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# ICSE CLASS X

# 61 SAMPLE QUESTION PAPERS

## All Subjects Combined

Aligned as per the Latest Specimen Question Paper Released by CISCE in July 2025

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# ICSE CLASS X

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Contact Us

For Feedback: +91 97202 77788 | publishing@oswalpublishers.in
For Queries: +91 74550 77222 | info@oswalpublishers.in

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# Preface

**In accordance with the latest syllabus prescribed by the Council for the Indian School Certificate Examinations (CISCE), New Delhi**

At Gurukul by Oswal, we believe success in board examinations comes from focused practice with the right resources. To help students prepare with confidence for the 2026 ICSE Board Examinations, we have designed this book strictly as per the latest syllabus and the Specimen Question Papers released by CISCE in July 2025.

This book comprises 61 Sample Question Papers, thoughtfully distributed across the core subjects: Hindi, English I, English II, History & Civics, Geography, Mathematics, Physics, Chemistry, Biology, Computer Applications, Physical Education, Economics, Economic Applications, Commercial Studies, Commercial Applications and Home Science.

Each paper reflects the latest question pattern issued by CISCE, giving learners a clear sense of how questions are asked and the approach to follow while attempting them. All questions are supported with accurate answers and explanations prepared by subject matter experts to build conceptual clarity and exam readiness.

## Key Features of this Book

- 61 Sample Question Papers, aligned with the July 2025 CISCE Specimen Papers.
- Strict adherence to the latest ICSE pattern for 2026 Examinations.
- Subject-wise coverage across all major papers listed above.
- Solved + Unsolved mix to build conceptual clarity and exam temperament.
- Concise, student-friendly language for efficient revision and time management.

We hope this book helps you practice efficiently, stay calm, and approach your Board Exams with confidence. Be selective with resources—revise smartly, manage time well, and trust your preparation.

Gurukul by Oswal is an imprint of Oswal Publishers, devoted to comprehensive class 9-12 exam preparation resources.

**— Series Editors**

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**NOTE**

The Specimen Question Paper in the subject provides a realistic format of the Board Examination Question Paper and should be used as a practice tool. The questions for the Board Examination can be set from any part of the syllabus. However, the format of the Board Examination Question Paper will remain the same as that of the Specimen Question Paper.

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# Specimen Question Paper

(The format of the same as followed in the ICSE year 2025 examination)

## Hindi (Second Language)

*Maximum Marks: 80*
*Time allowed: Three hours*

### General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will not be allowed to write during the first 15 minutes.*
*This time is to be spent in reading the question paper.*
*The time given at the head of this Paper is the time allowed for writing the answers.*
***Section A** is compulsory–**All** questions in **Section A** must be answered.*
*Attempt **any four** questions from **Section B**, answering at least **one** question each from the **two** books you have studied and **any two** questions from the same books you have studied.*
*The intended marks for questions or parts of questions are given in brackets [ ].*

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Write a short composition in Hindi of approximately 250 words on any one of the following topics: [15]**

**निम्नलिखित विषयों में से किसी एक विषय पर हिन्दी में लगभग 250 शब्दों में निबंध लिखिए:**

(i) जीवन में खेलकूद मनोरंजन प्रदान करने के साथ–साथ सुख–समृद्धि भी देते हैं। विद्यार्थी जीवन में इसकी उपयोगिता बहुत अधिक है। अपने किसी प्रिय खेल का वर्णन करें तथा यह खेल भविष्य में आपको कैसे लाभान्वित कर सकता है, निबंध में अपनी भविष्य की योजनाएँ भी बताइए।

(ii) 'परोपकार की भावना लोक–कल्याण से पूर्ण होती है।' हमें भी परोपकार से भरा जीवन ही जीना चाहिए। इस विषय को स्पष्ट करते हुए अपने विचार लिखिए।

(iii) 'स्वच्छता अभियान में सरकारी तंत्र की अपेक्षा नागरिकों की जागरूकता अधिक प्रभावपूर्ण मानी जाती है' जनता के सहयोग से ही देश स्वच्छ तथा सुन्दर बन सकता है, आप इस कथन से कहाँ तक सहमत हैं? स्पष्ट करें।

(iv) एक मौलिक कहानी लिखो, जिसके अंत में ये स्पष्ट हो ''जाको राखे साइयाँ। मार सके न कोय।''

(v) नीचे दिए गए चित्र को ध्यान से देखिए और चित्र को आधार बनाकर, उसका परिचय देते हुए कोई लेख, घटना अथवा कहानी लिखिए, जिसका सीधा व स्पष्ट सम्बन्ध चित्र से होना चाहिए।

**Question 2.**

**Write a letter in Hindi of approximately 120 words on any one of the topics given below:** [7]

**निम्नलिखित में से किसी एक विषय पर हिन्दी में लगभग 120 शब्दों में पत्र लिखिए:**

(i) आपका छोटा भाई अधिकांश समय मोबाइल फोन के उपयोग में बिताता है। मोबाइल फोन के अधिक उपयोग से होने वाली हानियों का उल्लेख करते हुए उसे पत्र लिखिए।

(ii) आपके क्षेत्र में मलेरिया तथा डेंगू का प्रकोप बढ़ गया है। इसकी रोकथाम के लिए नगर–निगम के अध्यक्ष को एक पत्र लिखिए।

**Question 3.**

**Read the passage given below and answer in Hindi the questions that follow, using your own words as far as possible :**

**निम्नलिखित गद्यांश को ध्यान से पढ़िए तथा उसके नीचे लिखे गए प्रश्नों के उत्तर हिन्दी में लिखिए। उत्तर यथासंभव आपके अपने शब्दों में होने चाहिए:**

सन्त कबीर ने स्थान–स्थान पर जाकर पर्याप्त भ्रमण किया था। घुमक्कड़ होने के कारण ही उनकी भाषा में अरबी, फारसी, भोजपुरी, मगही, पंजाबी, राजस्थानी आदि अनेक भाषाओं के शब्द आ गये हैं। उनकी बोलचाल की अनपढ़ भाषा विविध आंचलिक शब्दों, उक्तियों तथा अपभ्रंश शब्दों से युक्त है। इसलिए आचार्य रामचन्द्र शुक्ल इसे सधुक्कड़ी भाषा कहकर पुकारते हैं। वैसे उनकी भाषा किसी भी प्रकार की हो, परन्तु उनका भाषा पर पूर्ण अधिकार था। वे जानते थे कि किस भाव को व्यक्त करने के लिए कौन–सा शब्द उपयुक्त होगा। यही कारण है कि भाषा चुपचाप उसी भाव को प्रकट करने लगती है। इसी ओर संकेत करते हुए आचार्य हजारी प्रसाद द्विवेदी ने लिखा है–''भाषा पर कबीर का जबरदस्त अधिकार था। वे वाणी के डिक्टेटर थे। जैसी ताकत कबीर की भाषा में है, वैसी बहुत कम लेखकों में पायी जाती है। इस प्रकार बोलचाल की चलताऊ तथा विविध भाषाओं के शब्दों से युक्त तथा व्याकरण के बन्धनों से मुक्त भाषा के माध्यम से कबीर ने गम्भीर विषय का अत्यन्त सरल रूप प्रस्तुत किया है। आचार्य हजारी प्रसाद द्विवेदी का कथन सत्य ही है। सच पूछा जाए तो आज तक हिन्दी में ऐसा जबरदस्त व्यंग्य लेखक पैदा ही नहीं हुआ। उसकी साफ चोट करने वाली भाषा, बिना कहे भी सब कुछ कह देने वाली शैली अत्यन्त सही है, किन्तु अत्यन्त तेज प्रकाशन अनन्य असाधारण है।

(i) कबीर का स्वभाव कैसा था और उसके कारण उन्हें क्या कहा जाता था? [2]

(ii) कबीर की भाषा में कौन–सी विशेषताएँ पायीं जाती हैं? [2]

(iii) आचार्य शुक्ल ने कबीर की भाषा के विषय में क्या कहा है? [2]

(iv) आचार्य हजारी प्रसाद द्विवेदी जी ने कबीर की भाषा के सम्बन्ध में क्या कहा है? [2]

(v) कबीर की भाषा को मुक्त भाषा क्यों कहा गया है? [2]

**Question 4.**

**Answer the following according to the instructions given :** [8]

(i) 'निश्चेष्ट' का विलोम बताइए :

(a) सतर्क (c) सचेष्ट

(b) प्रवेष्ट (d) सजग

(ii) 'तालाब' का पर्यायवाची बताइए:

(a) सरि–सरिता (c) तड़ाग–पराग

(b) सर–सरोवर (d) पोखर–पाथर

(iii) 'काला' की भाववाचक संज्ञा बताइए :

(a) काली (c) कलात्मक

(b) कलिमा (d) कालिमा

(iv) 'भारत' का विशेषण बताइए :

(a) भारतीयता (c) भारती

(b) भारतवर्ष (d) भारतीय

(v) 'अभिलासा' का शुद्ध रूप बताइए :

(a) अभिलासा (c) अभीलाषा

(b) अभलाषा (d) अभिलाषा

(vi) 'घी के दिये जलाना' मुहावरे का अर्थ बताइए:

(a) दीवाली मनाना (c) खुशी मनाना

(b) पूजा–अर्चना करना (d) बहुत प्रसन्न होना

(vii) निर्देशानुसार उचित वाक्य बताइए :
धर्म का मानव मन पर प्रभाव पड़ता है। (वाक्य में 'प्रभावित' शब्द का प्रयोग कीजिए)

(a) धार्मिक मानव सबको प्रभावित करता है।
(b) धर्म मानव मन को प्रभावित करता है।
(c) मानव के मन को धर्म प्रभावित करता है।
(d) मन को प्रभावित करने वाला मानव धर्म है।

(viii) निर्देशानुसार उचित वाक्य बताइए :
रोम का राजा भीषण-रोग से पीड़ित हो गया। (वाक्य में 'कर दिया' शब्द का प्रयोग कीजिए)

(a) रोम के राजा को भीषण रोग ने पीड़ित कर दिया।
(b) रोम के राजा को एक भीषण रोग ने पीड़ित कर दिया।
(c) रोम के राजा को एक भयानक रोग ने पीड़ित कर दिया।
(d) रोम के राजा को एक रोग ने भयानक पीड़ित कर दिया।

## Section-B (Attempt four questions from this Section)

*(You must answer at least one question from each of the two books you have studied and any two other questions.)*

### साहित्य सागर–संक्षिप्त कहानियाँ
### (SAHITYA SAGAR-SHORT STORIES)

**Question 5.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

'दोनों घंटों साथ बैठते, बातें करते'।

['बात अठन्नी की'–सुदर्शन]

[`Baat Athanni Ki'–Sudarshan]

(i) 'दोनों'–शब्द से किस–किस की ओर संकेत है? [2]
(ii) वे दोनों किस–किस के यहाँ काम करते थे? [2]
(iii) वे दोनों जिन लोगों के यहाँ काम करते थे, उनमें कौन–सी बात समान थी? [3]
(iv) किस घटना से स्पष्ट होता है कि दोनों में अच्छी मित्रता थी? [3]

**Question 6.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

उन दिनों एक प्रथा प्रचलित थी। यज्ञ के फल का क्रय–विक्रय हुआ करता था।

['महायज्ञ का पुरस्कार'–यशपाल]

[Mahayagya Ka Puraskar–Yashpal]

(i) क्रय–विक्रय शब्द का अर्थ लिखें। [2]
(ii) यज्ञों के क्रय–विक्रय का क्या आशय है? [2]
(iii) सेठ जी यज्ञ बेचने कहाँ गये थे और क्यों? [3]
(iv) सेठानी द्वारा अपना यज्ञ बेचने का सुझाव दिए जाने पर सेठ की क्या प्रतिक्रिया हुई ? [3]

**Question 7.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

'उस भीड़–भाड़ में अचानक उसकी भेंट अरुणा से हो गई।' 'रूनी कहकर चित्रा भीड़ की उपस्थिति को भूलकर अरुणा के गले से लिपट गई।'

['दो कलाकार'–मन्नू भंडारी]

[Do Kalakaar–Mannu Bhandari]

(i) अरुणा और चित्रा कहाँ पर मिलीं हैं और यहाँ क्यों आईं हैं? [2]
(ii) अरुणा के साथ कौन खड़े थे? चित्रा के पूछने पर अरुणा ने क्या बताया? [2]
(iii) अरुणा ने बच्चों से क्या कहा? क्या चित्रा ने उन्हें प्यार किया? [3]
(iv) बच्चों के बारे में अरुणा की बात सुनकर चित्रा क्या सोचने लगी? [3]

## साहित्य सागर–पद्य भाग
## (SAHITYA SAGAR–POEMS)

**Question 8.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

धर्मराज यह भूमि किसी की, नहीं क्रीत है दासी,
है जन्मना समान परस्पर, इसके सभी निवासी।
सबको मुक्त प्रकाश चाहिए, सबको मुक्त समीरण,
बाधा रहित विकास, मुक्त आशंकाओं से जीवन।

['स्वर्ग बना सकते हैं'–रामधारी सिंह 'दिनकर']

[Swarg Bana Sakate Hain—Ramdhari Singh 'Dinkar']

(i) यह कविता किसने किसको सुनाई है? [2]

(ii) कवि ने 'मुक्त प्रकाश' और 'मुक्त समीरण' की इच्छा किसके लिए प्रकट की है? [2]

(iii) कवि ने मातृभूमि के बारे में क्या कहा है? [3]

(iv) इस धरती पर शांति लाने के लिए क्या आवश्यक है? [3]

**Question 9.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

सात समंद की मसि करौं, लेखनि सब बनराय।
सब धरती कागद करौं, हरि गुन लिखा न जाए।।

['साखी'–कबीरदास]

['Sakhi'—Kabirdas]

(i) 'सात समंद' कहकर कवि क्या स्पष्ट करना चाहते हैं? [2]

(ii) निम्नलिखित शब्दों के अर्थ लिखें : [2]
मसि, बनराय, कागद, लेखनी।

(iii) 'हरि गुण लिखा न जाए'–कबीर ने ऐसा क्यों कहा? [3]

(iv) कबीरदास जी का संक्षिप्त परिचय लिखें। [3]

**Question 10.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

साँईं सब संसार में, मतलब का व्यवहार।
जब लग पैसा गाँठ में, तब लग ताको यार।
तब लग ताको यार, यार संग ही संग डोले।
पैसा रहे ना पास, यार मुख से नहिं बोले।
कह 'गिरिधर कविराय' जगत यहि लेखा भाई।
करत बेगरजी प्रीति, यार बिरला कोई साँईं।।

['गिरिधर की कुंडलियाँ'–गिरिधर कविराय]

[Giridhar ki Kundliyan–Giridhar Kavirai]

(i) संसार में लोग कैसा व्यवहार करते हैं? [2]

(ii) लोग मित्र किसे बनाते हैं और क्यों? [2]

(iii) लोग किन से बातें करना पसंद नहीं करते और क्यों? [3]

(iv) किस प्रकार के लोग बिरला होते हैं? समझाइए। [3]

## नया रास्ता—सुषमा अग्रवाल

## (NAYA RAASTA – SUSHMA AGARWAL)

**Question 11.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित अवतरण को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

मीनू के हृदय में हीन–भावना के कारण जो दुःख के भाव थे, खुशी में परिवर्तित हो गए। प्रथम श्रेणी में पास होने पर फूली नहीं समाई।

(i) मीनू के हृदय में हीन–भावना ने क्यों स्थान बना लिया था? [2]

(ii) मीनू को अपने परीक्षा परिणाम की सूचना कहाँ मिली थी? [2]

(iii) नीलिमा और मीनू के बीच क्या सम्बन्ध थे? मीनू नीलिमा को किस बात की सूचना देने आई थी और क्यों? [3]

(iv) मीनू के मन में प्रसन्नता, उदासी और पुनः प्रसन्नता के भाव कब और किस प्रकार जाग्रत हुए? [3]

**Question 12.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित अवतरण को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

आशा को देखने के लिए इंजीनियर आलोक, उसके मम्मी–पापा व उसकी बड़ी भाभी आए।

(i) आशा कौन है? क्या लड़के वालों ने उसे पसंद कर लिया? [2]

(ii) लड़के वालों को आशा की बड़ी बहन के बारे में क्या बात बताई गई? [2]

(iii) बुआ ने इस लड़के की बात पहले किसके लिए चलाई थी? उस लड़की ने क्या कहा? [3]

(iv) उस लड़की की बात सुनकर पिताजी क्यों दुःखी हुए? समझाइए। [3]

**Question 13.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित अवतरण को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

'इतने में नीलिमा के पति सुरेंद्र जी ने कमरे में प्रवेश किया उन्हें देखकर मीनू आश्चर्यचकित रह गई'।

(i) मीनू इस समय कहाँ पर है? नीलिमा के पति को देखकर वह आश्चर्यचकित क्यों हो गई? [2]

(ii) क्यों, क्या हुआ नीलिमा को? मीनू के इस प्रश्न का सुरेंद्र ने क्या उत्तर दिया? [2]

(iii) यह शुभ समाचार सुनकर मीनू की क्या प्रतिक्रिया हुई? [3]

(iv) मीनू ने नीलिमा के घर जाने से पहले क्या तैयारी की? वहाँ किसे देखकर मीनू आश्चर्यचकित रह गई? [3]

## एकांकी संचय

## (EKANKI SANCHAY)

**Question 14.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित अवतरण को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

मैं जानती हूँ, मेरे ही तो बेटे हैं। माया–ममता किसी को छू नहीं गई है। हर बात में देश, धर्म और कर्त्तव्य की दुहाई देना उन्होंने सीखा है।

['संस्कार और भावना'–विष्णु प्रभाकर]

[Sanskar Aur Bhavna–Vishnu Prabhakar]

(i) वक्ता अपने बेटों के विषय में क्या जानती है? [2]

(ii) 'माया–ममता किसी को छू नहीं गई है'। इस कथन का क्या आशय है? [2]

(iii) बेटे हर बात में किसकी दुहाई देते हैं और यह उन्होंने किससे सीखा है? [3]

(iv) अतुल के पिता का चरित्र–चित्रण लिखें। [3]

**Question 15.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित अवतरण को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

'मुझे और लज्जित ना करो'। मेरी चोट का इलाज बेटी के ससुराल वालों ने दूसरी चोट से कर दिया है।

**['बहू की विदा'–विनोद रस्तोगी]**

**[Bahu Ki Vida—Vinod Rastogi]**

(i) 'मुझे और लज्जित ना करो'–किसने कहा? उसका संक्षिप्त परिचय लिखिए। [2]

(ii) 'मेरी चोट' से क्या आशय है? उसने ऐसा क्यों कहा? [2]

(iii) जीवनलाल के मन में पश्चाताप का भाव कब पैदा हुआ? [3]

(iv) इस अवतरण के आधार पर एकांकी के उद्देश्य को स्पष्ट कीजिए। [3]

**Question 16.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित अवतरण को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

ना बेटा, मैं अपने जीते–जी यह सब ना होने दूँगा। तुम चिंता ना करो। मैं सबको समझा दूँगा।

**['सूखी डाली'–उपेंद्रनाथ 'अश्क']**

**[Sookhi Daali—Upendra Nath 'Ashk']**

(i) वट वृक्ष को देखकर दादा जी के मन में कौन–सी कल्पनाएँ जाग जाती हैं? [2]

(ii) दादा जी का मन क्या सोचकर सिहर उठता है? वे किस चिंता में डूबे हैं? [2]

(iii) दादा जी कैसे विचारों के व्यक्ति हैं? उनकी क्या अभिलाषा है? [3]

(iv) अपनी छोटी बहू के विषय में दादा जी के क्या विचार हैं? [3]

# Answers

## Section-A

**Answer 1.**

(i) मनुष्य के जीवन में आरंभ से ही खेल–कूद महत्वपूर्ण रहे हैं। खेलों के बिना मनुष्य अधूरा है। प्राचीन समय में तो उसके मनोरंजन का साधन ही खेल हुआ करते थे। खेलों से जहाँ स्वास्थ्य अच्छा रहता है, वहीं मनोरंजन भी होता है। विद्यार्थियों के लिए खेल उत्तम औषधि के समान है। विद्यार्थियों को नियमित रूप से कुछ समय खेल को जरूर देना चाहिए। ऐसा करने से शरीर में रक्त–संचार सही रहता है, स्फूर्ति तथा उत्साह भी बढ़ता है। पढ़ाई करने के बाद खेलने से मन को नई शक्ति प्रदान होती है। खेलने से विद्यार्थियों में तनाव कम होता है। लगातार पढ़ने से उत्पन्न झुँझलाहट भी समाप्त हो जाती है। शरीर मजबूत बनता है। पढ़ाई में मन लगा रहता है। विद्यार्थी आज खेलों के माध्यम से उज्ज्वल भविष्य भी पा रहे हैं। खेलों को व्यवसाय के रूप में अपनाने से खिलाड़ी देश–विदेश में यश और धन दोनों कमा रहे हैं।

मेरा प्रिय खेल क्रिकेट है। मुझे क्रिकेट खेलना बहुत पसंद है। क्रिकेट आउटडोर गेम होता है। यह दुनिया भर में खेला जाता है और यह हर देश को सर्वाधिक पसंद आता है। युवा इसे खेलना बहुत ही ज्यादा पसंद करते हैं। इस खेल को दो टीमों द्वारा खेला जाता है। जो टीम अत्यधिक रन बनाती है, वह खेल को जीत जाती है। अंतर्राष्ट्रीय स्तर पर इस खेल को तीन रूपों में खेला जाता है। टेस्ट मैच को 5 दिनों तक खेला जाता है। प्रत्येक दिन 90 ओवर और 540 गेंदें फेंकनी होती हैं। दूसरा मैच एक दिवसीय मैच होता है, इसमें हर टीम को 50-50 ओवर खेलने होते हैं। तीसरा रूप टी 20 के नाम से बहुत ही प्रसिद्ध है, इसमें हर टीम को 20-20 ओवर खेलने होते हैं। मैं भी अपने विद्यालय की टीम में क्रिकेट खेलता हूँ। मेरा सपना है कि मैं इसी क्षेत्र में अपना भविष्य निर्माण करूँ जिससे मेरा शौक मेरे भविष्य में जीविकार्जन का साधन भी बने। इस हेतु मैं अधिक से अधिक क्रिकेट का अभ्यास करता हूँ। मेरा सपना है कि मैं बड़े होकर 'टीम इंडिया' में चुना जाऊँ।

(ii) परोपकार का अर्थ है दूसरों पर उपकार। दूसरों पर उपकार का तात्पर्य है दूसरों की भलाई के लिए कार्य करना। इस भलाई के कार्य में अपना कोई निजी स्वार्थ नहीं होता। ये करुणा, दया, ममता और स्नेह से परिपूर्ण भावना होती है।

यदि हम प्रकृति में चारों तरफ देखें तो हम पायेंगे कि प्रकृति परोपकार का सबसे अच्छा उदाहरण है। वृक्ष अपने फल स्वयं नहीं खाते। नदी अपना जल स्वयं नहीं पीती। सूर्य अनवरत हमें ऊर्जा और प्रकाश प्रदान करता है। खेत हमें अन्न देते हैं। वायु हमें ऑक्सीजन प्रदान करती है।

परोपकार एक सुखद अहसास है। अपने लिए तो सभी जीते हैं पर सच्चा सुख किसी दूसरे के लिए काम आने में है। संसार में वो कार्य सबसे श्रेष्ठ है जिससे किसी दूसरे की सहायता होती है। किसी के चेहरे पर मुस्कान और किसी के जीवन में खुशी लाना प्रभु की सच्ची आराधना के समान है। कहते हैं नर में ही नारायण बसते हैं अर्थात् प्रत्येक मनुष्य में ही ईश्वर व्याप्त है तो क्यों न किसी दुःखी की, किसी जरूरतमंद की, किसी परेशान व्यक्ति की मदद कर साक्षात् ईश्वर की पूजा करने जैसा महसूस करें।

आज के दौर में हमारे चारों ओर हिंसा, नफरत, स्वार्थ, असहनशीलता आदि व्याप्त हैं। हर कोई व्यक्ति अपने स्वार्थ में लिप्त है। ऐसे में परोपकार की भावना इस समाज के लिए नितांत आवश्यक है ताकि लोग स्वार्थी प्रवृत्ति से ऊपर उठकर एक-दूसरे का सहयोग करें, एक-दूसरे का दुःख -दर्द समझें, तब ही एक अच्छे समाज का निर्माण होगा। जिसमें दया व प्रेम की भावना हो।

हर धर्म में परोपकार को विशेष महत्व दिया गया है। जो अपने पूरे जीवन में किसी भी व्यक्ति के काम नहीं आया हो, जिसने कभी कोई परोपकार का कार्य नहीं किया हो वह व्यक्ति मानव कहलाने का अधिकारी नहीं है।

परोपकार करने के लिए किसी आयु या योग्यता की जरूरत नहीं पड़ती। परोपकार के लिए बस संवेदनशील होना आवश्यक है।

संसार में जितने भी महापुरुष हुए हैं उन्होंने अपना जीवन सदैव दूसरों की भलाई के लिए लगा दिया। अगर उन्होंने दूसरों की भलाई के कार्य नहीं किए होते और केवल अपने स्वार्थ के लिए जीये होते तो वे महापुरुष नहीं बन पाते और ना ही हम उन्हें याद करते।

अतः परोपकार की भावना लोककल्याण की भावना से ही पूर्ण होती है और प्रत्येक व्यक्ति के लिए परोपकारी होना अति आवश्यक है। ईश्वर ने मानव को विशेष गुण दिये है वह है बुद्धि और संवेदनशीलता। ये गुण मानवजाति को संसार के अन्य प्राणियों से अलग करता है। वरना केवल अपने स्वार्थ के लिए जीना तो पशुओं का काम है। जो लोग दूसरों के लिए जीते हैं, परोपकारी हैं वो लोग ही सच्चे मानव हैं।

**औरों को हँसते देखो मनु, हँसो और सुख पाओ।**
**अपने सुख को विस्तृत कर लो, सबको सुखी बनाओ।**

(iii) अस्वच्छता भारत की एक विकट समस्या है। हमारी संस्कृति में मन की पवित्रता पर जितना जोर दिया जाता है उतना जोर बाह्य परिवेश की स्वच्छता पर नहीं दिया जाता। इसी कारण भारतीय लोग अस्वच्छता से इतने चिंतित दिखाई नहीं देते हैं। अस्वच्छता ग्रामीण तथा शहरी दोनों ही स्थानों पर दिखाई देती है। इस समस्या के समाधान हेतु भारत के प्रधानमंत्री मोदी जी ने स्वच्छता अभियान चलाकर देश के नागरिकों को इससे जुड़ने का आह्वान किया है। सरकारी तौर पर सफ़ाई व्यवस्थाओं को सुचारु रखने के कई प्रयास किये जा रहे हैं परन्तु स्वच्छता की जिम्मेदारी सरकारी संस्थाओं की ही नहीं बल्कि प्रत्येक नागरिक की भी है। हमारे आस-पास जो गंदगी फैली दिखाई देती है उसका कारण हमारी आदतें भी हैं। हम चाहे जहाँ कूड़ा फेंकते हैं और गंदगी फैलाते हैं। सरकारी सफाई कर्मचारी सुबह सफाई करके चले जाते हैं परन्तु उसे कायम रखना तो नागरिकों के हाथ में है। कुछ भी खाते-पीते उसके छिलके, खाली डिब्बे, बोतलें सड़कों पर फेंक देना हमारी आदत है। मैंने एक विदेशी को देखा जो केले खाते हुए पैदल चल रहा था और छिलके अपने कंधे पर लटके थैले में डाल रहा था। अपने परिवेश की सफाई करना अन्य देशों में बुरा नहीं माना जाता। महात्मा गाँधी अपने आश्रम में शौचालय को भी साफ करना बुरा नहीं मानते थे। महान कहानीकार मुंशी प्रेमचन्द सवेरे घर की झाड़ू स्वयं लगाते थे। हमें भी ये समझना चाहिए कि अपना परिवेश स्वच्छ रखने में कोई शर्म की बात नहीं है।

भारत में चलने वाले स्वच्छता अभियान को सफल तभी बनाया जा सकता है जब हम सब अपने घरों और आस-पास की सफाई करने की आदत डालें, ना सिर्फ खुद आदत डालें बल्कि अपने आस-पास रहने वालों को भी जागरूक करें। ऐसा करने से हम अपने तथा अपने आस-पास के लोगों के स्वास्थ्य के हित में भी महत्वपूर्ण योगदान दे सकेंगे। आधी समस्या तो तभी खत्म हो जाएगी जब हर नागरिक खुद अपने परिवेश को स्वच्छ रखना सीख लेगा।

उत्तम स्वास्थ्य के लिए स्वच्छता आवश्यक है। अपने स्कूल, घर, दफ्तर, कारखाने आदि को स्वच्छ रखने की आदत हमें स्वच्छता के विषय में आत्मनिर्भर बनाएगी। इससे हमारे परिवेश में जो परिवर्तन होगा वह हमारे स्वास्थ्य के लिए हितकारी होगा।

(iv) एक बार एक राज्य में सुजान सिंह नाम का एक लकड़हारा रहता था। वह एक सीधा-सादा एवं मेहनती व्यक्ति था। रोज की भाँति एक दिन वह जंगल में लकड़ी काटने गया। पिछले कुछ दिनों से उसका स्वास्थ्य ठीक नहीं था परन्तु पैसे की अधिक आवश्यकता होने के कारण उस दिन उसने बहुत लकड़ियाँ काटीं। थकान होने के बावजूद भी वह अपने कार्य में जुटा रहा। देखते-देखते उसकी भूख उजागर होने लगी, इसलिए उसने एक पेड़ के नीचे बैठकर भोजन करने का निश्चय किया। वह खाना खाने के लिए जैसे ही बैठा उसे एक औरत के रोने की आवाज आई। उसे लगा कि किसी को सहायता की आवश्यकता है। वह उसी दिशा में ढूँढने के लिए आगे बढ़ा जिस दिशा से आवाज आई थी। जब वह वहाँ पहुँचा तो उसने देखा कि एक औरत रो रही थी। लकड़हारे ने औरत से उसके रोने का कारण पूछा। उस औरत ने बताया कि कई दिनों से भोजन ना मिलने के कारण उसका यह हाल है। लकड़हारे के हाथ में भोजन देखकर उस औरत ने उससे भोजन माँग लिया। सुबह से परिश्रम करने के कारण लकड़हारा थकान से ग्रस्त था जिसके कारण उसे बहुत भूख

लगी थी किंतु फिर भी औरत की स्थिति के बारे में सोचकर उसने उसे भोजन दे दिया। भोजन देने के बाद जब वह वापस उस दिशा में लौटा जिस स्थान पर वह था तो वहाँ लौटकर उसने देखा कि जिस स्थान पर वह बैठकर भोजन करने वाला था, उस जगह पर एक पेड़ गिरा हुआ था। लकड़हारे को अनुभव हुआ कि कैसे भगवान ने उसके प्राणों की रक्षा की। यह सोचकर उसने भगवान को धन्यवाद दिया और वहाँ से प्रस्थान किया। इसीलिए कहते हैं–

**जाको राखे साइयाँ मार सके ना कोय।**

(v) एक गाँव में एक जमींदार था। वह अत्यंत लालची, कृपण और निर्दयी था। धन–धान्य की कमी न थी। संतान के नाम पर सिर्फ एक बेटी थी। उसकी जमीनों पर गाँव के अनेक गरीब मजदूर काम करके अपनी रोजी–रोटी कमाते थे। जमींदार उनसे काम अधिक से अधिक लेता और मजदूरी कम देता परन्तु उस छोटे से गाँव में कोई और जीविका का साधन उपलब्ध न होने के कारण गाँव वाले वहीं काम करने के लिए मजबूर थे।

एक बार गाँव में सूखा पड़ा। काफी समय से वर्षा नहीं हुई थी। जमीनें बंजर हो गई थी। जमींदार ने मजदूरों को काम देना बंद कर दिया क्योंकि खेती का काम तो वर्षा पर ही निर्भर है। गरीब मजदूरों के पास कोई और काम नहीं था। उनके घरों में चूल्हा जलना तक मुश्किल हो गया। बड़े लोग तो जैसे–तैसे सब्र कर लेते मगर बच्चों को तो भरपेट खाना चाहिए ही था। विवश होकर उन लोगों ने जमींदार के पास जाकर मदद माँगने का निश्चय किया। उन लोगों ने जमींदार से कहा कि हम लोगों की जीविका तो यहाँ के काम से ही थी। हमारे भूखे मरने की नौबत आ गयी है। बच्चे घर में भूखे हैं। कुछ काम दें या कम से कम बच्चों के लिए खाना दें। ये सब सुनकर भी जमींदार का हृदय नहीं पिघला। उसके भंडार भरे हुए थे मगर हृदय कठोर था। उसने सबको दुत्कार कर भगा दिया। जमींदार की बेटी ये सब देख रही थी। वह अपने पिता के कृपण स्वभाव को जानती थी कि इस स्थिति में भी वो अपना स्वभाव न छोड़ेगा यह जानकर वह बहुत दुःखी हुई। उसने अपने पिता को सबक सिखाने का निश्चय किया। रात के खाने के लिए जब नौकर उसे बुलाने आया तो उसने खाने से मना करवा दिया। अगले दिन भी उसने कुछ नहीं खाया। यह खबर जमींदार तक पहुँचीं। वो भागता हुआ बेटी के पास आया और इसका कारण पूछा। बेटी ने कुछ भी बताने से इंकार कर दिया। वह अपने व्रत पर अडिग रही। अगले दिन भी जब बेटी का यही हठ जारी रहा तो जमींदार परेशान होकर रोने लगा। तब बेटी ने उससे कहा–अब आप उन लोगों का दर्द समझ पाएंगे जो अपने बच्चों को भूखा देखकर विवश होकर आपसे भीख तक माँगने आये। जमींदार को अपनी भूल का एहसास हो गया। अब उसकी आँखों से पश्चाताप् के आँसू बहने लगे। वह बोला–बेटी मुझे तुम पर गर्व है तुमने मेरी आँखें खोल दीं। उसने फ़ौरन उन मजदूरों के बच्चों को बुलवाया व उनके खाने का प्रेमपूर्वक प्रबंध किया। अन्य गाँव वालों के लिए भी उसने अपने भंडार खोल दिए और गाँव में घोषणा करवा दी कि जिसको जिस वस्तु की जरूरत हो वह निसंकोच होकर यहाँ आकर प्राप्त कर सकता है। उसका हृदय अब परिवर्तित हो चुका था।

**Answer 2.**

(i) नेहरू छात्रावास,

पीलीभीत।

दिनाँक: 18 जुलाई, 20XX

प्रिय मोहित,

मैं यहाँ कुशल हूँ तथा घर पर सबकी कुशलता की कामना करता हूँ। पिताजी का पत्र मिला, सुनकर खुशी हुई कि गुड़िया ने त्रैमासिक परीक्षा में प्रथम स्थान प्राप्त किया है तथा तुमने द्वितीय।

छोटे भाई! पिछले वर्ष की परीक्षाओं में तुम प्रथम स्थान पर रहे थे, पिताजी ने बताया कि आजकल तुम्हारा ध्यान पढ़ाई में कम होता जा रहा है और तुम अपना अधिकांश समय मोबाइल फ़ोन के उपयोग में बिता रहे हो। मोबाइल का अधिक उपयोग एक विद्यार्थी के लिए बहुत हानिकारक है। इससे समय तो व्यर्थ होता ही है बल्कि यह आँखों की रोशनी पर भी असर डालता है, एकाग्रचित्तता भी भंग होती है। मोबाइल फोन से निकलने वाली इलेक्ट्रोमेग्नैटिक विकिरणों से डीएनए क्षतिग्रस्त हो सकता है। इसके अलावा मोबाइल का अधिक इस्तेमाल मानसिक रोग, कैंसर, ब्रेन ट्यूमर, डायबिटीज, हृदय रोग आदि कई बड़ी बीमारियाँ भी दे सकता है।

तुम एक समझदार और मेधावी विद्यार्थी रहे हो। अपनी पढ़ाई पर ध्यान दो क्योंकि शिक्षा ही हमें जीवन की सही राह दिखाती है। उसके महत्व को समझो।

मैं आशा करता हूँ तुम मेरी सलाह को अमल करोगे। किसी तरह की सहायता की आवश्यकता हो तो मुझे लिखना।

तुम्हारा शुभचिंतक,

तुम्हारा भाई।

(ii) सेवा में,

श्रीमान् अध्यक्ष महोदय,

नगर निगम, आगरा।

**विषय** : क्षेत्र में फैल रहे डेंगू और मलेरिया के विषय में जानकारी देने हेतु।

सविनय निवेदन यह है कि मैं राधा विहार, फेस–2 का निवासी हूँ तथा आपका ध्यान राधा विहार क्षेत्र में फैल रहीं डेंगू और मलेरिया जैसी खतरनाक बीमारियों की ओर दिलाना चाहता हूँ। क्षेत्र में सफाई व्यवस्था बिल्कुल चरमराई हुई है। सफाई कर्मचारी नियमित सफाई हेतु नहीं आ रहे हैं जिससे जगह–जगह गंदगी के ढेर लग गए हैं जो बीमारी का मुख्य कारण हैं। हर दूसरे घर में एक मरीज डेंगू या मलेरिया का है। छोटे बच्चे अधिक प्रभावित हो रहे हैं। मैं एक जिम्मेदार नागरिक होने के नाते समस्त क्षेत्रवासियों की तरफ से अनुरोध करना चाहूँगा कि कॉलोनी में सफाई व्यवस्था पर ध्यान दिया जाये। आवश्यक दवाइयों का नियमित छिड़काव करवाया जाये तथा सरकारी स्वास्थ्य केंद्र से गरीब लोगों को आवश्यक दवाएँ उपलब्ध करायीं जाएँ।

कृपया शीघ्रातिशीघ्र उचित कार्यवाही करें।

धन्यवाद

भवदीय

अ.ब.स.

राधा विहार, फेस–2

आगरा।

**Answer 3.**

(i) कबीर स्वभाव से घुमक्कड़ थे। इसी कारण उनकी भाषा अनेक भाषाओं का मिला–जुला रूप थी। भाषा पर उनका पूर्ण अधिकार था। गंभीर विषयों पर भी वे अत्यंत सरल शब्दों में व्यंग्य कर जाते थे। इसी कारण उन्हें 'वाणी का डिक्टेटर' कहा जाता था।

(ii) कबीर की भाषा अरबी, फ़ारसी, भोजपुरी, पंजाबी आदि विभिन्न आंचलिक भाषाओं का मिश्रण है। साधारण बोलचाल की भाषा को व्याकरण के नियमों से मुक्त रखा गया है। साहित्यकारों ने कबीर की भाषा को 'सधुक्कड़ी' नाम दिया है।

(iii) विविध आंचलिक शब्दों, उक्तियों , अपभ्रंश शब्दों तथा मुहावरों से युक्त होने के कारण आचार्य शुक्ल ने कबीर की भाषा को सधुक्कड़ी कहकर पुकारा है।

(iv) आचार्य द्विवेदी जी के अनुसार कबीर वाणी के डिक्टेटर थे। वे भाषा को अपने अनुसार जैसे चाहे वैसे ढाल देते थे, जो भाव चाहे व्यक्त करवा लेते थे। भाषा कबीर के सामने लाचार नज़र आती है मानों उसमें हिम्मत ही न हो उन्हें इंकार करने की।

(v) कबीर की भाषा को मुक्त भाषा कहा गया है क्योंकि उनकी भाषा में अनेक भाषाओं के शब्द मिले हुए थे। वे अपने भावों को प्रकट करने के लिए कहीं से भी कोई भी उपयुक्त शब्द चुन लेते थे। वे बिना कहे भी कम शब्दों में अपनी बात कह देते थे। उनकी भाषा व्याकरण के बंधनों से मुक्त थी।

**Answer 4.**

(i) (c) सचेष्ट

(ii) (b) सर–सरोवर

(iii) (d) कालिमा

(iv) (d) भारतीय

(v) (d) अभिलाषा

(vi) (c) खुशी मनाना

(vii) (b) धर्म मानव मन को प्रभावित करता है।

(viii) (a) रोम के राजा को भीषण रोग ने पीड़ित कर दिया।

## Section-B

**Answer 5.**

(i) 'दोनों' शब्द से संकेत 'रमज़ान' और 'रसीला' की ओर है।

(ii) रमज़ान जिला मजिस्ट्रेट शेख सलीमुद्दीन के यहाँ चौकीदारी करता था तथा रसीला इंजीनियर बाबू जगत सिंह के यहाँ नौकर था।

(iii) रमज़ान शेख सलीमुद्दीन के यहाँ और रसीला इंजीनियर जगत सिंह के यहाँ नौकर था। शेख सलीमुद्दीन और जगत सिंह दोनों में एक बात समान थी कि दोनों ही अपने काम के प्रति ईमानदार नहीं थे। दोनों ही रिश्वत लेकर काम किया करते थे।

(iv) रसीला का बच्चा बीमार था। मालिक ने भी पेशगी देने से इंकार कर दिया था। रमज़ान से उसकी उदासी देखी न गयी। उसने कुछ रुपए देकर उसकी मदद की जो कि एक अच्छी मित्रता की निशानी है।

**Answer 6.**

(i) क्रय–विक्रय शब्द का अर्थ है 'खरीदना–बेचना'।

(ii) यज्ञों के क्रय–विक्रय से आशय यज्ञों के फल को खरीदने–बेचने से है। उन दिनों ये प्रथा थी कि धर्मपरायण लोग अपने किये हुए यज्ञों के फलों को बेचा करते थे। यज्ञ के छोटे–बड़े होने के अनुसार ही उसका मूल्य मिल जाया करता था।

(iii) सेठ जी को जब गरीबी का मुँह देखना पड़ा, संगे–साथियों ने भी जब मुँह फेर लिया, भूखे मरने की नौबत आ गयी, तब सेठ जी यज्ञ बेचने के लिए कुन्दनपुर के धन्ना सेठ के यहाँ गए।

(iv) सेठानी द्वारा यज्ञ बेचने का सुझाव सुनकर सेठ जी बहुत दुःखी हुए, परन्तु कोई और सहारा न था। इस पर विचार कर वे यज्ञ बेचने के लिए तैयार हो गए।

**Answer 7.**

(i) चित्रा के चित्रों की विराट प्रदर्शनी का आयोजन दिल्ली में किया गया था। चित्रा वहाँ प्रदर्शनी का उद्घाटन करने आयी थी। वे दोनों प्रदर्शनी स्थल पर मिलीं।

(ii) अरुणा के साथ दो प्यारे बच्चे खड़े थे। एक लड़का जिसकी उम्र करीब दस साल थी और एक लड़की जिसकी उम्र कोई आठ साल। चित्रा के पूछने पर अरुणा ने कहा कि ये मेरे बच्चे हैं।

(iii) अरुणा ने बच्चों से चित्रा मौसी को नमस्कार करने को कहा। चित्रा बच्चों को अवाक् होकर देख रही थी। अरुणा के टोकने पर उसने दोनों बच्चों के सर पर प्यार से हाथ फेरा।

(iv) अरुणा से यह पता चलने पर कि ये उसी भिखारिन के बच्चे हैं जिसका चित्र बनाकर उसने इतनी प्रसिद्धि पायी है, वह विस्मित हो जाती है। वह अपने और अरुणा के विषय में सोचने लग जाती है कि कौन सच्चा कलाकार है जिसने चित्र बनाकर अपना चित्रकार होने का धर्म निभाया या जिसने बच्चों को अपनाकर अपने मानव होने का कर्त्तव्य निभाया।

**Answer 8.**

(i) यह कविता 'दिनकर जी' की प्रसिद्ध रचना 'कुरुक्षेत्र' का एक अंश है। इसमें युद्ध के उपरांत युधिष्ठिर भीष्म पितामह के पास जाते हैं और उसी समय पितामह यह कविता रूपी उपदेश उन्हें देते हैं।

(ii) कवि ने मुक्त प्रकाश और मुक्त समीरण यानी वायु की इच्छा जन साधारण के लिए प्रकट की है। वे चाहते हैं कि प्रकृति प्रदत्त ये उपहार सबको समान रूप से प्राप्त हों।

(iii) कवि के अनुसार यह धरती किसी की खरीदी हुई दासी नहीं है। इस पर जन्म लेने वाले सभी एक समान हैं। सभी इस धरती के निवासी हैं। इस धरती पर जन्म लेने वाले प्रत्येक व्यक्ति का इस भूमि पर समान हक है इसलिए प्रकृति प्रदत्त सभी वस्तुओं का उपभोग आपस में मिल–बाँटकर करना चाहिए।

(iv) जब तक इस धरती पर रहने वाले मानव को न्याय के अनुसार सुख–सुविधाएँ प्राप्त नहीं हो जातीं तब तक वह चैन से नहीं बैठ सकता और जब तक मानव का मन अशांत है तब तक इस धरती पर शान्ति की कल्पना नहीं की जा सकती। ऐसी स्थिति में तो समूचे विश्व में शांति खोजने पर भी नहीं मिलेगी। इसलिए सभी व्यक्तियों को समान रूप से न्याय के अनुसार उसके विकास के लिए सुख–सुविधाओं का प्राप्त होना धरती पर शांति लाने के लिए अत्यंत आवश्यक है।

**Answer 9.**

(i) 'सात समंद' से तात्पर्य सात समुद्रों से है। कवि कहना चाहते हैं कि सात समुद्रों के जल की भी यदि स्याही बना दी जाए, धरती पर मौजूद सारे वृक्षों की लेखनी बना ली जाए और समस्त धरती को कागज कर दिया जाए तब भी हरि गुण का वर्णन करना सम्भव नहीं है।

(ii)

| शब्द | | अर्थ |
|---|---|---|
| मसि | – | स्याही |
| बनराय | – | वनराज अर्थात् वृक्ष (वन प्रदेश) |
| कागद | – | कागज |
| लेखनी | – | कलम |

(iii) सातों समुद्रों के जल की स्याही बना ली जाए और सभी वन समूहों की लेखनी बना ली जाए, तथा सारी पृथ्वी को कागज कर लिया जाए, तब भी हरि अर्थात् परमात्मा के गुणों का वर्णन नहीं किया जा सकता क्योंकि वह अथाह गुणों से युक्त है। उसकी महिमा अपरम्पार व अवर्णनीय है।

(iv) कबीर का जन्म सन् 1398 में हुआ माना जाता है तथा मृत्यु का समय विद्वानों ने सन् 1495 माना है। वे ज्ञानाश्रयी निर्गुण शाखा के प्रमुख कवि हैं। इनके गुरु संत रामानंद थे। कबीर पढ़े–लिखे नहीं थे। उन्होंने 'सधुक्कड़ी भाषा' में दोहों का संकलन किया है। वे मूर्ति पूजा, कर्मकांडों, सामाजिक कुरीतियों के विरोधी थे। उन्होंने हिन्दू–मुस्लिम एकता का समर्थन किया।

**Answer 10.**

(i) कवि के अनुसार इस संसार में बिना स्वार्थ के कोई किसी का सगा–सम्बन्धी नहीं होता। सब अपने मतलब के लिए ही व्यवहार रखते हैं अर्थात् इस संसार में मतलब का व्यवहार प्रचलित है।

(ii) लोग सिर्फ उसे मित्र बनाना पसंद करते हैं जो धनी है, जिसके पास संपत्ति है ताकि वे उस पैसे का उपयोग कर सकें। पैसे वाले मित्र के साथ घूम–फिर सकें और उसके पैसों पर खा–पी सकें। समाज में ये रौब डाल सकें कि उनकी मित्रता और उठना–बैठना संपन्न व्यक्तियों के साथ है।

(iii) निर्धन व सम्पत्तिहीन व्यक्तियों के साथ कोई बात करना पसंद नहीं करता क्योंकि उससे किसी को कोई फायदा नहीं होता। लोग सिर्फ उन्हीं लोगों के साथ सम्बन्ध रखना पसंद करते हैं जो पैसे वाले है। लोग डरते हैं कि कहीं निर्धन मित्र कोई सहायता ना माँग ले। उन्हें लगता है कि गरीब से मित्रता रखने पर उनकी सामाजिक प्रतिष्ठा में कमी आ जाएगी।

(iv) जो समाज में धनी–निर्धन का भेदभाव नहीं रखते, निस्वार्थ रूप से सबसे प्रेम का व्यवहार करते हैं, ऐसे व्यक्तियों का समाज में मिलना दुर्लभ है क्योंकि आज के समय में लोग सिर्फ धन के आधार पर मित्रता या प्रेम रखना अच्छा समझते हैं। जिसके पास धन न हो ऐसे व्यक्ति का कोई सगा–सम्बन्धी नहीं होता। समान रूप से सबसे प्रेम रखने वाले, उनकी सहायता करने वाले लोग बिरला होते हैं।

**Answer 11.**

(i) मीनू के विवाह के लिए कई रिश्ते आये थे परन्तु किसी ने उसे सांवली तो किसी ने कद की छोटी कहकर विवाह से इंकार कर दिया। इस तरह बार–बार अपने व्यक्तित्व के बारे में नकारात्मक बातें सुनकर मीनू के हृदय में हीन भावना ने स्थान बना लिया था।

(ii) मीनू अपनी सहेली नीलिमा से मिलने उसके घर गयी हुई थी। वहीं उसके भाई रोहित व नीलिमा की माँ ने आकर उन दोनों को परीक्षा परिणाम की सूचना दी।

(iii) नीलिमा और मीनू अच्छी सहेलियाँ थीं। दोनों एक–दूसरे को अपने मन की हर एक बात बताती थीं। मीनू के विवाह का प्रस्ताव मेरठ में मायाराम जी के यहाँ भेजा गया था। वहाँ से खबर आयी कि मीनू का फोटो पसंद कर लिया गया है। उसके रिश्ते के लिए कई जगह से मना हो चुकी थी। इस कारण मेरठ से सकारात्मक जवाब आने पर वो खुश हो गयी और ये बात नीलिमा को बताने चली आयी।

(iv) मेरठ से फोटो पसंद कर लिए जाने की खबर आने पर मीनू प्रसन्न थी परन्तु जब उसे अपनी जिंदगी के कुछ क्षण याद आये जब उसे किसी ने सांवली तो किसी ने कद की छोटी कहकर विवाह से इंकार कर दिया था तो वह दुःख में डूब गयी। कुछ ही क्षणों बाद उसके भाई व नीलिमा की माँ ने उन दोनों को परीक्षा में प्रथम व द्वितीय आने की खुशखबरी सुनाई। जिसे सुनकर मीनू के हृदय में जो दुःख हीन–भावना के कारण उभर रहा था वह खुशी में परिवर्तित हो गया।

**Answer 12.**

(i) आशा मीनू की छोटी बहन है जिसे देखने इंजीनियर आलोक अपने परिवारीजनों के साथ आया था। उन लोगों ने आशा को पसंद कर लिया था।

(ii) लड़के वालों को आशा की बड़ी बहन अर्थात् मीनू के विषय में बताया गया कि उसकी अभी शादी नहीं हुई क्योंकि वो वकालत की पढ़ाई कर रही है।

(iii) बुआ ने इस लड़के की बात पहले मीनू के लिए चलायी थी परन्तु मीनू ने अपने पिता से साफ कह दिया कि वो पढ़ाई बीच में छोड़कर शादी नहीं करेगी। उसने कहा कि लड़का अच्छा है तो आशा के लिए बात चला दीजिए। आशा देखने में भी सुन्दर है वह लड़के वालों को पसंद आ जाएगी।

(iv) उस लड़की अर्थात् मीनू की बात सुनकर पिताजी दुःखी हो गए क्योंकि मीनू आशा से बड़ी थी। वे बड़ी बेटी से पहले छोटी बेटी की शादी नहीं करना चाहते थे। ऐसा करने के लिए उनका दिल गवाही नहीं दे रहा था। वे जानते थे कि समाज में इस बात को अच्छा नहीं समझा जाता। यदि बड़ी बेटी को छोड़कर छोटी बेटी की शादी कर दी जाये तो समाज उन पर उँगलियाँ उठाएगा।

**Answer 13.**

(i) मीनू इस समय हॉस्टल के कमरे में बैठी है। वह नीलिमा के पति सुरेंद्र को देखकर आश्चर्यचकित हो गयी क्योंकि उसके लिए सुरेंद्र का हॉस्टल में बिना नीलिमा को साथ लिए मिलने आना अप्रत्याशित था।

(ii) नीलिमा के यह प्रश्न पूछने पर सुरेंद्र ने मुस्कराते हुए कहा–''हुआ कुछ नहीं। उसने पुत्र को जन्म दिया है।''

(iii) यह शुभ समाचार सुनकर मीनू प्रसन्न हो गयी। उसने नामकरण में जाने के लिए फौरन हामी भर दी। वह कार्ड देखकर सोचने लगी कि नीलिमा कितनी भाग्यशाली है उसे सुन्दर पति के साथ–साथ एक पुत्र की माँ बनने का सौभाग्य भी प्राप्त हो गया।

(iv) मीनू ने नीलिमा के घर नामकरण संस्कार में जाने के लिए कॉलेज से छुट्टी ली तथा नन्हे बालक के लिए उपहार भी खरीदा। वहाँ सुरेंद्र के मित्रों में अमित का नाम सुनकर वह चौंक गयी क्योंकि यह वही अमित था जिससे उसके रिश्ते की बात चली थी। घर में उसे नज़रअंदाज करना मीनू के लिए मुश्किल था।

**Answer 14.**

(i) वक्ता अपने बेटों के विषय में जानती हैं कि वे माया और ममता से दूर हैं। वे हर बात में बस देश, धर्म और कर्त्तव्य की दुहाई देना ही जानते हैं।

(ii) इस कथन का आशय है कि दोनों बेटे माया और ममता से कोसों दूर हैं।

(iii) बेटे हर बात में देश, धर्म और कर्त्तव्य की दुहाई देते हैं। ये उन्होंने अपने पिता से सीखा है।

(iv) अतुल के पिता मोह–माया से दूर व कठोर हृदयी थे। अपने बेटे के मृतप्राय हो जाने पर भी उनका हृदय द्रवित नहीं होता है। वे व्यावहारिकता में अत्यंत विश्वास रखते थे। वे अपनी पत्नी को भी मोह–माया से ग्रस्त कहकर बुरा–भला कहते थे। वे पत्नी को भी व्यावहारिकता का पाठ पढ़ाया करते थे।

**Answer 15.**

(i) इस वाक्य के वक्ता जीवनलाल हैं। उनकी उम्र लगभग 50 वर्ष है। वे एक धनी व्यापारी तथा परिवार के मुखिया हैं। वे एक घमंडी, जिद्दी और लालची व्यक्ति हैं। वे बेटी और बहू में भेदभाव करते हैं। उनके लिए धन ही सबकुछ है किसी की संवेदनायें नहीं, परन्तु एकांकी के अंत में वे एक कोमल हृदयी व्यक्ति के रूप में भी दिखाई देते हैं तथा वह अपनी भूल स्वीकार कर लेते हैं।

(ii) जीवनलाल को प्रमोद से शिकायत थी कि उसने बहन की शादी में बारातियों का स्वागत ठीक प्रकार से नहीं किया। दान–दहेज भी कम दिया गया जिस कारण बिरादरी में उनका मज़ाक बनाया गया। जिसे वह कमला के घरवालों द्वारा दी गयी चोट मानते हैं। जब उनकी बेटी के ससुराल वाले भी उनसे यही शिकायत करते हैं तब उनको अपनी भूल का एहसास होता है और वह उपर्युक्त वाक्य कहते हैं।

(iii) जीवनलाल सोचते थे कि बहू के घरवालों ने कम दहेज़ देकर उनका अपमान किया है। बिरादरी में उनकी बेइज़्ज़ती हुई है परन्तु जब उनका बेटा रमेश उनकी बेटी के ससुराल से बहन को बिना विदा कराये लौट आता है क्योंकि उसके ससुराल वालों ने भी कम दहेज़ का ताना देकर बहू को विदा करने से इंकार कर दिया था, तब उन्हें धक्का लगता है। तब वे एक बेटी के पिता की वस्तुस्थिति समझ पाते हैं तब उन्हें अपने गर्वपूर्ण व्यवहार पर पछतावा होता है।

(iv) 'बहू की विदा' एकांकी के माध्यम से एकांकीकार ने 'दहेज प्रथा' का पूर्ण विरोध किया है। उनका उद्देश्य पाठकों को इस सामाजिक कुरीति के प्रति जागरूक करना है। जीवनलाल द्वारा कहना कि 'हमने तो जीवनभर की कमाई दे दी और उनकी नज़र में दहेज़ पूरा नहीं दिया गया।' एक पिता की वस्तुस्थिति को पूरी तरह सामने ला देता है। इसी तरह एक संवाद 'अगर हर बेटे वाला ये याद रखे कि वो भी बेटी वाला है तो सब उलझनें सुलझ जायें' द्वारा उन्होंने इस समस्या का एक उचित समाधान भी सामने रखा है। बेटी और बहू को समान समझने का सन्देश भी उन्होंने इस एकांकी के माध्यम से दिया है।

**Answer 16.**

(i) वट वृक्ष को देखकर दादाजी के मन में अपने भरे–पूरे परिवार की कल्पना जाग जाती है। उन्हें शाखाओं, पत्तों, फलों, फूलों से लदा वृक्ष अपने परिवार की भाँति लगता है जिसके सदस्य उसकी डालियों की तरह हैं।

(ii) जब दादाजी वट वृक्ष की तुलना अपने परिवार से करते हैं और अपनी कल्पना में उसकी कलियों को टूटता हुआ देखते हैं तो वे सिहर जाते हैं। वे इस चिंता में डूब जाते हैं कि कहीं उनका परिवार बिखर ना जाए। वे अपने जीते–जी अपने परिवार को बिखरते नहीं देख सकते।

(iii) दादाजी एक परिश्रमी, साहसी और दूरदर्शी व्यक्तित्व के मालिक हैं। वे परिवार के मुखिया होते हुए भी सबकी व्यक्तिगत स्वतंत्रता का सम्मान करते हैं। उनकी अभिलाषा है कि उनका कुटुंब सदैव एक यूनिट बनकर साथ रहे। उनका मानना है कि यदि एक बार वृक्ष से डाली टूट जाए तो फिर लाख सींचा जाए उसमें वो सरसता नहीं आती। वे परिवार को सदैव एकजुट रखने का हरसंभव प्रयास करते हैं। जब उनको पता चलता है कि बेला परिवार में खुश नहीं है तो वे बाकी सभी सदस्यों को समझाते हैं ताकि परिवार बना रहे।

(iv) दादाजी छोटी बहू बेला के विषय में अच्छी राय रखते हैं। वह बेला को बुद्धिमती मानते हैं। उनका मानना है कि बेला एक बड़े घर की पढ़ी–लिखी लड़की है। वह उम्र और पद में सबसे छोटी सही मगर योग्यता में बड़ी है। वह परिवार वालों को समझाते हैं कि उसकी बुद्धि और योग्यता से लाभ उठाओ। उसे वह सम्मान दो जिसके वह योग्य है। वह बेला को पढ़ने–लिखने के अधिक अवसर उपलब्ध कराने के पक्षधर हैं।

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# Sample Paper

## Hindi (Second Language)

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Write a short composition in Hindi of approximately 250 words on any one of the following topics :**

**निम्नलिखित विषयों में से किसी एक विषय पर हिन्दी में लगभग 250 शब्दों में संक्षिप्त लेख लिखिए :**

(i) "आजकल देश में आवासीय विद्यालयों की बाढ़–सी आ गयी है। आवासीय विद्यालयों की छात्रों के जीवन में क्या उपयोगिता हो सकती है ?"–इस प्रकार के विद्यालयों की अच्छाइयों और बुराइयों के बारे में बताते हुए वर्तमान में इनकी आवश्यकता पर अपने विचार लिखिए।

(ii) आपके जीवन का लक्ष्य क्या है? इस विषय पर लेख लिखिए।

(iii) नारी का सम्मान एक सभ्य परिवार, समाज और देश की पहचान है। भारतीय समाज में नारी का स्थान किस प्रकार बढ़ा है, लिखिए।

(iv) एक कहानी लिखिए जिसका आधार निम्नलिखित उक्ति हो :

**'मन के हारे हार है, मन के जीते जीत।'**

(v) नीचे दिए गए चित्र को ध्यान से देखिए और चित्र को आधार बनाकर उसका परिचय देते हुए कोई लेख, घटना अथवा कहानी लिखिए, जिसका सीधा व स्पष्ट सम्बन्ध चित्र से होना चाहिए।

**Question 2.**

**Write a letter in Hindi of approximately 120 words on any one of the topics given below:**

**निम्नलिखित में से किसी एक विषय पर हिन्दी में लगभग 120 शब्दों में पत्र लिखिए:**

(i) अपने पिताजी को पत्र लिखकर अपने मित्रों के साथ शैक्षिक यात्रा पर जाने हेतु आज्ञा माँगिए। आप शैक्षिक यात्रा की उपयोगिता से भी उन्हें अवगत कराएँ।

(ii) आपके मोहल्ले में बच्चों के खेलने के लिए किसी प्रकार की व्यवस्था नहीं है। महानगरपालिका के अध्यक्ष को पत्र लिखकर एक बाल उद्यान बनवाने की प्रार्थना कीजिए।

**Question 3.**

**Read the passage given below and answer in Hindi the questions that follow, using your own words as far as possible.**

**निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़िए और उसके नीचे लिखे गए प्रश्नों के उत्तर हिन्दी में लिखिए। उत्तर यथासम्भव आपके अपने शब्दों में होने चाहिए :**

ईश्वर सच्चिदानंद स्वरूप है तथा उसकी सर्वोत्कृष्ट रचना है–मानव। कण–कण में व्याप्त होने के साथ ही वह सर्वाधिक निकट हमारे अंदर स्थित है, फिर भी मानव हताश, निराश, दुःखी और अशांत है। कारण है ईश्वरीय ज्ञान का अभाव। प्रश्न है उसे कैसे जाना जाए? ईश्वर से मिलन का सीधा–सरल तरीका है–ध्यान। ध्यान है देखना, पर इन बाहरी आँखों से नहीं अंतर्दृष्टि से देखना। ध्यान के द्वारा मन को एकाग्र कर प्राण तथा आत्मा में स्थिर किया जाता है। जैसे सूर्य की बिखरी किरणों को खुर्दबीन द्वारा एक बिन्दु पर केन्द्रित करने से अग्नि उत्पन्न होती है, वैसे ही ध्यान द्वारा चित्त की वृत्तियों के घनीभूत होने पर चैतन्य शक्ति का दिव्य प्रकाश, अमृतरस तथा अनहद संगीत के रूप में प्रकटीकरण

होता है, जिसे आत्म–साक्षात्कार कहते हैं। ध्यान आत्मा का भोजन तथा मुक्ति का मार्ग है, जिससे परम तत्व परमात्मा के रहस्यों का उद्घाटन अंतरात्मा में होता है।

ध्यान से मस्तिष्क की क्रियाशीलता बढ़ती है, बुद्धि कुशाग्र होती है तथा समय–समय पर आने वाले प्रश्नों की समस्याओं का समाधान आन्तरिक शक्ति से होता है। साधना से निष्क्रिय वायाँ मस्तिष्क सक्रिय हो जाता है तथा मस्तिष्क की कार्यकुशलता और शक्ति दस गुना बढ़ जाती है। ध्यान परमानंद का झरना है। इस प्रक्रिया में आनंद की रिमझिम वर्षा होती है, क्योंकि साधक के ध्यानस्थ होने पर मस्तिष्क में तरंगें उत्पन्न होती हैं, जो शांत तथा आनन्द का कारण हैं, किन्तु इस हेतु मन का शांत होना आवश्यक है।

प्रसन्नता की प्राप्ति हेतु आनन्द केन्द्र पर ध्यान कर उसे जगाया जाता है, जिससे व्यक्ति कठिन से कठिन परिस्थिति में भी खिन्न व विचलित नहीं होता तथा सदैव प्रसन्न व तनावमुक्त जीवन व्यतीत करता है। ध्यान की प्रक्रिया सरल है किन्तु आवश्यकता है इसे जानने की। तत्वदृष्टा सद्गुरु से जानकर इसका नित्यप्रति अभ्यास करना चाहिए। यह साधना शारीरिक, मानसिक एवं बौद्धिक विकारों को दूरकर सुख, समृद्धि, दीर्घायुदायक तथा आनंददायक है। स्वयं के अलावा परिवार एवं विश्व में शांति व मंगल–भावना हेतु भी साधना आवश्यक है।

(i) ईश्वर की सर्वोत्कृष्ट रचना कौन–सी है और क्यों?

(ii) ध्यान मानव के लिए उपयोगी क्यों है?

(iii) ईश्वर से मिलने का सीधा तरीका ध्यान कैसे है?

(iv) मानव हताश क्यों है?

(v) परिवार एवं विश्व के लिए क्या आवश्यक है?

**Question 4.**

**Answer the following according to the instructions given :**

(i) 'अथ' का विलोम है–

(a) इति (b) उति (c) याति (d) पूर्ण

(ii) 'सुधा' का पर्यायवाची है–

(a) विष (b) अमृत (c) नीर (d) रवि

(iii) 'बूढ़ा' की भाववाचक संज्ञा बताइए–

(a) बूढ़ी (b) बुढ़िया (c) बुढ़ापा (d) बूढ़ा–बूढ़ी

(iv) दया का विशेषण बनाइए–

(a) दयाशील (b) दयालु (c) दयावान (d) दयादीन

(v) 'सिष्टाचार' का शुद्ध रूप लिखिए–

(a) शिष्टाचार (b) सिस्टाचार (c) षिष्टाचार (d) शिश्टाचार

(vi) 'ताव आना' मुहावरे का अर्थ बताइए।

(a) गरम होना (b) नाराज़ होना (c) क्रोध में आना (d) कुछ हाथ न लगना

(vii) निर्देशानुसार उचित वाक्य बनाइए।

महाराणा प्रताप के साहस की तुलना नहीं की जा सकती। (रेखांकित के लिए एक शब्द लिखिए)

(a) अतुलनीय (b) अतुलनाजनक (c) अकथनीय (d) निर्वचनीय

(viii) निर्देशानुसार उचित वाक्य बनाइए।

वह ईश्वर को नहीं मानता। (वाक्य में 'नास्तिक' शब्द का प्रयोग कीजिए।)

(a) वह ईश्वर को नास्तिक मानता है।

(b) वह नास्तिक है।

(c) वह ईश्वर को नास्तिक नहीं मानता।

(d) इनमें से कोई नहीं

## Section-B (Attempt four questions from this Section)

*(You must answer at least one question from each of the two books you have studied and any two other questions.)*

### साहित्य सागर–संक्षिप्त कहानियाँ

**Question 5.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

दो घण्टे बाद प्रफुल्ल मन से श्यामू और भोला अँधेरी कोठरी में बैठे–बैठे पतंग में रस्सी बाँध रहे थे।

**–'काकी'–**

**लेखक–सियारामशरण गुप्त**

(i) श्यामू और भोला प्रफुल्ल मन से पतंग में रस्सी क्यों बाँध रहे थे?
(ii) इन दोनों में समझदार कौन था और कैसे?
(iii) इनके शुभ कार्य में विघ्न किसने डाला और कैसे?
(iv) भोला की बात सुनकर कौन हतबुद्धि होकर खड़ा रह गया और क्यों?

**Question 6.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

महत्त्व मूर्ति के रंग–रूप या कद का नहीं, उस भावना का है वरना तो देशभक्ति भी आजकल मजाक की चीज होती जा रही है।

**–'नेताजी का चश्मा'–**
**लेखक–स्वयं प्रकाश**

(i) यह विचार किसका है? देशभक्ति की भावना की क्या दशा हो रही है? अपने विचार बताइए।
(ii) दूसरी बार हालदार साहब ने क्या देखा? उनका कौतुक क्यों बढ़ा?
(iii) उन्होंने पानवाले से क्या पूछा और उन्हें क्या जवाब मिला? क्या हालदार साहब की समझ में बात आई?
(iv) कैप्टन चश्मेवाला नेताजी की मूर्ति में चश्मे के उलट–फेर क्यों करता था?

**Question 7.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

विदेशों में उसके चित्रों की धूम मच गयी। भिखारिन और दो अनाथ बच्चों के उस चित्र की प्रशंसा में तो अखबारों के कॉलम के कॉलम भर गए। शोहरत के ऊँचे कगार पर बैठे, चित्रा जैसे अपना पिछला सब कुछ भूल गयी।

**–'दो कलाकार'–**
**लेखिका–मन्नू भंडारी**

(i) 'उसके चित्रों' से क्या तात्पर्य है? समझाइए।
(ii) चित्रा कौन थी? उसके चरित्र की मुख्य विशेषता को बताइए।
(iii) अरुणा कौन थी जब उसे भिखारिन वाली घटना का पता चला तो उस पर क्या प्रभाव पड़ा और उसने क्या किया?
(iv) चित्रकारिता और समाज सेवा में आप किसे उपयोगी मानते हैं और क्यों? कहानी के माध्यम से समझाइए।

## साहित्य सागर–पद्य

**Question 8.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"ऐसो को उदार जग माहीं।
बिनु सेवा जो द्रवै दीन पर राम सरिस कोउ नाहीं॥
जो गति जोग विराग जतन करि नहिं पावत मुनि ज्ञानी।
सो गति देत गीध सबरी कहूँ प्रभु न बहुत जिय जानी॥"

**–'विनय के पद'–**
**कवि–तुलसीदास**

(i) कवि ने राम को उदार क्यों कहा है?
(ii) गीध को कौन–सी गति मिली?
(iii) सबरी का ज़िक्र यहाँ क्यों आया है?
(iv) प्रस्तुत पंक्तियों का भावार्थ लिखिए।

**Question 9.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

राजा के दरबार में, जैये समया पाय।
साईं तहाँ न बैठिए, जहँ कोउ देय उठाय॥
जहँ कोउ देय–उठाय, बोल अनबोले रहिए।

हँसिये नहीं हहाय, बात पूछे ते कहिए।।
कह 'गिरिधर कविराय' समय सों कीजै काजा।
अति आतुर नहिं होय, बहुरि अनखैहैं राजा॥

**–'गिरिधर की कुण्डलियाँ'–**
**कवि–गिरिधर कविराय**

(i) राजा के दरबार में कब जाना चाहिए और किस बात का ध्यान रखना चाहिए?
(ii) कवि ने इन पंक्तियों में और क्या बात बताई है?
(iii) अति आतुर होने के लिए कवि ने क्यों मना किया है?
(iv) हमको अपनी बात कब कहनी चाहिए?

**Question 10.**

**Read the extract given below and answer in Hindi the questions that follow :**
**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"मैया मेरी, चंद्र खिलौना लैहौं।
धौरी को पय पान न करिहौं, बेनी सिर न गुथैहौं।
मोतिन माल न धरिहौं उर पर झुंगली कंठ न लैहौं।
जैहौं लोट अबहिं धरनी पर, तेरी गोद न ऐहौं।।
लाल कहैहौं नंद बाबा को, तेरो सुत न कहैहौं।।"

**–'सूर के पद'–**
**कवि–सूरदास**

(i) प्रस्तुत पद्य में कौन अपनी माता से जिद कर रहे हैं? वे क्या प्राप्त करना चाहते हैं?
(ii) उनकी माता कौन हैं? वे अपने पुत्र को देखकर कैसा अनुभव कर रहीं हैं? स्पष्ट कीजिए।
(iii) खिलौना न मिलने की स्थिति में बाल कृष्ण अपनी माँ को क्या–क्या धमकियाँ दे रहे हैं? स्पष्ट कीजिए।
(iv) रूठे हुए बालक को बहलाने के लिए माँ क्या कहती है? बालक पर उसका क्या प्रभाव पड़ता है? सूरदास जी की भक्ति भावना का परिचय देते हुए समझाइए।

## नया रास्ता (सुषमा अग्रवाल)

**Question 11.**

**Read the extract given below and answer in Hindi the questions that follow :**
**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

दूसरे दिन प्रातः होते ही दयाराम जी के घर में मेहमानों के स्वागत के लिए विभिन्न प्रकार की तैयारियाँ प्रारम्भ हो गई थीं। घर की सारी चीजें झाड़–पोंछकर यथा–स्थान लगा दीं गईं थीं। एक मध्यम श्रेणी के व्यक्ति की हैसियत के अनुसार बैठक को विशेष रूप से सुसज्जित किया गया।

(i) प्रस्तुत पंक्तियों में कौन किसके घर आ रहा है? आने वाले मेहमान को विशेष महत्त्व क्यों दिया जा रहा है?
(ii) "विभिन्न प्रकार की तैयारियाँ ..... " विशिष्ट सन्दर्भ में स्पष्ट कीजिए।
(iii) आने वाले मेहमान से परिवार के लोगों को क्या उम्मीद है?
(iv) दयाराम जी कहाँ के रहने वाले हैं और उनके परिवार में कौन–कौन सदस्य हैं?

**Question 12.**

**Read the extract given below and answer in Hindi the questions that follow :**
**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

धनीमल जी व मायाराम जी ने आपस में कुछ बातें कीं और सब वहाँ से उठकर चल दिये। अमित व सरिता को एकान्त में बातें करने का अवसर दिया गया। अमित ने सरिता से कुछ प्रश्न किये। अमित ने पूछा, "आपकी किस चीज में रुचि है?"

(i) धनीमल और मायाराम कौन हैं? उनके बीच क्या बातचीत हो रही है?
(ii) अमित व सरिता में क्या–क्या बातें हो रही हैं?
(iii) उनकी बातचीत का निष्कर्ष क्या होगा?
(iv) धनीमल जी को क्या आशा थी?

**Question 13.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

वह समझ नहीं पा रही थी कि हमारे समाज में स्त्री व पुरुष में इतना भेद क्यों? यदि कोई लड़का अकेला रहता है तो समाज उस पर उँगलियाँ नहीं उठाता, चाहे वह कितना ही अपराध क्यों न करता हो। परन्तु एक लड़की चाहे वह कितना ही संयमशील जीवन क्यों न व्यतीत करती हो, फिर भी समाज उस पर दोषारोपण करता है।

(i) किसकी बातें सुनकर वक्ता इतनी परेशान है? समाज में स्त्री और पुरुष में इतना भेद क्यों है?

(ii) लड़की के जीवन में इतनी कठिनाइयाँ क्यों आती हैं?

(iii) इन पंक्तियों के भाव स्पष्ट कीजिए।

(iv) इस समय वक्ता मीरापुर क्यों गई थी?

## एकांकी संचय

**Question 14.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

'प्राण जायें पर वचन न जाये'—यह हमारे जीवन का मूलमन्त्र है। जो तीर तरकश से निकलकर कमान पर चढ़कर छूट गया, उसे बीच में नहीं लौटाया जा सकता। मेरी प्रतिज्ञा कठिनाई से पूरी होगी, यह मैं जानता हूँ और इस बात की हाल के युद्ध में पुष्टि भी हो चुकी है कि हाड़ा जाति वीरता में हम लोगों से किसी प्रकार हीन नहीं है।"

**—'मातृभूमि का मान'—**
**लेखक—हरिकृष्ण 'प्रेमी'**

(i) उपर्युक्त कथन के वक्ता और श्रोता का संक्षिप्त परिचय दीजिए।

(ii) वक्ता ने क्या प्रतिज्ञा ली थी? कारण सहित लिखिए।

(iii) हाड़ा वंश के राजा कौन थे? हाड़ा लोगों की क्या विशेषताएँ थीं? उन पर प्रकाश डालिए।

(iv) 'प्राण जायें पर वचन न जाये'—इस कहावत का क्या अर्थ है? एकांकी के सन्दर्भ में समझाइए।

**Question 15.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"मैं कहा करता हूँ न बेटा कि एक बार वृक्ष से जो डाली टूट गई, उसे लाख पानी दो, उसमें वह सरसता न आएगी और हमारा यह परिवार बरगद के इस महान पेड़ की भाँति है ..... ।"

**—'सूखी डाली'—**
**लेखक—उपेन्द्रनाथ 'अश्क'**

(i) किस घटना को देखकर दादाजी के मन में उक्त विचार आये ?

(ii) दादाजी अपने परिवार की तुलना बरगद के पेड़ से क्यों कर रहे हैं ? वे बरगद के पेड़ को महान क्यों कह रहे हैं ?

(iii) 'एक बार पेड़ से जो डाली टूट गई, उसे लाख पानी दो उसमें वह सरसता न आएगी' से दादाजी का क्या तात्पर्य है ? वे किस सोच में हैं?

(iv) इस एकांकी के माध्यम से एकांकीकार क्या सन्देश देना चाहता है ?

**Question 16.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"दहेज देना तो दूर, बारात की खातिर भी ठीक से नहीं की गई। मेरे नाम पर जो धब्बा लगा, मेरी शान को जो ठेस पहुँची, भरी बिरादरी में जो हँसी हुई, उस करारी चोट का घाव आज भी हरा है। जाओ, कह देना अपनी माँ से कि अगर बेटी को विदा कराना चाहती हैं तो पहले उस घाव के लिए मरहम भेजें।

**—'बहू की विदा'—**
**लेखक—विनोद रस्तोगी**

(i) प्रस्तुत कथन किसने, किससे कहा? सन्दर्भ सहित उत्तर लिखिए।

(ii) 'मरहम' का क्या अर्थ है? यहाँ मरहम से क्या तात्पर्य है? स्पष्ट कीजिए।

(iii) वक्ता के चरित्र की विशेषताएँ लिखिए।

(iv) प्रस्तुत एकांकी में किस समस्या को उठाया गया है? इस समस्या को दूर करने के लिए क्या-क्या कदम उठाये जा रहे हैं? अपने विचार दीजिए।

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# 2 Sample Paper

## Hindi (Second Language) [Unsolved]

### Questions

**Section-A** (Attempt all questions from this Section)

**Question 1.**

**Write a short composition in Hindi of approximately 250 words on any one of the following topics :**

**निम्नलिखित विषयों में से किसी एक विषय पर हिन्दी में लगभग 250 शब्दों में संक्षिप्त लेख लिखिए :**

(i) वैश्विक महामारी कोरोना के चलते लॉकडाउन में मनुष्य की जीवन शैली में आए बदलाव पर अपने विचार प्रस्तुत कीजिए। साथ ही यह भी बताएँ कि इस लॉकडाउन से आपकी दिनचर्या में क्या परिवर्तन आया और आपने क्या नया सीखा?

(ii) विद्यार्थियों का राजनीति में भाग लेने का प्रश्न हमेशा से ही विवाद का विषय रहा है। इस विषय पर लेख लिखिए।

(iii) यदि आप शिक्षामंत्री होते तो आप क्या–क्या करते? इस विषय को ध्यान में रखते हुए लेख लिखिए।

(iv) एक मौलिक कहानी लिखिए जिसका आधार निम्नलिखित उक्ति हो–

''आब–आब कर मर गए, रहा सिरहाने पानी''

(v) नीचे दिए गए चित्र को ध्यान से देखिए और चित्र को आधार बनाकर उसका परिचय देते हुए कोई लेख, कहानी अथवा घटना लिखिए जिसका सीधा व स्पष्ट सम्बन्ध चित्र से होना चाहिए।

**Question 2.**

**Write a letter in Hindi of approximately 120 words on any one of the topics given below:**

**निम्नलिखित में से किसी एक विषय पर हिन्दी में लगभग 120 शब्दों में पत्र लिखिए:**

(i) आपका छोटा भाई अशोक नगर, जयपुर-7, राजस्थान में रहता है। उसने आपको सूचना दी है कि वहाँ किसी महान व्यक्ति के आगमन के अवसर पर एक प्रदर्शनी (Exhibition) लगाने की व्यवस्था करने की जिम्मेदारी उसे सौंपी गई है। आप उसे एक पत्र लिखिए जिसमें आपने प्रदर्शनी की व्यवस्था करने के बारे में उपयोगी सुझाव दिये हों।

(ii) आप अपने विद्यालय के 'साक्षरता अभियान' (Literacy Programme) दल के नेता हैं। आप अपने मोहल्ले में एक माह तक गरीब बच्चों को शिक्षित करने के उद्देश्य से यह योजना चलाना चाहते हैं। अपने विद्यालय के प्रधानाचार्य को इसकी स्वीकृति के लिए एक पत्र लिखिए। इस पत्र में अपने कार्यक्रम की रूपरेखा दीजिए और बताइए कि आप इस योजना से क्या प्राप्त करने की आशा रखते हैं।

**Question 3.**

**Read the passage given below and answer in Hindi the questions that follow using your own words as far as possible.**

**निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़िए और उसके नीचे लिखे गए प्रश्नों के उत्तर हिन्दी में लिखिए। उत्तर यथासम्भव आपके अपने शब्दों में होने चाहिए :**

भाषा का एक प्रमुख गुण है—सृजनशीलता। हिन्दी में सृजनशीलता का अद्भुत गुण है, अद्भुत क्षमता है, जिससे वह निरन्तर प्रवाहमान है। हिन्दी ही ऐसी भाषा है, जिसमें समायोजन की पर्याप्त और जादुई शक्ति है। अन्य भाषाओं और संस्कृतियों के शब्दों को हिन्दी जिस अधिकार और सहजता से जज्ब करती है, उससे हिन्दी की संभावनाएँ प्रशस्त होतीं हैं। हिन्दी के लचीलेपन ने अनेक भाषाओं के शब्दों को ही नहीं उनके सांस्कृतिक तेवरों को भी अपने में समेट लिया है। यही कारण है कि हिन्दी सामासिक संस्कृति की तथा विविध भाषा–भाषियों और धर्मावलंबियों की प्रमुख पहचान बन गई है। अरबी, फारसी, तुर्की, अंग्रेजी आदि के शब्द हिन्दी की शब्द–संपदा में ऐसे मिल गए हैं, जैसे वे जन्म से ही इस भाषा परिवार के सदस्य हों, यह समाहार उसकी जीवंतता का प्रमाण है।

आज हम परहेजी होकर, शुद्धतावाद की जड़ मानसिकता में कैद होकर नहीं रह सकते। सूचना–क्रान्ति, तकनीकी–विकास और वैज्ञानिक आविष्कारों के दबाव ने हमें सबसे संवाद के अवसर दिए हैं। विश्व–ग्राम की संकल्पना से हिन्दी को कदम–ब–कदम चलना होगा। इसके लिए आवश्यक है—आधुनिक प्रयोजनों के अनुरूप विकास तथा भाषा और लिपि से संबंधित यांत्रिक साधनों का विकास। इंटरनेट से लेकर बाजार तक, राजकाज से लेकर शिक्षा और न्याय के मंदिरों तक हिन्दी को उपयोगी और कार्यसक्षम बनाने के लिए उसका सरल–सहज होना आवश्यक है और उसकी ध्वनि, लिपि, शब्द–वर्तनी, वाक्य–रचना का मानकीकृत होना भी जरूरी है। सरकार की तत्परता के साथ हम जनता की दृढ़ इच्छाशक्ति, सजगता और सचेष्टता को जोड़ दें, तो वह दिन दूर नहीं, जब हिन्दी अंतर्राष्ट्रीय सरहदों में भारत की रहनुमाई करेगी।

(i) लेखक ने हिन्दी के किस गुण को उसकी जीवंतता का प्रमाण माना है और क्यों?

(ii) हिन्दी भारत की सामासिक संस्कृति की पहचान कैसे बन गई? लेखक के कथन को स्पष्ट कीजिए।

(iii) सबके साथ कदम मिलाकर चलने के लिए क्या आवश्यक है?

(iv) हिन्दी भाषा के संदर्भ में शुद्धतावादी होने का क्या तात्पर्य है?

(v) हिन्दी को सबसे संवाद स्थापित करने का अवसर कैसे मिला है?

**Question 4.**

**Answer the following according to the instructions given :**

(i) 'वियोग' का विलोम शब्द लिखिए—

(a) सुयोग (b) संयोग (c) दुर्योग (d) योग

(ii) 'स्वर्ग' का पर्यायवाची बताइए—

(a) सुरलोक (b) असुरलोक (c) पाताल (d) भूलोक

(iii) 'बंधु' की भाववाचक संज्ञा बताइए—

(a) बंधित (b) बंधुत्व (c) बँधा (d) बँधी

(iv) 'लोभ' का विशेषण बनाइए—

(a) लालच (b) लालची (c) लोभी (d) लाभ

(v) 'ग्यान' का शुद्ध रूप लिखिए—

(a) गियान (b) ज्ञान (c) गिआन (d) ज्यान

(vi) 'छक्के छुड़ाना' मुहावरे का अर्थ है—

(a) क्रिकेट के खेल का एक नियम (c) घायल करना

(b) हराना (d) परेशान करना

(vii) निर्देशानुसार उचित वाक्य बनाइए—

मोहन और रमेश सच्चे मित्र थे। ('मित्र' शब्द के विशेषण का प्रयोग कीजिए)

(a) मोहन और रमेश सच्ची मित्रता में थे। (c) मोहन और रमेश में सच्ची मित्रता थी।

(b) मोहन और रमेश सच में मित्र थे। (d) इनमें से कोई नहीं।

(viii) निर्देशानुसार उचित वाक्य बनाइए—

उन्होंने एक मधुर आवाज सुनी। ('उनको' से वाक्य शुरू करें।)

(a) उनको एक मधुर आवाज सुनी। (c) उनको एक आवाज सुनाई दी जो मधुर थी।

(b) उनको एक मधुर आवाज सुनाई दी। (d) इनमें से कोई नहीं।

## Section-B (Attempt four questions from this Section)

*(You must answer at least one question from each of the two books you have studied and any two other questions.)*

### साहित्य सागर–संक्षिप्त कहानियाँ

**Question 5.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

उस दिन बड़े सवेरे श्यामू की नींद खुली तो देखा कि घर भर में कुहराम मचा हुआ है।

**–'काकी'–**

**लेखक–सियारामशरण गुप्त**

(i) घर में कुहराम क्यों मचा हुआ था? श्यामू को क्या लगा?

(ii) काकी को ले जाते समय श्यामू ने क्या उपद्रव मचाया?

(iii) काकी के बारे में उसे क्या बताया गया? क्या सत्य उससे छिपा रहा?

(iv) वह बैठा–बैठा शून्य मन से आकाश की ओर क्यों ताका करता था?

**Question 6.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"उनका हृदय परिवर्तन हो गया है। वे आज सात दिनों से घास खा रहे हैं। रात–दिन भगवान के भजन और परोपकार में लगे रहते हैं। उन्होंने अपना जीवन जीवमात्र की सेवा में ही अर्पित कर दिया है।"

**–'भेड़ें और भेड़िये'–**

**लेखक–हरिशंकर परसाई**

(i) यह कौन कह रहा है और किससे ? इस बात का सन्दर्भ क्या है ?

(ii) एक बार भेड़ों ने क्या सोचा ?

(iii) वक्ता ने भेड़िये के बारे में और क्या–क्या बातें बताईं ?

(iv) पंचायत के चुनाव में किसको चुना गया? चुने जाने के बाद उसने क्या कानून बनाया ?

**Question 7.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

बेनीमाधव सिंह ने पुचकारा–"बेटा, बुद्धिमान लोग मूर्खों की बात पर ध्यान नहीं देते। वह बेसमझ लड़का है। उससे जो कुछ भूल हुई, तुम बड़े होकर क्षमा करो।"

**–'बड़े घर की बेटी'–**

**लेखक–मुंशी प्रेमचन्द**

(i) बेनीमाधव सिंह कौन हैं? वे किससे बातें कर रहे हैं?

(ii) उन्होंने 'बुद्धिमान' और 'मूर्ख' शब्दों का प्रयोग किस–किस के लिए किया है और क्यों?

(iii) बेनीमाधव सिंह ने उससे किसकी तथा कौन–सी गलती क्षमा कर देने का आग्रह किया?

(iv) बेनीमाधव सिंह की बात सुनकर श्रोता ने उन्हें अपना कौन–सा अन्तिम निर्णय सुनाया?

### साहित्य सागर–पद्य

**Question 8.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

जन्मे जहाँ थे रघुपति, जन्मी जहाँ थी सीता।
श्रीकृष्ण ने सुनाई, वंशी पुनीत गीता।।
गौतम ने जन्म लेकर जिसका सुयश बढ़ाया।

जग को क्या दिखाई, जग को दिया दिखाया॥
वह युद्धभूमि मेरी, वह बुद्धभूमि मेरी।
वह जन्मभूमि मेरी, वह मातृभूमि मेरी॥

—'वह जन्मभूमि मेरी'—
कवि—सोहनलाल द्विवेदी

(i) प्रस्तुत कविता किस प्रकार की है? इस कविता में किसका गुणगान किया गया है?
(ii) कवि ने भारत को युद्धभूमि और बुद्धभूमि क्यों कहा है? समझाकर लिखिए।
(iii) प्रस्तुत कविता में जन्मभूमि की किन–किन प्राकृतिक विशेषताओं का उल्लेख किया गया है? स्पष्ट कीजिए।
(iv) प्रस्तुत पद्यांश में कवि ने भारत को किन–किन महापुरुषों की भूमि कहा है? कविता का केन्द्रीय भाव लिखते हुए स्पष्ट कीजिए।

**Question 9.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

जीवन अपूर्ण लिए हुए,
पाता कभी, खोता कभी
आशा–निराशा से घिरा
हँसता कभी रोता कभी।
गति–मति न हो अवरुद्ध, इसका ध्यान आठों याम है।

—'चलना हमारा काम है'—
कवि—शिवमंगल सिंह 'सुमन'

(i) कवि ने मनुष्य के जीवन को अपूर्ण क्यों कहा है?
(ii) जीवन में आशा–निराशा भरी हुई है। हमें आशा को महत्त्व देना चाहिए या निराशा को? समझाइए।
(iii) सुख–दुःख को हमें किस प्रकार लेना चाहिए?
(iv) आठों याम हमें किस बात का ध्यान रखना चाहिए?

**Question 10.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

मेघ आये बड़े बन–ठन के, सँवर के,
आगे–आगे नाचती–गाती बयार चली,
दरवाजे खिड़कियाँ खुलने लगीं गली–गली,
पाहुन ज्यों आये हो, गाँव में शहर के,
मेघ आये बड़े बन–ठन के सँवर के।

—'मेघ आये'—
कवि—सर्वेश्वर दयाल सक्सेना

(i) मेघ किस तरह से आये हैं? हवा कैसी चल रही है?
(ii) दरवाजे और खिड़कियाँ क्यों खुलने लगीं?
(iii) पाहुन किसे कहा गया है? पाहुन का कैसा स्वागत होता है?
(iv) बादलों का स्वागत कौन–कौन करता है और क्यों?

## नया रास्ता (सुषमा अग्रवाल)

**Question 11.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

अमित व मायाराम जी जब अपने घर पहुँचे, तो उन्होंने देखा कि कोई सज्जन उनका इन्तजार कर रहे हैं। बात करने पर पता चला कि वे उसी शहर के एक धनी व्यक्ति थे, जिनका नाम धनीमल था।

(i) अमित और मायाराम जी कहाँ से आये हैं? वे वहाँ क्यों गये थे?

(ii) अमित कौन है? वे जिस काम से गये थे उसका निष्कर्ष क्या निकला? आशा को देखकर सब लोग क्यों आकर्षित हुए?

(iii) धनीमल जी कौन हैं और यहाँ क्यों आये हैं?

(iv) धनीमल जी की और मायाराम जी की क्या बातें हुई?

**Question 12.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

ये सब बातें मीनू अन्दर कमरे में बैठी सुन रही थी। अपने अन्दर साहस एकत्र कर वह पलंग से उठ खड़ी हुई। वह दिल–ही–दिल में निर्णय कर चुकी थी कि वह अब शादी नहीं करेगी। उसके हृदय में अन्तर्द्वन्द्व चल रहा था कि वह जो निर्णय ले रही है, वह उचित है कि नहीं। अन्त में इसी निर्णय को उचित मानकर वह कमरे से बाहर निकली।

(i) कौन–सी बातें मीनू कमरे में बैठी सुन रही थी?

(ii) मेरठ वालों का क्या उत्तर आया था?

(iii) मीनू के हृदय में हीन भावना क्यों घर कर गई?

(iv) मीनू ने क्या निर्णय लिया और क्यों?

**Question 13.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

तभी बारात में आये एक नवयुवक ने उसकी आवाज की प्रशंसा करते हुए कहा, "आपकी आवाज बहुत मधुर है, कितना सुन्दर गीत सुनाया है आपने।" मीनू ने जैसे ही सिर उठाकर ऊपर की ओर देखा, तो वह आश्चर्यचकित हो उठी। अरे! ये तो वही लड़का अमित है जो मेरठ से उसे देखने आया था। उसके मुँह से अपनी प्रशंसा सुनने के बाद उसके हृदय में कोई प्रसन्नता की अनुभूति नहीं हुई।

(i) नवयुवक कौन है? मीनू उस नवयुवक को देखकर क्यों चौंक गई?

(ii) मीनू अपनी प्रशंसा सुनकर खुश क्यों नहीं हुई?

(iii) उसकी भावनाओं को ठेस पहुँचाई–स्पष्ट कीजिए।

(iv) मीनू ने उस लड़के से कैसा व्यवहार किया? इससे उस नवयुवक को कैसा लगा?

## एकांकी संचय

**Question 14.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

मुझे न जाने क्या हो रहा था। मेरा अन्तर्मन काँपने लगा था, मैं उन्हें देखती थी तो जैसे मोहिनी सी छा जाती थी। मैं थी भी और नहीं भी। मोहग्रस्त आदमी होता भी है और नहीं भी होता, पर हुआ यही, मैं वहाँ न ठहर सकी। वह पुकारती ही रह गई।

**–'संस्कार और भावना'–**

**लेखक–विष्णु प्रभाकर**

(i) किसको क्या हो रहा था? वक्ता का अन्तर्मन क्यों काँपने लग गया था?

(ii) वक्ता पर मोहिनी सी क्यों छा रही थी?

(iii) 'मैं थी भी और नहीं भी।" उक्त वाक्य का आशय स्पष्ट कीजिए।

(iv) वक्ता की ऐसी मानसिक हालत क्यों हो गई थी? कारण सहित उत्तर दीजिए।

**Question 15.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

बेटी और बहू को एक ही तराजू पर तौलना चाहते हो? बेटी बेटी है और बहू बहू!

**–'बहू की विदा'–**

**लेखक–विनोद रस्तोगी**

(i) वक्ता कौन है और वह किससे किस विषय में बात कर रहा है?

(ii) बेटी और बहू के लिए जीवनलाल के क्या विचार थे?

(iii) जीवनलाल बेटी और बहू में अन्तर क्यों करता है?

(iv) आपके विचार से बेटी और बहू के लिए जीवनलाल के जो विचार थे, क्या वे उचित थे यदि नहीं तो क्यों? समझाकर लिखिए।

**Question 16.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"आज कुसमय नाच–रंग की बात सुनकर मेरे मन में शंका हुई थी। इसलिए मैंने कुँवर को वहाँ जाने से रोक दिया था। संभव था कि कुँवर वहाँ जाते और बनवीर अपने सहायकों से कोई काण्ड रच देता।"

—'दीपदान'—

लेखक—डॉ. रामकुमार वर्मा

(i) उपर्युक्त कथन का वक्ता कौन है? उसका संक्षिप्त परिचय दीजिए।

(ii) नाच–रंग का आयोजन किसने और किस उद्देश्य से किया था?

(iii) बनवीर कौन है? उसका परिचय देते हुए उसका चरित्र–चित्रण कीजिए।

(iv) 'दीपदान' एकांकी के शीर्षक की सार्थकता बताइए तथा एकांकी के माध्यम से एकांकीकार ने क्या शिक्षा दी है?

# 3 Sample Paper

## Hindi (Second Language) [Unsolved]

### Questions

**Section-A** (Attempt all questions from this Section)

**Question 1.**

**Write a short composition in Hindi of approximately 250 words on any one of the following topics :**

**निम्नलिखित विषयों में से किसी एक विषय पर हिन्दी में लगभग 250 शब्दों में संक्षिप्त लेख लिखिए :**

(i) 'पुस्तक एक उत्तम साथी होती है' इस कथन पर अपने विचार प्रकट कीजिए।

(ii) 'सदाचार के समक्ष धन–सम्पत्ति एवं ऐश्वर्य सब तुच्छ हैं।' इस कथन पर अपने विचार व्यक्त कीजिए।

(iii) दुनिया में अच्छे–बुरे दोनों तरह के लोग होते हैं। एक अच्छा पड़ोसी जहाँ आपका उत्तम मित्र साबित होता है, वहीं स्वभाव से बुरा पड़ोसी आपका सुख–चैन छीन लेता है। अपने पड़ोसी के स्वभाव की चर्चा कीजिए और बताइए कि उसकी कौन–सी बात आप जीवन भर नहीं भूल पायेंगे।

(iv) 'बिन माँगे मोती मिलें, माँगे मिले न भीख'—इस उक्ति पर आधारित एक मौलिक कहानी लिखिए।

(v) नीचे दिए गए चित्र को ध्यान से देखिए। इस चित्र को आधार बनाकर यथोचित वर्णन कीजिए। आपने जो लिखा है उसका विषय या तो चित्र हो या आपने इस चित्र को रूपरेखा की तरह प्रयोग किया हो; परन्तु जो कुछ भी आपने लिखा हो उसका स्पष्ट तथा सीधा सम्बन्ध चित्र से ही होना चाहिए।

**Question 2.**

**Write a letter in Hindi of approximately 120 words on any one of the topics given below:**

**निम्नलिखित में से किसी एक विषय पर हिन्दी में लगभग 120 शब्दों में पत्र लिखिए:**

(i) अपने मित्र को पत्र लिखकर अपने साथ हुई दुर्घटना के बारे में बताइए।

(ii) आपके घर के निकट बरसात के कारण सड़क टूटी–फूटी अवस्था में है और उसके आगे एक पुलिया टूट गई है। अत: अपने शहर के विकास प्राधिकरण अधिकारी को सड़क और पुलिया की मरम्मत के लिए प्रार्थना–पत्र भेजिए।

**Question 3.**

**Read the passage given below and answer in Hindi the questions that follow using your own words as far as possible.**

**निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़िए और उसके नीचे लिखे गए प्रश्नों के उत्तर हिन्दी में लिखिए। उत्तर यथासम्भव आपके अपने शब्दों में होने चाहिए :**

एक बार रोम का राजा एक भीषण रोग से पीड़ित हो गया। उस समय देश–विदेश के प्रख्यात एवं निष्णात चिकित्सक राजा के उपचार के लिए बुलाये गए, किन्तु अच्छी–से–अच्छी औषधियों के प्रयोग से भी वे राजा के रोग का निदान न कर सके। राजा का रोग पहले की अपेक्षा और अधिक बढ़ता चला गया। असाध्य रोग के कारण राजा के हृदय में विकलता और राज्य में उदासी छा गई।

एक दिन एक वृद्ध पुरुष राजा के दरबार में आये और उसने रोगग्रस्त राजा से कहा–''राजन् ! एक विशेष औषधि के सेवन से आपका रोग ठीक हो सकता है। यह विशेष औषधि किसी अन्य व्यक्ति के पित्ताशय (पित्त की थैली) से तैयार की जाती है। यह औषधि आपके रोग को मूल से उखाड़ने की क्षमता ही नहीं रखती, अपितु आपको चिरंजीवी भी बना सकती है।''

वृद्ध के वचनों को सुनकर राजा के निराश मन में आशा का संचार हो गया। उसने वृद्ध के प्रति मन ही मन कृतज्ञता अभिव्यक्त करते हुए राज्य के चिकित्सकों को एक ऐसे व्यक्ति को तलाश करने का आदेश दिया जिसके पित्त की थैली से वह औषधि बनाई जा सके। अन्ततः चिकित्सकों को एक ऐसा परिवार मिल गया जिसे हाथ की तंगी के कारण भरपेट भोजन भी उपलब्ध नहीं होता था। इस परिवार में केवल तीन सदस्य थे–एक लड़का और उसके माता–पिता। चिकित्सकों ने लड़के के माता–पिता को प्रभूत धन का प्रलोभन देकर उसके एकमात्र पुत्र को खरीदने का प्रस्ताव रखा। धन की लालसा ने माता–पिता की आँखों पर पर्दा डाल दिया। उनकी दृष्टि में धन–मोह के सम्मुख पुत्र–मोह फीका पड़ गया और उन्होंने अपने घर के दीपक को चिकित्सकों के हाथों बेच दिया।

चिकित्सक लड़के को राजा के सामने लेकर आये। राजा ने लड़के की पित्त की थैली को लेने के विषय में राज्य–पुरोहित से विचार–विमर्श किया। पुरोहित ने कहा–''राजन् ! यद्यपि देश सर्वोपरि होता है, किन्तु उसका शासक उससे भी बड़ा होता है, क्योंकि वह देश की रक्षा करता है तथा उसकी समृद्धि के लिए प्रयास करता है। ऐसे शासक के लिए किसी भी व्यक्ति के जीवन की बलि देना कोई अपराध नहीं है।''

पुरोहित के वचनों को सुनकर लड़के को राजा के सम्मुख खड़ा कर दिया गया। जल्लाद भी तलवार लेकर वहाँ आ पहुँचा। चिकित्सक औषधि तैयार करने वाले उपकरणों को लेकर वहाँ खड़े हो गए। अब राजा के आदेश की प्रतीक्षा थी। उसी क्षण लड़का आकाश की ओर देखकर जोर–जोर से हँसने लगा। उसे हँसते देखकर, सम्राट् ने लड़के से हँसने का कारण पूछा। लड़के ने कहा, ''जिस देश में माँ–बाप धन के लिए सन्तान को बेचें, पुरोहित निरपराध मनुष्य की हत्या को उचित ठहराये, देश और प्रजा की रक्षा करने वाला शासक निर्दोष प्राणी की जान लेकर अपनी जान बचाये, वहाँ तो ऊपर वाले के न्याय पर ही भरोसा करना पड़ेगा।''

लड़के की बातों को सुनकर सम्राट् की आँखें खुल गईं। उसे अपनी भूल पर पश्चात्ताप होने लगा। उसका मन ग्लानि से भर गया। उसके अन्तस्तल में मानवता के अंकुर फूट पड़े। उसने जल्लाद को वापस कर दिया।

(i) राजा के दरबार में कौन आया ? उसने किस औषधि का सुझाव दिया ? उसको बनाने का क्या तरीका बताया ? उस औषधि के गुणों का उल्लेख कीजिए।

(ii) उस व्यक्ति की बात सुनकर राजा को कैसा अनुभव हुआ ? उसके प्रति राजा ने क्या किया? उसके बाद राजा ने किसको क्या आदेश दिया?

(iii) राजा के व्यक्तियों को तलाश करने पर कैसा परिवार मिला ? उस परिवार के कौन–कौन सदस्य थे? राजा के व्यक्तियों ने उस परिवार को क्या प्रलोभन दिया ? प्रलोभन का उस परिवार पर क्या प्रभाव हुआ और फिर उस परिवार ने क्या किया?

(iv) राजा और पुरोहित में किस विषय पर विचार–विमर्श हुआ ? पुरोहित ने राजा को क्या सलाह दी? उसके बाद दरबार में कौन–कौन सी घटनाएँ घटीं?

(v) राजा ने लड़के से क्या पूछा ? लड़के ने क्या उत्तर दिया ? उसके उत्तर का राजा पर क्या प्रभाव हुआ? उसके बाद राजा ने क्या किया?

**Question 4.**

**Answer the following according to the instructions given :**

(i) 'ऋजु' शब्द का विलोम है–
(a) तक्र (b) सीधा (c) वक्र (d) विरल

(ii) 'अमृत' का पर्यायवाची बताइए।
(a) घमंड (b) गगन (c) दानव (d) सुधा

(iii) 'मीठा' की भाववाचक संज्ञा बताइए।
(a) मिठास (b) मिठाई (c) मिथिता (d) मिथिलेश

(iv) 'आदर' का विशेषण बताइए–
(a) आदरणीय (b) आदरता (c) आदरी (d) सादर

(v) 'दुगम' का शुद्ध रूप बताइए।
(a) दुग्रम (b) दुरगम (c) दुर्गम (d) दुंगम

(vi) 'छाती पर मूँग दलना' का अर्थ है–

(a) कठिन काम करना
(b) बात–बात पर लड़ना
(c) कर्जा वसूल करना
(d) पास रहकर दुःख देना

(vii) निर्देशानुसार उचित वाक्य बनाइए–

मैं तो आपको आपके पिता के आदेश का स्मरण करा रहा हूँ। (मेरे द्वारा.....से प्रारम्भ करें।)

(a) मेरे द्वारा आपको पिता के आदेश का स्मरण कराया जा रहा है।
(b) मेरे द्वारा तो आपको आपके पिता के आदेश का स्मरण कराया जा रहा है।
(c) मेरे द्वारा पिताजी के आदेश का स्मरण कराया जा रहा है।
(d) मेरे द्वारा आपके पिताजी के आदेश का स्मरण होता है।

(viii) निर्देशानुसार उचित वाक्य बनाइए–

मैं कलम से पत्र लिखूँगा। (वाक्य में कर्ता के बाद 'द्वारा' शब्द का प्रयोग कीजिए)

(a) मेरे द्वारा पत्र लिखा जाएगा
(b) पत्र कलम द्वारा लिखा जाएगा
(c) मेरे द्वारा कलम से पत्र लिखा जाएगा
(d) मेरे द्वारा कलम द्वारा पत्र लिखा जाएगा

## Section-B (Attempt four questions from this Section)

*(You must answer at least one question from each of the two books you have studied and any two other questions.)*

### साहित्य सागर–संक्षिप्त कहानियाँ

**Question 5.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"दूसरे दिन मुकदमा शेख सलीमुद्दीन की कचहरी में पेश हुआ। रसीला ने तुरन्त अपना अपराध स्वीकार कर लिया। उसने कोई बहाना न बनाया। चाहता तो कह सकता था कि यह साजिश है।"

**–'बात अठन्नी की'–**
**लेखक–सुदर्शन**

(i) कौन–सा मुकदमा शेख सलीमुद्दीन की कचहरी में पेश हुआ ?
(ii) इंजीनियर साहब ने क्रोध में आकर क्या किया ?
(iii) रसीला अपना अपराध स्वीकार न कर क्या कह सकता था ?
(iv) लेखक ने शेख साहब पर क्या व्यंग्य किया था ?

**Question 6.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"बड़े भोले हैं आप सरकार ! अरे मालिक, रूप–रंग बदल देने से तो सुना है आदमी तक बदल जाते हैं। फिर ये तो सियार है।"

**–'भेड़ें और भेड़िए'–**
**लेखक–हरिशंकर परसाई**

(i) उपर्युक्त कथन कौन, किससे तथा क्यों कह रहा है ?
(ii) बूढ़े सियार ने भेड़िए का रूप किस प्रकार बदला?
(iii) यह कैसी कहानी है? बूढ़े सियार ने किन बातों का ख्याल रखने के लिए कहा तथा क्यों कहा?
(iv) सियारों को किन–किन रंगों में रंगा गया? वे किसके प्रतीक थे? इस कहानी से आपको क्या शिक्षा मिलती है?

**Question 7.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"कुन्दनपुर की धर्मशाला के चबूतरे पर भूखे पेट जैसे–तैसे रात बिताकर पौ फटे वहाँ से चलकर, अगले दिन शाम को सेठ अपने घर आ पहुँचे।"

**–'महायज्ञ का पुरस्कार'–**
**लेखक–यशपाल**

(i) ये कौन से सेठ थे तथा वह कुन्दनपुर क्यों गये थे ?
(ii) उन दिनों क्या प्रथा थी? सेठानी ने सेठ को क्या सलाह दी ?
(iii) सेठ के कुन्दनपुर जाने के लिए सेठानी ने क्या तैयारी की ?
(iv) भोजन के लिए वह कहाँ बैठे? वहाँ उन्होंने क्या देखा और फिर क्या किया ?

## साहित्य सागर–पद्य

**Question 8.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"काँकर पाथर जोरि कै, मसजिद लई बनाय।
ता चढ़ि मुल्ला बाँग दे, क्या बहरा हुआ खुदाय॥"

**–'साखी'–**
**कवि–कबीरदास**

(i) क्या कबीर पढ़े–लिखे थे? उन्होंने कैसी शिक्षाएँ दीं?
(ii) वे किसके उपासक थे और उन्होंने किसका विरोध किया ?
(iii) क्या कबीरदास जी ने हिन्दू–मुसलमानों की एकता का प्रयास किया ?
(iv) प्रस्तुत दोहे का अर्थ लिखिए।

**Question 9.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"जब तक मनुज–मनुज का यह सुख भाग नहीं सम होगा
शमित न होगा कोलाहल संघर्ष नहीं कम होगा।।"

**–'स्वर्ग बना सकते हैं'–**
**कवि–रामधारीसिंह 'दिनकर'**

(i) कवि की यह कैसी कविता है? कवि क्या चाहता है?
(ii) कोलाहल कब शान्त होगा?
(iii) सबका सुख–भाग समान होने के लिए क्या प्रयत्न करने होंगे?
(iv) इन पंक्तियों का भावार्थ लिखिए।

**Question 10.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"वह जन्मभूमि मेरी, वह मातृभूमि मेरी
ऊँचा खड़ा हिमालय, आकाश चूमता है,
नीचे चरण तले पड़ नित सिन्धु झूमता है।
गंगा, यमुना, त्रिवेणी नदियाँ लहर रहीं हैं,
जगमग छटा निराली, पग–पग पर छहर रही हैं।"

**–'वह जन्मभूमि मेरी'–**
**कवि–सोहनलाल द्विवेदी**

(i) सीताजी का जन्म कहाँ हुआ था ? इनका विवाह किससे हुआ और कैसे ?
(ii) भारतभूमि की क्या–क्या विशेषताएँ हैं ?
(iii) हिमालय हमारे देश का गौरव कैसे है ?
(iv) सोहनलाल द्विवेदी जी का संक्षिप्त परिचय दीजिए।

## नया रास्ता (सुषमा अग्रवाल)

**Question 11.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"बेटे के ये शब्द सुनकर दयाराम जी को लगा कि बेटे के साथ जबरदस्ती की जा रही है। एक बार पिता के नाते उनके हृदय में यह भाव उठा कि बेटे की जिन्दगी के साथ खिलवाड़ करना उचित नहीं।"

(i) घर पहुँचकर पिताजी और माताजी ने अपने क्या विचार प्रकट किये?

(ii) बेटे के कौन से शब्द सुनकर दयारामजी को लगा कि बेटे के साथ जबरदस्ती की जा रही है?

(iii) दयाराम जी के इस विचार पर उनकी पत्नी की क्या प्रतिक्रिया थी?

(iv) ऐसे व्यंग्यपूर्ण वचन सुनकर भी अमित चुप क्यों रहा ?

**Question 12.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"नीलिमा का हॉस्टल की और सहेलियों ने भी स्वागत किया। कितना अच्छा लग रहा था उसे। कितना अपनापन था सब में यह सब कल्पना करके ही नीलिमा का दिल प्रसन्नता से प्रफुल्लित हो गया।"

(i) हॉस्टल की लड़कियाँ कहाँ बैठी थीं और किसका इन्तजार कर रही थीं ?

(ii) टैक्सी में से कौन उतरा तथा मीनू ने उसका कैसे स्वागत किया ?

(iii) नीलिमा मीनू के कमरे में गई तो उसने क्या बताया ?

(iv) लड़के के बारे में नीलिमा ने मीनू को क्या बताया ?

**Question 13.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"हमारे भारतीय समाज में क्या नारी सदैव पुरुषों की दासी बनकर ही रहेगी? क्या हर लड़की अपने माता–पिता के लिए अभिशाप बनकर रह जायेगी?"

(i) ये प्रश्न किसके मस्तिष्क में उठ रहे थे और क्यों ?

(ii) जब वह पढ़ाई कर रही थी तो उसके मन में क्या ख्याल आया ?

(iii) वह सहेली की शादी के लिए क्या भेंट देना चाहती थी ?

(iv) अगले दिन मीनू कहाँ चल दी? वह वहाँ कैसे पहुँची ?

## एकांकी संचय

**Question 14.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"और तुम जानते हो कि महाराणा इस गढ़ को जीतकर अपनी प्रतिज्ञा पूरी करना चाहते हैं, किन्तु क्या हम लोग अपनी मातृभूमि का अपमान होने देंगे?"

**–'मातृभूमि का मान'–**

**लेखक–हरिकृष्ण 'प्रेमी'**

(i) यहाँ कौन किससे वार्ता कर रहा है और किस सन्दर्भ में ?

(ii) वक्ता का परिचय दीजिए। वह इस समय कहाँ पर है ?

(iii) दूसरे साथी के नकली बूँदी कहने पर वक्ता ने क्या जवाब दिया ?

(iv) तीसरे साथी का विचार क्या था ?

**Question 15.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"मेरे बनवाये गये मयूर पक्ष कुंड में दीपदान करो। मालूम हो जैसे भवसागर में आत्माएँ तैर रही हों, या जैसे मेघ पानी–पानी हो गये हों और बिजलियाँ टुकड़े–टुकड़े हो गई हों।"

**–'दीपदान'–**

**लेखक–डॉ. रामकुमार वर्मा**

(i) यह कथन किसने और किससे कहा है? दीपदान की उपमाएँ किस–किस से दी हैं?

(ii) कौन–कौन ये त्योहार मना रहे थे? क्या यह किसी उत्सव का दिन था? यदि नहीं तो यह क्यों मनाया जा रहा था?

(iii) धाय माँ को किसने क्या बनने की राय दी और क्यों?

(iv) उसकी राय सुनकर धाय माँ ने क्या कहा और उसका उत्तर क्या था?

**Question 16.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"मेरी आकांक्षा है कि सब डालियाँ साथ–साथ फलें–फूलें, जीवन की सुखद, शीतल वायु के स्पर्श से झूमें और सरसाएँ। विटप से अलग होने वाली डाली की कल्पना ही मुझे सिहरा देती है।"

**–'सूखी डाली'–**

**लेखक–उपेन्द्रनाथ 'अश्क'**

(i) उपर्युक्त कथन कौन, किससे तथा किस सन्दर्भ में कह रहा है?

(ii) सब डालियाँ साथ–साथ फलने–फूलने से क्या आशय है ? 'डालियाँ' शब्द किसके लिए प्रयुक्त हुआ है ?

(iii) किसकी आकांक्षा है कि सब खुशहाल रहें और क्यों ? इस एकांकी से आपको क्या शिक्षा मिलती है ?

(iv) प्रस्तुत कथन से वक्ता की किस चारित्रिक विशेषता का पता चलता है ? अपने विचार भी प्रस्तुत कीजिए।

# 4

# Hindi (Second Language) [Unsolved]

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Write a short composition in Hindi of approximately 250 words on any one of the following topics :**

**निम्नलिखित विषयों में से किसी एक विषय पर हिन्दी में लगभग 250 शब्दों में संक्षिप्त लेख लिखिए :**

(i) 'कम्प्यूटर–आज की आवश्यकता' विषय पर अपने विचार प्रकट कीजिए।

(ii) आज विज्ञान ने हमें किस प्रकार के मनोरंजन के साधन प्रदान किये हैं? इस सम्बन्ध में आपके क्या विचार हैं? आपको उनमें से कौन–सा साधन सर्वाधिक पसंद आता है और कौन–सा बिल्कुल नहीं। सकारण तथ्यपूर्ण प्रस्ताव लिखिए।

(iii) आप अपने बड़ों से क्या–क्या आशाएँ रखते हैं? वर्णन कीजिए।

**अथवा**

बड़ों से हम कुछ अपेक्षाएँ रख सकते हैं जब हम अपने कर्त्तव्यों का पालन करें। इस तर्क से आप कहाँ तक सहमत हैं?

(iv) 'मूर्ख मित्र से समझदार शत्रु अच्छा होता है।' कथन को आधार बनाकर एक मौलिक कहानी लिखिए।

(v) नीचे दिए गए चित्र को ध्यान से देखिए। इस चित्र को आधार बनाकर यथोचित वर्णन कीजिए। आपने जो लिखा है उसका विषय या तो चित्र हो या आपने इस चित्र को रूपरेखा की तरह प्रयोग किया हो; परन्तु जो कुछ भी आपने लिखा हो उसका स्पष्ट तथा सीधा सम्बन्ध चित्र से ही होना चाहिए।

**Question 2.**

Write a letter in **Hindi** of approximately **120** words on any **one** of the topics given below:

निम्नलिखित में से किसी **एक** विषय पर हिन्दी में लगभग **120** शब्दों में पत्र लिखिए:

(i) आपकी छोटी बहन पहली बार घर से दूर पाश्चात्य संगीत की शिक्षा के लिए विदेश जा रही है। वह परेशान और दुःखी है, उसे समझाते हुए प्रोत्साहित कीजिए।

(ii) आप किसी पत्रिका के नियमित ग्राहक बनना चाहते हैं। उसके 'प्रसार–प्रबन्धक' (Circulation Manager) को एक पत्र लिखिए जिसमें उनको स्पष्ट रूप से बताइए कि आपने वह पत्रिका सबसे पहले कहाँ देखी और उसमें आपको सबसे अधिक पसन्द क्या आया? उनसे यह बताने के लिए भी निवेदन कीजिए कि उस पत्रिका का वार्षिक शुल्क क्या है?

**Question 3.**

**Read the passage given below and answer in Hindi the questions that follow using your own words as far as possible.**

**निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़िए और उसके नीचे लिखे गए प्रश्नों के उत्तर हिन्दी में लिखिए। उत्तर यथासम्भव आपके अपने शब्दों में होने चाहिए :**

कोलाहल से दूर, आधुनिक सभ्यता से अछूते और सरलता से भरे ग्राम्यजीवन में जो आनन्द है, वो नगरों की भन–भन में मग्न मनुष्यों को कहाँ प्राप्त ? यद्यपि वहाँ न तो बिजली के पंखे हैं, न नल का जल, न दमदमाती लैम्पें हैं, न मोटर व रेल का पथ, न मेवे और फलों की मण्डियाँ हैं, न मिठाईयों की दुकान। परन्तु फिर भी वहाँ कुछ ऐसी मिठास है कि वहाँ सचमुच स्वर्ग का वास है।

प्रातः काल उठिये। घड़ी देखने का काम नहीं। यहाँ तो प्रकृति घड़ी–घड़ी अपनी घड़ी लिये खड़ी है। धूप और चाँदनी से ही समय जान लिया जाता है, तारे भी उसमें सहायता करते हैं। जंगल में जाइये। लहलहाते वृक्ष अपने पत्तों के बहाने हाथ हिला–हिलाकर बुलाते हैं। समीर अपने सुखद स्पर्श से मुख को खिला देता है। खुले मैदान में शौच क्रिया से निवृत्त होइये। किसी लखपति नगरवासी का शौचालय भी उतना विस्तृत और स्वास्थ्यकर न होगा, जितना कि ग्राम के कंगाल तेली का। कुएँ की मुण्डेर पर ताजी दातुन करते समय और सर्द पानी से स्नान करके दण्ड लगाते समय तो आनन्द की सीमा नहीं रहती। कहाँ वह वायु–सेवित सतेज ललाट और कहाँ गन्दगी से भरे नगरों के निवासियों के नीरस चेहरे? फिर कहाँ दुहनी से उठता हुआ फेनवाला गर्मागर्म दूध और कहाँ दहकती हुई चाय ? कहाँ धौरी के दही से निकली हुई लोहनी, छाछ और कहाँ दुकानों के सिके हुए पकवान ?

दिन में गौएँ चराईं तो ब्रज के गोपालों की भाँति क्रीड़ा करते रहे। हल जोता तो परिश्रम द्वारा जीवन सफल किया। काम करना और मगन रहना; 'न माधो का लेना न ऊधो का देना।' निश्चिन्तता ही इस जीवन का सार है। संसार के छल–छिद्र से दूर रहते हैं। वेद और उपनिषद् का तत्व जीवन में ही मिला हुआ है। भोजन और पहनावा इतना साधारण तथा स्वाभाविक, कि चाहें तो ऋषि–जीवन व्यतीत करें, लोकहित के लिये तो मानों ग्रामीणों का जन्म ही हुआ है। उन्हीं के परिश्रम की कठिन कमाई हमारी वेश–भूषा, खान–पान आदि का आधार है।

संध्या हुई। घर लौटे, गाय की सेवा की, बैलों को चारा डाला। चौपाल पर चार आदमियों में मन बहलाया। मोटा–झोटा जो मिला पेट भर खाया। बन पड़ा तो रामायण की पोथी पढ़ ली। बाल बच्चों से बातें कीं सो गए। गहरी नींद आई, उठे तो वही पुनीत प्रातः काल। चिड़ियाँ चहक रही हैं; और भगवान भास्कर मुस्कराते हुए चले आ रहे हैं।

(i) ग्रामों में नगरों की कौन सी सुविधाएँ उपलब्ध नहीं हैं ?

(ii) ग्राम में समय जानने के क्या साधन हैं ?

(iii) ग्रामीणों के मुख–मण्डल पर तेज का क्या कारण है और नगरवासियों के चेहरे नीरस क्यों रहते हैं ?

(iv) ग्रामवासियों और नगरवासियों के भोजन में क्या अन्तर है ?

(v) ग्रामीण लोगों की दिनचर्या कैसी है ?

**Question 4.**

**Answer the following according to the instructions given :**

(i) 'अंतरंग' का विलोम बताइए–

(a) बहिरंग (b) काला रंग (c) संगीत (d) रंगीन

(ii) 'अनुराग' का पर्यायवाची बताइए–

(a) प्रेम–ममता (b) राग–विराग (c) आदर–बिरादर (d) नेह–प्रेम

(iii) 'उड़ना' का भाववाचक संज्ञा बताइए–

(a) चढ़ना (b) उड़ान (c) पढ़ना (d) पंख फैलाना

(iv) 'अर्थ' का विशेषण बताइए–

(a) अर्थी (b) अंकित (c) आर्थिक (d) अधर्म

(v) 'रमायना' शुद्ध करें–

(a) रामायण (b) रामयण (c) रामायना (d) रामाय

(vi) 'गले का हार' का अर्थ बताइए–

(a) बहुत बुरा होना (b) बहुत प्रिय होना (c) लालच होना (d) बहुत कष्ट देना

(vii) निर्देशानुसार उचित वाक्य बनाइए–

मुसाफिर धर्मशाला में विश्राम करते हैं (भूतकाल में बदलें)–

(a) मुसाफिरों ने धर्मशाला में विश्राम किया।

(b) मुसाफिर धर्मशाला में विश्राम करने जाएँगे।

(c) मुसाफिर धर्मशाला में विश्राम करेंगे।

(d) धर्मशाला में मुसाफिर विश्राम करेंगे।

(viii) 'जो कम बोलता हो' के लिए एक शब्द लिखिए–

(a) वाचाल (b) मितव्ययी (c) मितभाषी (d) बातूनी

## Section-B (Attempt four questions from this Section)

*(You must answer at least one question from each of the two books you have studied and any two other questions.)*

### साहित्य सागर–संक्षिप्त कहानियाँ

**Question 5.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

पन्द्रह दिन पहले आरक्षण के लिए स्टेशन पर गया तो वहाँ पहले ही लोगों की लम्बी कतार खड़ी थी।

**–भीड़ में खोया आदमी–**

**लेखक–लीलाधर शर्मा 'पर्वतीय'**

(i) लेखक कहाँ जा रहा था और क्यों?

(ii) लेखक ने अपने मित्र का प्रारम्भिक परिचय क्या दिया है ?

(iii) स्टेशन पर आरक्षण क्यों नहीं हो पाया?

(iv) यात्रा के दिन लेखक को कैसे अनुभव प्राप्त हुए ?

**Question 6.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"वह काम तो तेरे लिए छोड़ दिया। मैं चली जाऊँगी तो जल्दी से सारी दुनिया का कल्याण करने के लिए झण्डा लेकर निकल पड़ना।"

(i) यहाँ कौन किससे कह रहा है? यह व्यंग्य उसने क्यों किया?

(ii) वक्ता कहाँ जाने की बात कर रहा है?

(iii) तीन दिन से क्या हो रहा था? श्रोता ने इस घड़ी में क्या किया?

(iv) वक्ता की जाने की बात से श्रोता ने कैसा महसूस किया?

**–दो कलाकार–**

**लेखिका–मन्नू भंडारी**

**Question 7.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

यह एक भेड़िये की कथा नहीं है, यह सब भेड़ियों की कथा है। सब जगह इस प्रकार प्रचार हो गया कि भेड़िये से बड़ा कोई उनका हितचिन्तक और हितरक्षक नहीं है।

(i) यहाँ 'भेड़ियों' शब्द का प्रयोग किस सन्दर्भ में किया गया है?

(ii) भेड़िये, भेड़ें और सियार क्रमशः किस–किसके प्रतीक हैं तथा 'भेड़ें और भेड़िये' शीर्षक रचना किस प्रकार की रचना है?

(iii) चुनाव में भेड़िये का प्रचारक कौन था तथा उसका प्रचार किस ढंग से किया गया?

(iv) भेड़िये के प्रचार में सियारों ने अपनी पूरी शक्ति लगाकर सफलता दिलाने का प्रयास किया, इसके पीछे छिपे कारण को स्पष्ट कीजिए।

**–भेड़ें तथा भेड़िये'–**

**लेखक–हरिशंकर परसाई**

### साहित्य सागर–(पद्य)

**Question 8.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

जसोदा हरि पालने झुलावै।
हलरावै, दुलराइ मल्हावै, जोइ–सोइ कछु गावै।
मेरे लाल को आइ निंदरिया, काहे न आनि सुवावै।
तू काहे नहिं बेगहिं आवै, तोको कान्ह बुलावै॥

**–'सूर के पद'–**

**कवि–सूरदास**

(i) कृष्ण के सो जाने पर यशोदा कैसे बात करती है? इतने में क्या होता है?
(ii) यशोदा क्या कर रही हैं? वे कृष्ण को किस प्रकार सुलाने का प्रयत्न कर रहीं हैं?
(iii) यशोदा नींद से क्या कह रहीं हैं?
(iv) यशोदा कौन–सा सुख प्राप्त कर रहीं हैं?

**Question 9.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

नाते नेह राम के मनियत, सुहृद सुसेव्य जहाँ लौं।
अंजन कहा आंख जेहि फूटै, बहु तक कहौं कहाँ लौं॥
तुलसी सो सब भांति परम हित पूज्य प्रान ते प्यारो।
जासों होय सनेह राम–पद, एतो मतो हमारो॥

(i) नाते के बारे में तुलसीदास जी ने क्या कहा है?
(ii) सबसे पूज्य और प्राण से प्यारा कौन है?
(iii) भरत ने अपनी माँ का त्याग क्यों किया?
(iv) विभीषण को रामजी ने क्या सम्पदा दी? उन्हें संकोच क्यों हुआ?

**–'विनय के पद'–**
**कवि–तुलसीदास**

**Question 10.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"प्रभु के दिये हुये सुख इतने
हैं विकीर्ण धरती पर
भोग सकें जो उन्हें जगत में,
कहाँ अभी इतने नर ?"

**–'स्वर्ग बना सकते हैं'–**
**कवि–रामधारी सिंह 'दिनकर'**

(i) प्रभु ने धरती पर क्या–क्या सुख दिये हैं ?
(ii) किस प्रकार मनुष्य को सुख–शान्ति प्राप्त हो सकती है ?
(iii) मानव के कल्याण के लिए मानव को क्या करना चाहिए?
(iv) प्रस्तुत पंक्तियों का भावार्थ लिखिए।

## नया रास्ता (सुषमा अग्रवाल)

**Question 11.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"लगभग एक सप्ताह यही क्रम चलता रहा। हर समय एक व्यक्ति उसके पास बैठा रहता। कभी माँ तो कभी मीनू, कभी रोहित तो कभी आशा। इन सबकी सेवा और ईश्वर के आशीर्वाद से पिताजी की दशा में काफी सुधार हो गया।"

(i) मीनू अपने घर क्यों आई थी ?
(ii) अगले दिन कौन लोग पिताजी को देखने आये ?
(iii) मीनू क्यों चाहती थी कि बुआजी ज्यादा बातें न करें ?
(iv) जाते समय बुआजी ने अपने भाई को क्या सलाह दी ?

**Question 12.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"मीनू का चेहरा बुखार के कारण तमतमा रहा था। माया अपने पलंग से उठकर मीनू के पास आई और उसके माथे पर हाथ रखा तो दंग रह गई। उसका शरीर ज्वर से तप रहा था। चेहरा तमतमा रहा था।"

(i) इन दिनों हॉस्टल में कैसा वातावरण था ?

(ii) मीनू बचपन से ही पढ़ाई में कैसी थी ? परीक्षा के दिनों में उसका कार्यक्रम क्या रहता था ?

(iii) माया जब दवाई लेने गई तो मीनू कौन–सी स्मृतियों में खो गई ?

(iv) माया कौन थी ? उसने मीनू की किस प्रकार सहायता की ?

**Question 13.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"नीलिमा के घर जाने के लिए मीनू ने अपना हरे रंग का सलवार सूट निकालकर पहना। तभी माँ रसोई से बाहर निकली। मीनू को सलवार सूट पहना देखकर बोली, "बेटी, आज तो साड़ी पहन लेती।"

(i) मीनू हॉस्टल से अपने घर क्यों आई है ?

(ii) हॉस्टल में और घर में क्या फर्क है ? उसने नाश्ते के लिए क्या बनवाया ?

(iii) आज मीनू के हृदय में विशेष उत्साह क्यों है ?

(iv) नीलिमा के यहाँ जाने के लिए वह तैयार हुई तो उसे कैसा लगा ?

## एकांकी संचय

**Question 14.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"अतुल ! इसीलिए मैं कहती हूँ, तू एक बार मुझे उनके पास ले चल। वह निर्मम है, पर मैं माँ हूँ। मुझे निर्मम नहीं होना चाहिए। मैं उसके पास चलूँगी।"

**–संस्कार और भावना–**
**लेखक–विष्णु प्रभाकर**

(i) माँ का हृदय परिवर्तन कैसे हुआ ?

(ii) अतुल ने चलने से पहले माँ से क्या कहा ?

(iii) माँ की कौन–सी बात सुनकर अतुल प्रसन्न हो गया ?

(iv) अन्त में उमा ने क्या कहा ?

**Question 15.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"मैं तो उधर ऊपर सामान रखने गई थी। बहुत बातें तो मैंने सुनी ही नहीं बहुत–सी समझ भी नहीं पाई। अंग्रेजी में गिटपिट कर रहे थे। छोटी बहू का पारा कुछ चढ़ा हुआ था.....।"

**–'सूखी डाली'–**
**लेखक–उपेन्द्रनाथ 'अश्क'**

(i) वक्ता कौन है और किसके बारे में बात कर रहा है?

(ii) वक्ता ने बहू रानी के बारे में क्या बताया ?

(iii) परेश ने अपनी बहू से फर्नीचर के बारे में क्या कहा ?

(iv) उसकी बात सुनकर बहू की क्या प्रतिक्रिया हुई?

**Question 16.**

**Read the extract given below and answer in Hindi the questions that follow :**

**निम्नलिखित गद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :**

"बहुत अच्छे हो ! तुम तो चित्तौड़ के सूरज हो। महाराणा साँगा जी के छोटे कुँवर! सूरज की तरह तुम्हारा उदय हुआ है। तभी तो तुम्हारा नाम उदयसिंह रखा गया है।"

**–'दीपदान'–**
**लेखक–डॉ. रामकुमार वर्मा**

(i) उदयसिंह के क्या कहने पर वक्ता ने यह बात कही ?

(ii) कुलदीपक की बात सुनकर उदयसिंह ने क्या कहा ?

(iii) दीपदान का उत्सव क्यों मनाया गया है ?

(iv) दीपदान के उत्सव में न तो वक्ता गया न उदयसिंह को जाने दिया ? क्यों ?

# Sample Paper

## Hindi (Second Language)

## Answers

### Section-A

**Answer 1.**

(i)

**आवासीय विद्यालयों की उपयोगिता, लाभ एवं हानियाँ**

प्रारंभिक वर्षों में शिक्षा के लिए घर और स्कूल दोनों में पढ़ाई करने की आवश्यकता होती है। आजकल अधिकांश घरों में छोटे परिवार होते हैं, और अधिकांश माता–पिता दोनों जीविका चलाने के लिए कार्य करते हैं। ऐसे परिदृश्य में बच्चे को एक आवासीय विद्यालय में स्थानांतरित करना हमेशा बेहतर विकल्प होता है। इसके लिए सबसे अच्छी आयु सात वर्ष की होती है। आवासीय विद्यालय उनके लिए एक अच्छा समाधान है। जिन बच्चों के माता–पिता बच्चों को बहुत अधिक समय नहीं दे पाते। उनके लिए आवासीय विद्यालय लाभ है, सबसे पहले सभी बच्चों को समान स्तर मिलता है, सभी एक ही लाभ प्राप्त करते हैं। आवासीय विद्यालय हर एक छात्र के समग्र विकास पर अधिक ध्यान देते हैं। आवासीय विद्यालय में पढ़ने वाले युवाओं के व्यवहार में सकारात्मक परिवर्तन दिखाई देते हैं। यहाँ पर्याप्त रूप से अध्ययन कराया जाता है।

इसका लाभ यह भी है कि छात्रों की छोटी संख्या और शिक्षकों के साथ अधिकतम समय बिताने के कारण शिक्षकों और छात्रों के बीच घनिष्ठ सम्बन्ध विकसित हो जाता है। वे भावनात्मक, शारीरिक और शैक्षणिक सभी पहलुओं में छात्र के विकास पर ध्यान देते हैं और भविष्य में आने वाली हर परिस्थिति का सामना छात्र अच्छे से कर सकें, इसके लिए उन्हें तैयार करते हैं।

आवासीय विद्यालय का सबसे बड़ा नुकसान यह है कि लोग इसके नकारात्मक पहलू के बारे में यह सोचते हैं कि यहाँ बच्चों से सख्ती की जा सकती है। वे अपना बचपन जी नहीं पाते हैं। माता–पिता तथा भाई–बहनों के साथ भावनात्मक रूप से जुड़ नहीं पाते हैं। छात्र के लिए आवासीय विद्यालय में रहना कठिन होता है क्योंकि वहाँ नये लोगों को अपना दोस्त बनाने में समय लगता है, परिवार के साथ समय नहीं बिता पाते हैं। आवासीय विद्यालय के नियम और कानून बहुत सख्त होते हैं जिन्हें निभाना कठिन होता है लेकिन वर्तमान में अभिभावकों के पास समय की कमी के कारण वे अपने बच्चों को आवासीय विद्यालय में डालना पसन्द करते हैं।

(ii)

**मेरे जीवन का लक्ष्य**

प्रत्येक मानव का जीवन में कोई–न–कोई लक्ष्य होना चाहिए। मैंने यह तय किया है कि मैं पत्रकार बनूँगा। आजकल सबसे प्रभावशाली स्थान है–प्रचार माध्यमों का। समाचार–पत्र, रेडियो, दूरदर्शन आदि चाहें तो देश में बहुत से बदलाव ला सकते हैं। मैं भी ऐसे ही महत्त्वपूर्ण स्थान पर पहुँचना चाहता हूँ जहाँ से मैं देशहित के लिए बहुत कुछ कर सकूँ। पत्रकार बनकर मैं देश को तोड़ने वाली ताकतों के विरुद्ध संघर्ष करूँगा, समाज को खोखला बनाने वाली कुरीतियों के खिलाफ जंग छेड़ूँगा और भ्रष्टाचार का भंडाफोड़ करूँगा। मुझे पता है कि पत्रकार बनने में खतरा बहुत है तथा पैसा भी कम है परन्तु मैं पैसे के लिए या धंधे के लिए पत्रकार नहीं बनना चाहता। मेरे पत्रकार बनने का लक्ष्य होगा–समाज में फैली कुरीतियों और भ्रष्टाचार को समाप्त करना। यदि मैं थोड़ी–सी बुराइयों को भी हटा सका तो मुझे बहुत संतोष मिलेगा।

मैं स्वस्थ समाज बनाना चाहता हूँ। इसके लिए मैं पत्रकार बनकर हर प्रकार की समस्याओं को मिटा देना चाहता हूँ परंतु केवल सोचने से लक्ष्य प्राप्त नहीं होता। मैंने इस लक्ष्य को पाने के लिए तैयारी भी शुरू कर दी है। मैं रोज दैनिक समाचार–पत्र पढ़ता हूँ, रेडियो–दूरदर्शन के समाचार तथा अन्य सामयिक विषयों को ध्यान से सुनता हूँ। मैंने साथ ही हिन्दी और अंग्रेजी भाषा का अच्छे से अध्ययन करना भी शुरू कर दिया है ताकि अच्छे लेख लिख सकूँ।

अब वह दिन दूर नहीं जब मैं पत्रकार बनकर समाज की सेवा करने का सौभाग्य पा सकूँगा।

(iii)

## नारी का सम्मान

प्राचीन काल में हमारे समाज में आज से कहीं बढ़कर नारी का सम्मान होता था। किसी समय तो नारी का स्थान नर से ऊपर बढ़ गया था कि पिता के नाम के स्थान पर माता का ही नाम प्रधान होकर परिचय का सूत्र बन गया था। धर्मदृष्टा मनु ने नारी को श्रद्धामयी और पूजनीय मानते हुए महत्त्व प्रदर्शित किया–

**'यत्र नार्यस्तु पूज्यन्ते, रमन्ते तत्र देवताः।'**

अर्थात् जहाँ नारी की पूजा–प्रतिष्ठा होती है, वहाँ देवता रमण करते हैं, अर्थात् निवास करते हैं।

धीरे–धीरे समय के साथ नारी की दशा में कुछ अपूर्व परिवर्तन हुए। वह नर से महत्त्वपूर्ण न होकर उसके समकक्ष श्रेणी में आ गई। अगर पुरुष ने परिवार के भरण–पोषण का उत्तरदायित्व संभाल लिया तो घर के अन्दर के सभी कार्यों का बोझ नारी ने उठाना शुरू कर दिया। इस प्रकार नर और नारी के कार्यों में काफी अन्तर आ गया। ऐसा होने पर भी प्राचीनकाल की नारी ने हीन भावना का परित्याग कर स्वतन्त्र और आत्मविश्वासी होकर अपने व्यक्तित्व का सुन्दर और आकर्षक निर्माण किया।

समय के बदलाव के साथ नारी दशा में अब बहुत परिवर्तन आ गया है। नारी तो प्राचीनकाल से अब तक गृहणी के रूप में रही है। इसके लिए उसे गृहस्थी के मुख्य कार्यों को करने के लिए विवश किया गया, जैसे–भोजन बनाना, बाल–बच्चों की देखभाल करना, पति की सेवा करना।

शिक्षा के प्रचार–प्रसार के फलस्वरूप वर्तमान में नारी की उस दशा में कुछ सुधार हुआ है, जो कुछ अंधविश्वासों, रूढ़िवादी विचारधारा या अज्ञानता के फलस्वरूप हो गयी थी। नारी को नर के समानान्तर लाने के लिए समाज चिन्तकों ने इस दिशा में सोचना और कार्य करना आरम्भ कर दिया है। राष्ट्रकवि मैथिलीशरण गुप्त जी ने इस विषय में स्पष्ट कहा है–

**'एक नहीं, दो–दो मात्राएँ, नर से बढ़कर नारी।'**

नारी के प्रति अब श्रद्धा और विश्वास की पूरी भावना व्यक्त की जाने लगी है। नारी आज समाज में प्रतिष्ठित और सम्मानित हो रही है। वह अब घर की लक्ष्मी ही नहीं रह गयी है, अपितु घर से बाहर समाज का दायित्व निर्वाह करने के लिए आगे बढ़ गयी है। वह घर की चारदीवारी से अपने कदम को बढ़ाती हुई समाज की विकलांग दशा को सुधारने के लिए कार्यरत हो रही है। इसके लिए वह नर के समानान्तर पद तथा अधिकार को प्राप्त करती हुई नर को चुनौती दे रही है। वह नर को यह अनुभव कराने के साथ–साथ उसमें चेतना भर रही है कि नारी में किसी प्रकार की शक्ति और क्षमता की कमी नहीं है केवल अवसर मिलने की देर होती है। इस प्रकार नारी का स्थान हमारे समाज में आज अधिक समादृत और प्रतिष्ठित है।

नारी देश की पहचान भी है। वह हर क्षेत्र में अपना अधिकार और योगदान प्रकट करती है। शिक्षा, व्यवसाय, सरकारी सेवा और राजनीति में भी भाग ले रही है जिससे उसकी पहचान और प्रतिष्ठा में वृद्धि हुई है।

(iv)

## 'मन के हारे हार है, मन के जीते जीत।'

मोहन अपनी कक्षा में सभी विषयों को पढ़ने में ठीक था, किन्तु हिन्दी में वह हमेशा से ही पिछड़ा हुआ था। हिन्दी भाषा में उसके अंक सबसे कम रहते थे। इस कारण वह कक्षा में प्रथम नहीं आ पाता था। परीक्षा परिणाम आने के बाद सब उससे यही कहते थे कि यदि हिन्दी में भी तेरे अंक आ जायें तो तू कक्षा में प्रथम आ जाएगा। सहपाठी भी उसका मजाक बनाने लगे थे। जिससे वह बहुत निराश हो गया था। कुछ दिन बाद वह इस बार की वार्षिक परीक्षा में भी हिन्दी विषय में कम अंक आने के कारण प्रथम नहीं आ सका। अब मोहन ने मन ही मन यह स्वीकार कर लिया था कि वह हिन्दी नहीं सीख सकता।

मोहन की नई हिन्दी शिक्षिका, वीना शर्मा भी इस बात को समझ चुकी थीं। एक दिन उन्होंने मोहन को अपने पास बुलाया और पूछा–'मोहन, तुम्हें हिन्दी में क्या परेशानी है ? तुम मात्राओं का प्रयोग क्यों नहीं समझ पाते हो ?'

मोहन केवल उन्हें देखे जा रहा था। शिक्षिका ने अपनी बात आगे बढ़ाते हुए कहा–'तुम्हें पता है कि तुम्हारे ठीक तरह से हिन्दी न सीख पाने का क्या कारण है ? किसी भी भाषा को समझने के लिए हमें उसे ध्यानपूर्वक सुनना पड़ता है और शिक्षक जिस प्रकार उच्चारण करते हैं वैसा ही उच्चारण करने का अभ्यास करना चाहिए।

दूसरी बात, जब हम पढ़ें तो पुस्तक में शब्दों और मात्राओं को ध्यानपूर्वक देखना चाहिए और उनका प्रयोग समझना चाहिए और जब लिखें तो ध्यानपूर्वक लिखो और फिर उसे पढ़ो ताकि यह जान सको कि वह मात्राएँ सही हैं या नहीं। तुम आज से ही इस कार्य को प्रारम्भ कर दो। मुझे पूरा विश्वास है कि तुम बहुत जल्दी ही मात्राओं का सही प्रयोग सीख जाओगे, शिक्षिका के मार्गदर्शन से, मन से हारे हुए मोहन में आत्मविश्वास जाग उठा। कुछ समय बाद जब परीक्षा हुई तो मोहन को हिन्दी में सबसे अधिक अंक मिले। अतः सच ही कहा है–'मन के हारे हार है, मन के जीते जीत।'

(v)

## चित्र प्रस्ताव

प्रस्तुत चित्र में हम देख रहे हैं कि लगभग एक ही आयु के 13-14 बच्चे दो पंक्तियों में बैठकर बड़ी सभ्यता से भोजन–ग्रहण कर रहे हैं और दो व्यक्ति उन्हें भोजन परोस रहे हैं। ये सभी एक ही कक्षा के छात्र प्रतीत हो रहे हैं। यह दृश्य सरकारी स्कूलों में दिए जाने वाले मध्याह्न भोज (Mid-day-meal) को दर्शा रहा है।

आजादी के बाद से सरकार की ओर से निरक्षरता मिटाकर साक्षरता लाने के यथा–संभव प्रयास किए जा रहे हैं और इसके लिए यह नियम बनाया गया है कि देश के सभी सरकारी स्कूलों में कक्षा आठ तक की शिक्षा हर बच्चे को निःशुल्क दी जाएगी। पहले की अपेक्षा अब सरकारी स्कूलों की संख्या भी बढ़ा दी गई है।

सरकारी स्कूलों में पढ़ने वाले विद्यार्थियों की संख्या में वृद्धि तो हुई है, पर वह संतोषजनक नहीं है। इसलिए और अधिक प्रयास करना आवश्यक है। जिस दिन किसी भी घर में कोई बच्चा अशिक्षित नहीं रहेगा, जिस दिन झुग्गी–झोंपड़ी में रहने वाले सभी बच्चे इन विद्यालयों में आकर कम–से–कम कक्षा आठ तक की शिक्षा प्राप्त करेंगे, उस दिन सरकार के प्रयास सफल होंगे।

इस सफलता तक पहुँचने के लिए एक ओर तो देश के जागरूक और जिम्मेदार लोग गाँव–गाँव, घर–घर में जाकर लोगों को शिक्षा की उपयोगिता के विषय में जाग्रत करके बच्चों को विद्यालय में भेजने के लिए उनके माता–पिता को प्रेरित कर रहे हैं और दूसरी ओर सरकार ने भी अपने प्रयास बढ़ा दिए हैं। आजकल सरकारी स्कूलों में विद्यार्थियों को मुफ्त वर्दी एवं पुस्तकें तो दी ही जाती हैं, साथ ही उन्हें दोपहर में 'मध्याह्न भोजन' भी दिया जाता है, जिससे सब विद्यार्थियों को एक–सा पोषणयुक्त भोजन मिल सके। यह योजना शुरु करने का एक अन्य उद्देश्य छात्रों की विद्यालय में उपस्थिति बढ़ाना भी था। सरकार द्वारा इस दिशा में निरंतर प्रयास किये जा रहे हैं। आशा करते हैं कि देश के सभी बालक साक्षर हो सकें।

**Answer 2.**

(i) थामसन छात्रावास

प्रयागराज

दिनांक : 10-10-20XX

आदरणीय पिताजी,

सादर प्रणाम।

आपको अवगत कराते हुए मुझे हर्ष हो रहा है कि हमारे कॉलेज की ओर से एक शैक्षणिक यात्रा का आयोजन किया गया है। इस शैक्षणिक यात्रा में कॉलेज के प्राचार्य सहित सभी अध्यापक सम्मिलित हो रहे हैं। इस यात्रा का उद्देश्य आगरा, मथुरा, वृन्दावन तथा जयपुर के दर्शनीय स्थलों का अवलोकन कराना है। प्रत्येक विद्यार्थी को केवल ₹ 80 खर्च के लिए देने होंगे। इसी धनराशि में से सभी लोगों के रेल किराये, भोजन एवं ठहरने आदि का प्रबन्ध किया जाएगा। अन्य खर्चों को कॉलेज वहन करेगा।

आप इस बात से भलीभाँति अवगत हैं कि इन शैक्षणिक यात्राओं का ज्ञानार्जन की दृष्टि से कितना अधिक महत्त्व है। इनसे छात्रों को विभिन्न वस्तुओं के बारे में प्रत्यक्ष ज्ञान प्राप्त करने का सुअवसर मिलता है। मेरे सभी प्रिय मित्र यात्रा पर जा रहे हैं। अतः उनके साथ मनोरंजन की भी कमी नहीं रहेगी।

मेरा आपसे सविनय अनुरोध है कि मुझे भी यात्रा पर जाने के लिए अपनी अनुमति देने की कृपा करें। खर्च के लिए ₹100 का मनीऑर्डर भेज दें। आप किसी प्रकार की चिन्ता न करें।

मुझे आशा ही नहीं वरन् पूर्ण विश्वास है कि आप मेरी भावनाओं का आदर करते हुए मुझे निराश नहीं करेंगे और अपनी अनुमति प्रदान करेंगे।

आपका प्रिय पुत्र,

रवि

(ii) सेवा में,

श्रीमान अध्यक्ष महोदय,

नगर निगम,

आगरा।

**विषय–बाल उद्यान बनवाने हेतु नगर निगम को पत्र।**

महोदय,

सविनय निवेदन है कि मैं मयूर विहार फेस-III में रहता हूँ तथा आपका ध्यान इस तथ्य की ओर दिलाना चाहता हूँ कि मेरे मोहल्ले में बच्चों के खेलने के लिए किसी प्रकार की व्यवस्था नहीं है। इससे हम सभी बच्चे शाम को घर से निकलते तो हैं, पर खेल नहीं पाते। घरों के बीच में जो खाली जगह है उस पर भवन–निर्माण का सामान जैसे–ईंट, चूना, रेत आदि पड़े रहते हैं, क्योंकि कुछ भवन निर्माणाधीन हैं। अतः हम बच्चे जगह होने पर भी खेल नहीं पाते। इस जगह पर कुछ असामाजिक तत्व जुआ भी खेलते हैं और हमें धमकी भी देते हैं।

अत: आपसे अनुरोध है कि इस खाली जगह पर एक बाल–उद्यान बनवाने का कष्ट करें तथा असामाजिक तत्वों को यहाँ से भगाएँ। हम सभी बच्चे आपके सदा आभारी रहेंगे।

धन्यवाद !

भवदीय

नीरज

5, मयूर विहार, फेस-III आगरा-5

दिनांक : 05-05-20XX

**Answer 3.**

(i) ईश्वर की सर्वोत्कृष्ट रचना मानव है, क्योंकि मानव चिंतन शक्ति से सम्पन्न है।

(ii) ध्यान से मनुष्य के चित्त का रूपान्तरण होता है। इससे मनुष्य के मन के विकार समाप्त होते हैं और मस्तिष्क की क्रियाशीलता बढ़ती है। इससे मनुष्य की आन्तरिक शक्ति का विकास होता है।

(iii) ईश्वर से मिलने का सीधा तरीका ध्यान है, क्योंकि ध्यान के द्वारा मन को एकाग्र करके प्राण तथा आत्मा में स्थिर किया जाता है और बाहरी संसार से सम्बन्ध विच्छेद कर लिए जाते हैं।

(iv) मानव ईश्वर की सर्वोत्कृष्ट रचना है और कण–कण में व्याप्त ईश्वर मानव मन के सर्वाधिक निकट है, परन्तु मानव को ईश्वर का ज्ञान नहीं है। इसी कारण वह हताश, निराश और अशांत है।

(v) परिवार एवं विश्व के लिए ध्यान की साधना आवश्यक है, क्योंकि इसी के द्वारा विश्वशांति तथा मंगल–भावना का उदय हो सकता है।

**Answer 4.**

(i) (a) इति

(ii) (b) अमृत

(iii) (c) बुढ़ापा

(iv) (b) दयालु

(v) (a) शिष्टाचार

(vi) (c) क्रोध में आना

(vii) (a) अतुलनीय

(viii) (b) वह नास्तिक है।

## Section-B

### साहित्य सागर (संक्षिप्त कहानियाँ)

**Answer 5.**

(i) श्यामू और भोला बहुत प्रसन्न थे, क्योंकि उनकी योजना थी कि राम के यहाँ पतंग भेजकर श्यामू की माँ को नीचे उतारेंगे। रस्सी इसलिए बाँधी जा रही थी ताकि उसके सहारे काकी आराम से नीचे उतर आयें और वो टूटे नहीं।

(ii) श्यामू और भोला में समझदार भोला था। पहले तो ये दोनों पतंग में डोर बाँध रहे थे। तभी भोला ने अपनी समझदारी दिखाई यह कहकर कि पतंग की डोर पतली है, काकी के उतरने से टूट सकती है। पतंग में मोटी रस्सी बाँधनी चाहिए। यह बात श्यामू की समझ में आ गई।

(iii) इनके शुभ कार्य में विघ्न क्रोध में भरे हुए विश्वेश्वर ने डाला। वे आये और श्यामू से पूछा कि क्या तुमने मेरे कोट की जेब से एक रुपया निकाला है? भोला ने डरकर सारी बात बता दी।

(iv) भोला ने बताया कि श्यामू भैया ने रस्सी और पतंग के लिए एक रुपया निकाला था। ये कहते थे कि पतंग तानकर काकी को राम के यहाँ से नीचे उतारेंगे। यह सुनकर विश्वेश्वर हतबुद्धि होकर वहीं खड़े रह गये। उन्होंने फटी हुई पतंग उठाकर देखी तो उस पर 'काकी' लिखा हुआ था। उन्हें अपने कृत्य पर बड़ा दु:ख हुआ। दु:खी हृदय से सोचा कि श्यामू अपनी माँ को भूल नहीं पाया है, वह उन्हें कितना चाहता है।

**Answer 6.**

(i) उपर्युक्त पंक्तियों में दिया गया विचार हालदार साहब का है। चलती हुई जीप में बैठे हुए हालदार साहब मूर्ति के बारे में ही सोचते रहे और अन्त में इस निष्कर्ष पर पहुँचे कि कस्बे वालों का मूर्ति लगाने का प्रयास सराहनीय है। लोगों में अभी देशभक्ति की भावना जीवित है। देश की स्वतन्त्रता के लिए बलिदान देने वाले शहीदों को याद करके हमारी देशभक्ति की भावना प्रबल हो जाती है। आज भी देश के सम्मान के लिए अपना जीवन कुर्बान करने वालों की कमी नहीं है।

(ii) दूसरी बार जब हालदार साहब उधर से गुजरे तो उन्हें मूर्ति में कुछ अन्तर दिखाई दिया। ध्यान से देखा तो चश्मा दूसरा था। पहले मोटे फ्रेमवाला चौकोर चश्मा था, अब तार के फ्रेम वाला गोल चश्मा है। उनका कौतुक बढ़ा कि मूर्ति कपड़े नहीं बदल सकती, लेकिन चश्मा तो बदल ही सकती है।

(iii) हालदार साहब ने पान वाले से पूछ लिया–''क्यों भई! क्या बात है? यह तुम्हारे नेताजी का चश्मा हर बार बदल कैसे जाता है?'' पान वाला खुशमिजाज आदमी था। उसने बताया कि यह उलटफेर कैप्टन चश्मे वाला करता है। हालदार साहब की समझ में यह बात नहीं आई कि कैप्टन चश्मे वाला ऐसा क्यों करता है?

(iv) पान वाले की बातों के आधार पर मालूम हुआ कि चश्मेवाला अपनी छोटी–सी दुकान के गिने–चुने फ्रेमों में से एक फ्रेम नेताजी की मूर्ति पर लगा देता था। जब उसके किसी ग्राहक को नेताजी का पहना हुआ चश्मा पसन्द आता तो वह उस ग्राहक को वह फ्रेम उतारकर दे देता और नेताजी की मूर्ति को दूसरा चश्मा पहना देता।

**Answer 7.**

(i) उसके चित्रों से तात्पर्य चित्रा द्वारा गर्ग स्टोर के सामने पेड़ के नीचे मृत पड़ी भिखारिन और उसके अनाथ बच्चों का बना चित्र है, जिसने देश–विदेश में बहुत नाम कमाया है। यह चित्र अभी दिल्ली में उसके चित्रों की प्रदर्शनी में लगा हुआ है जिसका शीर्षक 'अनाथ' रखा है।

(ii) चित्रा एक धनी पिता की इकलौती बेटी थी। वह अरुणा की पक्की सहेली थी। वे दोनों हॉस्टल में एक ही कमरे में रहतीं थीं। चित्रा एक महान चित्रकार बनना चाहती है। इसी उद्देश्य से वह विदेश भी जाती है और सफल भी होती है। चित्रा भौतिकवादी व संवेदनहीन है। वह अपने लक्ष्य के प्रति दृढ़ है और कर्मठता से उसे पाने में सफल भी होती है।

(iii) अरुणा चित्रा की सहेली तथा सहपाठी है। वह भावुक और संवेदनशील है। समाज सेवा उसके जीवन का लक्ष्य है। जब उसे पता चलता है कि गर्ग स्टोर के सामने पेड़ के नीचे मृत भिखारिन के सूखे शरीर से चिपककर उसके दोनों बच्चे रो रहे हैं, तो वह अत्यन्त भावुक और दुःखी हो जाती है। वह तुरंत उन बच्चों को घर लेकर आ जाती है। वह उन दोनों बच्चों को अपना लेती है और उनका पालन–पोषण करती है।

(iv) चित्रकारिता और समाज सेवा में, मैं समाज सेवा को उपयोगी मानती हूँ। कहानी में अरुणा यथार्थवाद का परिचय देती है। मानवता मनुष्य का सबसे बड़ा धर्म होता है। अरुणा इस धर्म का पालन करती है और दोनों अनाथ बच्चों को अपने संरक्षण में रखकर माँ की तरह पालन–पोषण करती है। लोगों के दुःख–दर्द में सहभागी बनना और उनकी मदद करना ही मनुष्य के जीवन का लक्ष्य होना चाहिए। कुछ बनने की इच्छा रखना गलत नहीं है, क्योंकि व्यक्ति की महत्वाकांक्षा ही उसे सफल और प्रसिद्ध बनाती है। चित्रा महान चित्रकार तो बन जाती है पर उसके हृदय में मानवता व परोपकार की भावनाएँ नहीं हैं।

## साहित्य सागर (पद्य)

**Answer 8.**

(i) तुलसीदास जी ने श्रीराम को संसार में सबसे अधिक उदार बताया है क्योंकि वे बिना सेवा के ही दीन पर कृपा करते हैं। उनके अतिरिक्त और कोई ऐसा देवता नहीं है जो बिना सेवा–पूजा के ही कृपा कर दे। अन्य देवताओं के अलग–अलग पूजा विधान हैं। उस विधान के अनुसार पूजा करने पर ही वह फल देते हैं पर श्रीराम का ऐसा कोई विधान नहीं है वे अकारण ही कृपा करते हैं।

(ii) जब सीता–राम और लक्ष्मण वनवास में थे और राम की पत्नी सीता को लंका का राजा रावण हरण करके अपने विमान में ले जा रहा था तो जटायु नाम के गिद्ध ने उसका विरोध किया और अपनी चोंच से उसे घायल कर दिया। रावण ने क्रोध में आकर अपनी तलवार से उसके दोनों पंख काट दिये। वह घायल होकर नीचे गिर गया। वह विकल नेत्रों से राम के आने की राह देख रहा था। जब राम और लक्ष्मण आये तो उसने पूरा वृतान्त सुनाया तथा अपने प्राण त्याग दिये। तब राम ने स्वयं अपने हाथों से उसका दाह–संस्कार किया।

(iii) जब राम और लक्ष्मण सीताजी की खोज कर रहे थे तभी वे दोनों शबरी के आश्रम में आये। शबरी के गुरु (मतंग ऋषि) उससे कह गये थे कि तुम्हारी कुटिया पर श्रीराम आयेंगे और तुम्हें दर्शन देंगे। तभी से शबरी नित्य अपनी कुटिया के सामने पुष्प बिछाती और उनकी प्रतीक्षा करती थी। आखिर वह दिन आया जब राम और लक्ष्मण उसकी कुटिया पर पधारे। बड़े हर्ष से शबरी ने उनका सत्कार किया। राम ने उसे नवधा–भक्ति का उपदेश दिया। इस प्रकार शबरी को उन्होंने कृतार्थ किया।

(iv) तुलसीदास जी कहते हैं कि संसार में राम के समान उदार कोई देवता नहीं है। वे तो बिना सेवा के ही दीन पर कृपा करते हैं। ऐसा कोई दूसरा देवता नहीं है। जो सुगति ज्ञानी मुनि जोग, जतन और वैराग्य से भी प्राप्त नहीं कर पाते वह 'सुगति' जटायु और शबरी को उन्होंने दी। यह देते हुए उन्होंने कोई भेद नहीं किया। इन दोनों भक्तों को दुर्लभ–दर्शन दिये। गिद्ध का तो अपने हाथों से दाह–संस्कार किया और शबरी को दर्शन देकर नवधा (नौ प्रकार की) भक्ति का उपदेश दिया।

**Answer 9.**

(i) जाने का न्यौता मिलने पर ही राजा के दरबार में जाना चाहिए। बिना बुलाए जाने से मनुष्य का अपमान हो सकता है। इसलिए राजा के दरबार में ससम्मान जाना चाहिए।

(ii) कवि ने बताया है कि उस स्थान पर नहीं बैठना चाहिए जहाँ से किसी के द्वारा आपको उस जगह से हटा देने की सम्भावना हो या ऐसी शंका हो कि उस स्थान से कोई उठा सकता है। कोई बात तब कहनी चाहिए जब किसी ने कहने के लिए कहा हो।

(iii) अधिक आतुरता दिखाने से काम भी बिगड़ जाता है और सामने वाला प्रसन्न नहीं होता। राजा के दरबार में आतुरता दिखाने से राजा नाराज भी हो सकता है।

(iv) हमें अपनी बात तभी कहनी चाहिए जब किसी ने हमसे बोलने को कहा हो। बिना पूछे कही गयी बात का सम्मान नहीं होता। इसलिए किसी के पूछने पर ही अपनी बात कहनी चाहिए।

**Answer 10.**

(i) प्रस्तुत पद्य में बाल कृष्ण अपनी माता से जिद कर रहे हैं। वे चाँद को खिलौना समझ उसे प्राप्त करना चाहते हैं। वे अपनी माता से चन्द्रमा रूपी खिलौना लाने को कहते हैं।

(ii) बाल कृष्ण की माता यशोदा हैं। श्रीकृष्ण के बाल हठ में वह बहुत प्रसन्न हैं। वह बालक की अबोधता का आनन्द ले रहीं थीं। वह अपने पुत्र के बालपन, हठ और दर्शन का सुख प्राप्त कर रहीं थीं। वह उस सुख को निरन्तर प्राप्त करना चाहतीं थीं। उनका हृदय आनंदित व प्रफुल्लित है।

(iii) चाँद रूपी खिलौना न मिलने की स्थिति में बाल कृष्ण ने अपनी माँ को यह धमकियाँ दी कि वे अपनी चोटी नहीं गुँथवाएँगे और दूध नहीं पीयेंगे। वे यह भी कहते हैं कि वे मोतियों की माला नहीं पहनेंगे और कंठ का आभूषण भी नहीं पहनेंगे। वे धरती पर लोट जाएँगे और यशोदा की गोद में भी नहीं आयेंगे। वे नन्द बाबा के बेटे कहलाएँगे, यशोदा माँ के नहीं। इस प्रकार जब कृष्ण माँ को धमकियाँ देते है तो वे उन्हें बहलाने लगतीं हैं।

(iv) रूठे हुए कृष्ण को बहलाने के लिए यशोदा उनके कान में धीरे से कहती हैं कि यह बात दाऊ से मत कहना कि मैं तेरे लिए चाँद से भी अधिक सुन्दर दुल्हनियाँ ब्याह कर लाऊँगी। यह बात सुनकर कृष्ण प्रसन्न हो जाते हैं और कहते हैं कि वे तुरन्त विवाह करने जाँयेंगे। उनके सभी सखा बराती होंगे और नये मंगल गीत गाये जाएँगे। सूरदास श्रीकृष्ण के अनन्य भक्त थे। श्री कृष्ण के प्रति अपनी भक्ति का प्रदर्शन वे कृष्ण की बाल लीलाओं के वर्णन द्वारा करते हैं।

## नया रास्ता (सुषमा अग्रवाल)

***Answer 11.***

(i) प्रस्तुत पंक्तियों में मेरठ से मायाराम जी के परिवार के लोग दयाराम जी के घर आ रहे हैं। आने वाले मेहमान को विशेष महत्त्व इसलिए दिया जा रहा है, क्योंकि मेरठ का रहने वाला एक लड़का अपने परिवार के कुछ लोगों के साथ दयाराम जी की बड़ी बेटी मीनू को देखने के लिए आ रहा है।

(ii) विभिन्न प्रकार की तैयारियों से तात्पर्य है कि बैठक को खूब सजाया गया था। विभिन्न प्रकार के व्यंजन बनाये गये थे। उनके सत्कार का पूरा प्रबन्ध किया गया था। अनेक प्रकार की मिठाइयाँ बाजार से मँगवाई गईं थीं।

(iii) आने वाले मेहमान से परिवार के लोगों को यह उम्मीद थी कि वे लोग मीनू को पसन्द कर लेंगे और मीनू का रिश्ता उनके यहाँ हो जाएगा।

(iv) दयाराम जी मीरापुर नामक नगर के रहने वाले हैं। उनके घर में उनकी पत्नी, दो बेटियाँ मीनू और आशा और एक छोटा बेटा रोहित है।

**Answer 12.**

(i) धनीमल और मायाराम दोनों मेरठ के ही रहने वाले हैं। धनीमल एक धनी व्यक्ति हैं और अपनी लड़की सरिता का रिश्ता लेकर आये हैं। मायाराम लड़के वाले हैं और मध्यम श्रेणी के व्यक्ति हैं। धनीमल और मायाराम जी में इधर–उधर की बात हो रही थीं फिर धनीमल जी ने मायाराम जी से कहा कि हम बाहर चलें, ताकि लड़का–लड़की आपस में बात कर सकें।

(ii) अमित ने सरिता से उसकी रुचि के बारे में पूछा तो सरिता ने बताया कि उसकी रुचि कार ड्राइविंग और पेंटिंग में है। घर के काम–काज के बारे में सरिता का उत्तर था कि मुझे घर के काम नहीं आते हैं। घर में चार–चार नौकर हैं। काम करने की कोई जरूरत ही नहीं पड़ती है। वैसे मुझे घर के काम में विशेष रुचि नहीं है। अमित ने पूछा, "यदि शादी के बाद काम करना पड़ा, तो किस प्रकार करोगी?" सरिता ने उत्तर दिया, "पिताजी शादी के बाद मेरे साथ एक नौकर भेज देंगे। वही काम करेगा।" सरिता के शिक्षा के बारे में पूछने पर सरिता ने बताया कि उसने बी. ए. सेकण्ड डिवीजन से पास किया है।

(iii) अमित और सरिता की बातचीत का निष्कर्ष यह हो सकता है कि अमित को सरिता पसन्द नहीं आएगी। हर पति यह तो चाहेगा ही कि उसकी पत्नी घर में कुछ न कुछ काम जरूर करे। सरिता ने तो पहले ही स्पष्ट कर दिया कि उसे घर के काम नहीं आते। सरिता के पिता अपने पैसे के बल पर अपनी लड़की का सम्बन्ध करना चाहते हैं। सरिता को पिता के पैसे का बहुत घमंड था।

(iv) धनीमल जी को अपने पैसे का गर्व है। उन्होंने लड़की दिखाने से पहले ही पाँच लाख का दहेज देने की बात मायाराम जी से कह दी थी। आजकल अधिकतर परिवार अधिक दहेज को पसन्द करते हैं। अतः धनीमल जी को यही आशा थी कि लड़के वालों को उनकी बेटी पसन्द आ जाएगी और उसका सम्बन्ध यहाँ हो जाएगा।

**Answer 13.**

(i) जब मीनू मीरापुर के लिए जा रही थी तो उस बस में पड़ोस की मौसी और उसकी एक महिला सम्बन्धी बैठी हुई थी। वे दोनों मीनू के बारे में दोयम दर्जे की गलत बातें कर रही थीं। इन बातों को सुनकर मीनू परेशान हो उठी। पुरुषों ने अपने हितों के कारण समाज को पुरुष प्रधान बना रखा है। वह नहीं चाहता है कि स्त्री स्वतन्त्र होकर रहे। वह उसे अपने अधीन रखना चाहता है। ऐसी ही धारणा महिलाओं की भी हो गई है कि वह अपने से छोटी उम्र की लड़कियों को या बहुओं को अपने अधीन रखना चाहतीं हैं। वे उनको कोई स्वतन्त्रता नहीं देना चाहतीं और अपनी इच्छाओं को उस पर थोपना चाहतीं हैं। इसी कारण स्त्री व पुरुष में भेद किया जाता है।

(ii) लड़की को असहाय और अबला समझा जाता है। स्वतन्त्र निर्णय के लिए हतोत्साहित किया जाता है। प्राचीन विचारधारा के अनुसार उसका कार्य घर–गृहस्थी को सँभालना माना जाता है। उसके अपने निर्णय को महत्त्व नहीं दिया जाता है। दहेज व धन का लालच उसके विवाह में कठिनाइयाँ उत्पन्न करते हैं।

(iii) मीनू जब बस में बैठकर आ रही थी, तो पड़ोस की दो औरतें बस में उसके पास बैठी थीं। वे तरह–तरह की व्यंग्य भरी बातें कर रहीं थीं। अतः मीनू की समझ में यह नहीं आ रहा था कि समाज में स्त्री–पुरुष में इतना भेद क्यों रखा जाता है। यदि कोई लड़का कहीं दूसरी जगह या शहर में रहता है, तो उससे कोई कुछ नहीं कहता, लेकिन एक लड़की दूसरे स्थान पर कितना ही संयमशील क्यों न रहे फिर भी समाज उस पर उँगलियाँ उठाता है।

(iv) कचहरी का शनिवार और रविवार दो दिन का अवकाश रहता है। मीनू को मीरापुर गये कई महीने हो गये थे। अतः उसने दो दिन के अवकाश में मीरापुर जाने का निश्चय कर लिया और बस द्वारा वह मीरापुर गई।

## एकांकी संचय

**Answer 14.**

(i) उपर्युक्त कथन के वक्ता महाराणा लाखा सिसौदिया वंश के राजपूत और मेवाड़ के शासक थे। वह राजपूतों में एकता की भावना सुदृढ़ बनाने के लिए असंगठित राजपूतों को एकजुट बनाने की भावना से बूँदी राज्य को अपने राज्य में मिलाना चाहते थे। उन्हें बाप्पा रावल और वीरवर हम्मीर की वीरता तथा शौर्य पर गर्व था।

इस कथन का श्रोता अभयसिंह है। वह मेवाड़ का सेनापति एवं महाराणा लाखा का विश्वासपात्र सैनिक है। राजपूतों में एकता के भाव की वृद्धि के लिए बूँदी लेकर राज्य में मिला लेने का सन्देश वही राव हेमू के पास लेकर गया। वह उनसे अत्यन्त मधुरता से बात करता है। इससे प्रतीत होता है वह सबको समान रूप से सम्मान देने वाला विनम्र, बुद्धिमान तथा मृदुभाषी सैनिक है।

(ii) कथन के वक्ता महाराणा लाखा हैं जो चित्तौड़ के सिसौदिया वंशी शासक थे, एक बार युद्ध में बूँदी के राजपूतों द्वारा धोखे से हराये जाने के कारण उनका खून खौलता रहता है इसलिए उन्होंने प्रतिज्ञा कर ली कि जब तक वह बूँदी में ससैन्य प्रवेश कर उसे पराजित नहीं कर देंगे तब तक अन्न–जल ग्रहण नहीं करेंगे।

(iii) हाड़ा वंश का सम्बन्ध राजा राव हेमू से है। राव हेमू हाड़ा जाति के राजपूतों में से है। वह महाराणा लाखा और सिसौदिया वंश के अन्य राजपूतों के साथ प्रेम का सम्बन्ध रखना चाहते हैं। वे सबके सुख व दुःख में सहायक हैं, किन्तु किसी प्रकार की अधीनता को स्वीकार नहीं करना चाहते। वह अनुशासन में विश्वास करते हैं। महाराणा लाखा ने राव हेमू के द्वारा अधीनता स्वीकार न करने के कारण नकली बूँदी का किला बनवाकर ससैन्य प्रवेश कर उसे पराजित करने का प्रयास किया, लेकिन उस समय भी हाड़ा वीरों व उनके एक वीर सेनानी वीरसिंह ने डटकर सामना किया और मातृभूमि पर अपना बलिदान दे दिया। हाड़ा राजपूत अत्यन्त वीर होते हैं। वे अपनी मातृभूमि की रक्षा में प्राणों की परवाह नहीं करते।

(iv) 'प्राण जाये पर वचन न जाये' यह कथन मेवाड़ के शासक महाराणा लाखा के द्वारा कहा गया है। उन्होंने एक प्रतिज्ञा की थी कि जब तक मैं बूँदी को पराजित नहीं कर दूँगा अन्न–जल ग्रहण नहीं करूँगा। ऐसी प्रतिज्ञा पर अभय सिंह ने महाराणा को ऐसी अनुचित प्रतिज्ञा न करने की बात कही तब महाराणा लाखा कहते हैं कि राजपूतों की तो यह पहचान है कि वे प्राण त्याग देंगे, परन्तु वचन को नहीं त्यागेंगे। इस कथन का अभिप्राय यह है कि प्राण भले ही चले जायें, परन्तु वचन को अवश्य पूरा किया जाएगा। महाराजा दशरथ ने वचन निभाने के लिए प्राण त्याग दिये। यह राजपूतों की शान व मान है । एकांकी के सन्दर्भ में भी यह उक्ति सटीक है। महाराणा लाखा ने भी बूँदी से बदला लेने के लिए अपने वचन को बनाये रखा दूसरी तरफ, यदि हम देखें तो हाड़ा राजपूतों की सेना का सैनिक वीरसिंह भी इसका जीता जागता उदाहरण है।

**Answer 15.**

(i) दोपहर के भोजन के बाद आराम करते समय दादाजी ने जब बच्चों को पेड़ से टूट कर अलग होने वाली डालियों को आँगन की मिट्टी में दबाकर उसे पानी देते हुए देखा तब उनके मन में ऐसे विचार आये।

(ii) दादाजी का परिवार बरगद के समान विशाल है। बरगद के मजबूत तने और उसकी शाखाओं के समान दादाजी का प्रेम, उदारता तथा अनुशासन परिवार को मजबूती प्रदान कर रहा है। वे बरगद के पेड़ को महान इसलिए कह रहे हैं, क्योंकि यह वृक्ष वर्षों से उन्हें शीतलता और छाया प्रदान कर रहा है। इसकी डालियों में सैकड़ों की संख्या में पक्षियों ने अपने घोंसले बना लिए हैं।

(iii) इस वाक्य से दादाजी का यह तात्पर्य है कि जिस प्रकार पेड़ से यदि उसकी कोई डाली टूटकर अलग हो जाती है तो उसे फिर से लगाने का या पानी देने का कितना भी प्रयत्न क्यों न किया जाये उसमें पहले के समान हरियाली और सुन्दरता नहीं आ सकती। वे इस समय बरगद के पेड़ से अपने परिवार की तुलना कर रहे हैं। उनका परिवार बरगद के वृक्ष के समान पुराना है। वह नहीं चाहते कि यह परिवार छिन्न–भिन्न हो।

(iv) इस एकांकी के द्वारा लेखक यह सन्देश देता है कि परिवार समाज की एक महत्त्वपूर्ण इकाई है। संयुक्त परिवार की कुछ सीमाएँ हैं। इसमें परिवार के सभी सदस्यों में प्रेम, सहयोग, सहनशीलता, उदारता आदि गुण होने चाहिए।

**Answer 16.**

(i) प्रस्तुत कथन लेखक विनोद रस्तोगी द्वारा रचित एकांकी 'बहू की विदा' में दहेज लोभी प्रधान पात्र जीवनलाल द्वारा बहू के भाई प्रमोद से तब कहा गया था जब वह अपनी बहन की शादी के बाद पहले सावन के त्योहार पर उसे घर ले जाने आया था। जीवनलाल ने प्रमोद को अपनी बहू के समक्ष बारात की खातिर और दहेज कम देने को लेकर बहुत ताने सुनाये और कहा कि इससे उनके मान–सम्मान को ठेस पहुँची है। उनके हृदय पर गहरे घाव हुए हैं। उसके लिए उन्हें मरहम चाहिए जिस की कीमत है पाँच हजार रुपए। जब वे पाँच हजार की रकम दे देंगे तभी कमला विदा होगी।

(ii) 'मरहम' का अभिप्राय ऐसी दवाई है जिसे घाव पर लगाने से घाव ठीक हो जाता है। यहाँ 'मरहम' का प्रयोग जीवनलाल ने दहेज के पाँच हजार रुपये की कमी को पूरा करने के लिए किया है। साथ ही बारात की खातिरदारी में जो कमी रह गई थी, जीवनलाल बहू के भाई से उसे पूरा करके घावों पर मरहम लगाने की बात कह रहे हैं।

(iii) वक्ता जीवनलाल इस एकांकी के प्रमुख पात्र हैं। उनके चरित्र की विशेषताएँ इस प्रकार हैं–

**लालची :** वह एक धनी व्यापारी हैं और अपनी बहू कमला के मायके से इच्छानुसार दहेज न मिलने के कारण वह उसको मायके के लिए विदा नहीं करते। इससे यह कहा जा सकता है कि वह एक लालची किस्म के व्यक्ति हैं व दहेज लोभी हैं।

**अभिमानी :** जीवनलाल बहू के भाई प्रमोद से कहते हैं कि बारात की उचित खातिरदारी न करके उन लोगों ने उनको गहरी चोट पहुँचाई है और अगर उस चोट पर मरहम लगानी है और बहन विदा करानी है तो पाँच हजार रूपयों का प्रबंध करना होगा।

**कठोर :** कम दहेज मिलने के कारण वह अपनी बहू को पहले सावन के मौके पर मायके नहीं जाने देते। इतना ही नहीं, वे उसके भाई प्रमोद को खूब खरी–खोटी सुनाकर अपमानित भी करते हैं। वे बेटी और बहू में अंतर मानते हैं। उनकी तुलना में अपने घराने को प्रतिष्ठित बताते हैं।

**विशाल हृदयी :** उन्हें अपनी गलती का अहसास होता है जब उनकी खुद की बेटी को कम दहेज देने के कारण विदा नहीं करा पाते। वह उस वक्त भौंचक्के रह जाते हैं, उन्हें बुरा–भला कहते हैं परंतु इसके साथ ही उनका हृदय परिवर्तित हो जाता है। वे एकदम पिघल जाते हैं। उसके बाद अपनी बहू को विदा कर भूल सुधार लेते हैं।

(iv) इस एकांकी में लेखक ने समाज में व्याप्त दहेज–प्रथा जैसी बुराई को जाग्रत किया है। इस बुराई के लिए दहेज विरोधी कानून बनाया गया है, किन्तु आज के युग में भी दहेज के समर्थक माता–पिता ही नहीं बल्कि स्वयं लड़के भी इसमें पीछे नहीं हैं। यद्यपि आज के पढ़े–लिखे नवयुवक प्रेम विवाहों के माध्यम से इस प्रथा को समाप्त करने में सहायक हैं तथापि जहाँ बात माता–पिता के द्वारा आयोजित विवाह की आती है, वहाँ तो दहेज चलता ही है। इस स्थिति में जिनके पास पर्याप्त धन नहीं है उनकी गुणवती बेटियाँ भी अविवाहित बैठी रहती हैं। सरकार दहेज के लोभियों को कड़ी सजा देती है। इसके लिए महिलाओं को भी आवाज उठानी होगी। अपने पर किये गये अत्याचारों को समाज के सामने लाना होगा ताकि अत्याचारियों के विरुद्ध कार्रवाई की जा सके।

# Specimen Question Paper

## English Language [English - I]

*Maximum Marks: 80*
*Time allowed: Two hours*

### General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will **not** be allowed to write during the first **15** minutes.*
*This time is to be spent in reading the question paper.*
*The time given at the head of this Paper is the time allowed for writing the answers.*
*Attempt **all five** questions.*
*The intended marks for questions or parts of questions are given in brackets [ ].*
*You are advised to spend not more than **30** minutes in answering **Question 1** and **20** minutes in answering **Question 2.***
***Instruction for the Supervising Examiner***
*Kindly read aloud the instructions given above to all the candidates present in the Examination Hall.*

## Questions

**Question 1.**

**Select any one of the following :** **[10]**

(i) **Your grandmother has taught you a special skill. Write a letter thanking her. Explain how you will use that skill and why it is important to you.**

(ii) **There is no bus stop in your locality. Write a letter to the Municipal Commissioner of your town/city complaining about the problem. Offer possible solutions.**

**Question 2.**

**(Do not spend more than 30 minutes on this question.)**

**Write a composition (300-350 words) on any one of the following:** **[20]**

(i) Write an original short story in which a woman, her strange neighbour and a police officer form the main characters.

(ii) You teacher has asked you to form a group and work on a particular project.

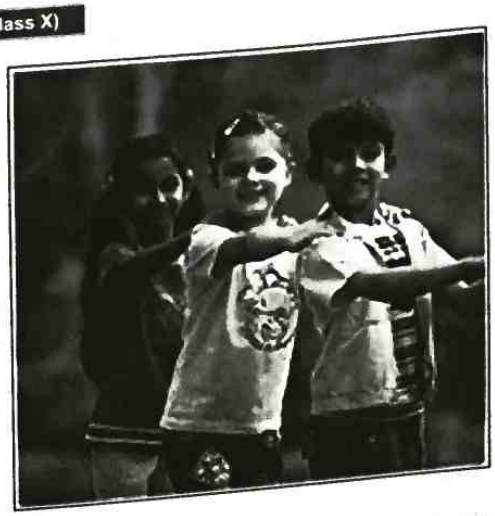
Write an account of how you worked together and what each of you learned from the experience.

(iii) *'Peer pressure is a force for good.'*

Express your views either for or against this statement.

(iv) Describe the locality in which you live. Give details of the things you see and hear as you walk around your locality. What do you especially like about the place?

(v) Study the picture given below. Write a story or a description or an account of what it suggests to you. Your composition may be about the subject of the picture or you may take suggestions from it; however, there must be a clear connection between the picture and your composition.



**Question 3.**

**(a) Write the text for a notice based on given directions.** [5]

**(b) Write an e-mail on the same content as the notice.** [5]

**(i) Your school is hosting an inter-school debate competition. Write a notice for your school informing them of the event.**

**(ii) Write an email to the principal of a neighbouring school informing him/her of the event and requesting him/her to send a team to participate.**

**(a) Your school is hosting an Inter School Story Writing Competition. Write a notice informing the students about the event.**

**(b) Write an e-mail to a famous person inviting him/her to be the Judge on the occasion.**

**Question 4.**

**Read the following passage carefully and answer the questions that follow:**

One day I found the pond occupied by several buffaloes. Their keeper, a boy a little older than me, was swimming about in the middle. Instead of climbing out on the bank, he would pull himself up on the back of one of his buffaloes, stretch his naked brown body out on the animal's glistening ***hide***, and start singing to himself.

When he saw me staring at him from across the pond, he smiled, showing gleaming white teeth in a dark face. He invited me to join him in a swim. I told him I couldn't swim, and he offered to teach me.

His name was Ramu, and he promised to give me swimming lessons every afternoon, and so it was during the afternoons—especially summer afternoons when everyone was asleep—that we usually met. Before long I was able to swim across the pond to sit with Ramu astride a ***contented*** buffalo.

Sometimes I would slip into the water. Emerging in shades of green and khaki, I would sneak into the house through the bathroom and bathe under the tap before getting into my clothes.

One afternoon Ramu and I found a small tortoise in the mud, sitting over a hole in which it had laid several eggs. I presented the tortoise to Grandfather. He had a weakness for tortoises, and was pleased with this addition to his menagerie, giving it a large tub of water all to itself, with an island of rocks in the middle. If one of the dogs bothered it too much, it would draw its head and legs into its shell and defy all its attempts at rough play.

Ramu came from a family of bonded labourers and had received no schooling. But he was well-versed in folklore and knew a great deal about birds and animals.

'Many birds are sacred,' said Ramu, as we watched a blue jay swoop down from a peepul tree and carry off a grasshopper.

Both Ramu and Grandfather were of the opinion that we should be more gentle with birds and animals and should not kill so many of them.

'It is also important that we respect them,' said Grandfather. 'We must acknowledge their rights. Birds and animals are finding it more difficult to survive, because we are trying to destroy both them and their forests.' 30

Ramu and I spent long summer afternoons at the pond. I still remember him with affection, though we never saw each other again after I left Dehra.

— *Rusty, the Boy from the Hills, Ruskin Bond*

(i) For each word given below choose the correct meaning (as used in the passage) from the options provided: [2]

1. hide (line 4)
   (a) blanket (c) undisclosed
   (b) fur (d) skin
2. contented (line 12)
   (a) cheerful (c) satisfied
   (b) lazy (d) container

(ii) Which word in the passage is the opposite of 'easy'? [1]
   (a) sneak (c) labourer
   (b) difficult (d) survive

(iii) Answer the following questions briefly in your own words.
   (a) What did Ramu like to do once he had climbed on the back of a buffalo? [2]
   (b) What offer did Ramu make to the narrator? [2]
   (c) Why do you think the narrator would bathe before entering the house? [2]
   (d) Who was the large tub of water for? [1]
   (e) How would the tortoise protect itself from the dogs? [2]

(iv) Despite the lack of schooling what did Ramu know? How, according to Ramu and Grandfather, should we treat birds and animals? Answer in not more than fifty words. [8]

**Question 5.**

(i) Fill in each of the numbered blanks with the correct form of the word given in brackets. Do not copy the passage but write in correct serial order the word or phrase appropriate to the blank space. [4]

**Example:**

(0) The sun _____ (shine) bright outside.

**Answer:** *shone*

It was hot in the railway compartment and the fan _____ (1) (not work). The elderly lady _____ (2) (use) up all her water because she had cheerfully shared it with her fellow passengers. She knew that the train _____ (3) (halt) at the station for only three minutes. Calling a shoeshine boy she said, 'Will you help me? I _____ (4) (need) a bottle of cold water and here is the money,' and she put a twenty rupee note in his hand. The boy snatched the money and _____ (5) (disappear) into the crowd on the platform. A fellow passenger _____ (6) (cannot believe) what he had witnessed. 'What _____ (7) (you do)?' He said, 'You _____ (8) (never see) your money again.' Just then the whistle was heard and the train began to move. At that moment the child appeared at the window with the water. 'Your water,' he gasped, out of breath. 'And the change.'

(ii) Fill in the blanks with appropriate words. [4]
   (a) We can cut _____ this field instead of taking the main road.
   (b) Passengers are advised _____ standing on the footboard of a moving bus.
   (c) They have been working on the project _____ years now.
   (d) Ever _____ the accident, he has been afraid of boarding buses.
   (e) It is a hard climb _____ the hill.
   (f) She turned _____ the offer because she did not like the terms and conditions.

(g) I will need to speak _____ my parents before I sign up for the school trip.

(h) The sports teacher was taken _____ when he heard how enthusiastic the team was.

(iii) Join the following sentences to make one complete sentence **without using** ***and, but*** or ***so***. Choose the correct option. [4]

1. Stay still. We cannot take your photograph otherwise.
   (a) Stay still, else we cannot take your photograph otherwise.
   (b) Stay still because we can take your photograph otherwise.
   (c) Unless you stay still we cannot take your photograph.
   (d) If you stay still we cannot take your photograph.
2. Roy's mother rang up the school office. She wanted to enquire about the swimming classes at the summer camp.
   (a) Roy's mother rang up the school office as she want to enquire about the swimming classes at the summer camp.
   (b) Roy's mother rang up the school office to enquire about the swimming classes at the summer camp.
   (c) Roy's mother has rang up the school office to enquire about the swimming classes at the summer camp.
   (d) Roy's mother rang up the school office wanting enquiry about the swimming classes at the summer camp.
3. I left my keys somewhere. Do you know where they are?
   (a) Do you know where I had left my keys?
   (b) Do you know where my keys were left behind?
   (c) Do you know where I left my keys?
   (d) Do you know where I would have left my keys?
4. The captain should not be blamed for the team's defeat. The players should not be blamed for the team's defeat.
   (a) The captain should neither be blamed nor the players should be blamed for the team's defeat.
   (b) Neither the captain nor the players should be blamed for the team's defeat.
   (c) The captain should not be blamed for the team's defeat as the players should not be blamed for the team's defeat.
   (d) The captain should not be blamed for the team's defeat but the players too should not be blamed for the team's defeat.

(iv) Choose the correct option to rewrite the following according to the instructions given after each sentence. [8]

1. The audience broke into loud applause as soon as he finished speaking.
   *(Begin with: No sooner…)*
   (a) No sooner he finished speaking that the audience broke into loud applause.
   (b) No sooner had he finish speaking when the audience broke into loud applause.
   (c) No sooner did he finish speaking than the audience broke into loud applause.
   (d) No sooner the audience broke into loud applause than he finished speaking.
2. The news surprised everyone in my family.
   *(Begin with: The news took …)*
   (a) The news took everyone in my family by surprise.
   (b) The news took everyone in my family with surprise.
   (c) The news took with surprise everyone in my family.
   (d) The news took everyone in my family for a surprise.
3. Yesterday was so much fun.
   *(End with a question tag)*
   (a) Yesterday was so much fun, would you say?
   (b) Was yesterday much fun?
   (c) Yesterday was so much fun, isn't it?
   (d) Yesterday was so much fun, wasn't it?

4. I wouldn't eat that food if I was not really hungry.
*(Use: 'unless')*
(a) Unless I eat that food I will remain really hungry.
(b) I wouldn't be really hungry unless I ate that food.
(c) I wouldn't eat that food unless I was not really hungry.
(d) I wouldn't eat that food unless I was really hungry.

5. It is so hot and humid that I cannot sleep.
*(Use: too)*
(a) It is hot and humid too sleep.
(b) It is too hot and humid to sleep.
(c) It is hot and humid too, so I cannot sleep.
(d) It is too hot and humid such that I cannot sleep.

6. I prefer going out with friends to staying alone at home.
*(Begin with: I would rather…)*
(a) I would rather go out with friends than stay alone at home.
(b) I would rather prefer going out with friends than staying alone at home.
(c) I would rather prefer to go out with friends than stay alone at home.
(d) I would rather go out with friends to staying alone at home.

7. "Why were you absent yesterday?" the teacher asked me.
*(Begin with: The teacher asked me why ...)*
(a) The teacher asked me why was I absent yesterday.
(b) The teacher asked me why I had been absent yesterday.
(c) The teacher asked me why I had been absent the day before.
(d) The teacher asked me why was I absent the day before.

8. Very few dancers are as graceful as she is.
*(Begin with: She is ...)*
(a) She is one of the most graceful dancers.
(b) She is the most graceful dancer.
(c) She is more graceful than all the other dancers.
(d) She is more graceful than a few other dancers.

## Answers

**Answer 1.**
(i) 12 C, Lakeview Apartments,
M.G. Road,
Bengaluru - 560 001
21st July 20XX

Dear Grandmother,
I would like to thank you for teaching me how to cook last summer. This special skill has brought so much joy and excitement into my life. Helping out in preparing meals for the family when my parents are busy and discovering new recipes to cook is fun. It is wonderful to watch the expression of delight on my sister's face when I place that steaming hot bowl of soup in front of her. I now make our tiffin and even bake cakes for birthdays. When I stay in a hostel later for my higher studies, I will be able to make a home-cooked meal for myself and my friends whenever I like. I also hope someday to start a small bakery of my own. Learning this skill has given me the confidence I need to do this.
I look forward to sharing photographs with you of my experiments with cooking. I hope you will enjoy them.
Yours affectionately,
Rita

(ii) 12 C, Lakeview Apartments,
46 Salem Street,
Kolkata 700 014.
21st July 20XX.
The Municipal Commissioner,
The Kolkata Municipal Corporation,
5W, Bertram Street
Kolkata - 700 087.

Madam,

We belong to Ward No. 45YY under the North-west sector of the Kolkata Municipal Corporation. Unfortunately, there is no designated bus stop either in the street we live in or even within a reasonable walking distance.

The children we have living in the area find it difficult to walk the long distances to school because of this. They often carry heavy schoolbags. Officegoers also find themselves running late and have to hire taxis which are expensive.

If you could schedule an inspection of the area and arrange for a bus stop to be constructed in our locality we would be very grateful. A shuttle service would be another alternative.

We will be grateful if you look into the matter and take the necessary steps as soon as possible.

Yours faithfully,
Rahul Sharma
(RAHUL SHARMA)

**Answer 2.**

**(i)** Miss Sprouse inhaled the fresh air as she stood on her balcony looking down upon a small lawn. It was her favourite place where she did yoga in the morning. Suddenly a glint caught her eye from the empty house to the left of hers. While she was wondering whether it was her imagination, again the light flashed spanning her house from one end to the other.

The house used to be vacant for many months. On the right side of her house, there was a warehouse, hardly used. Sandwiched in between, Miss Sprouse was anxious about her security, especially after her friends had warned about increasing crime in her locality. Her solace was that Inspector Gregory, one of her friends, could be called upon anytime, even in the middle of the night.

As she turned to go inside, she saw a man, a muffler covering the lower part of his face, amble out of the neighbouring house. He stopped at her gate, took a long look at the warehouse and went back. She was surprised to see him jot down a few words. Her antennae up, she decided to call Greg.

Fifteen minutes later, Greg was at her doorstep. He took a sweeping glance. He looked worried. Only in the morning the news of a robbery had flashed out with no trace of the offender. Miss Sprouse greeted him with tea and biscuits and revealed her anxiety. He suddenly got up whisking out a pistol from his coat pocket. He crept along the wall till he reached a small rickety gate at the back. He went through it and surprised the old man. The old man raised his hands but suddenly dashed to his left. Gregory caught him in a choke hold and the man started laughing.

Miss Sprouse gaped in surprise as the two came towards her, hand in hand. The older man extended his hand and introduced himself as Chief of Special Police. He said, "Yes, I was looking through my binoculars at the building behind you. Just for your safety, Madam. My intention was not to alarm you!"

**(ii)** School projects are interesting and thought-provoking, honing not only the creativity but also the practical aspects of execution and deployment. One such assignment we immensely enjoyed was the project our English teacher had assigned us. We had to select a short story, make a dramatic script, and put up a neatly structured play in front of our parents. My, My, what a lark! Can you imagine the thrill and excitement we felt at the prospect!

We were a group of ten. Out of all, I was the most literary-minded. So, I was entrusted with the task of choosing a story that could be easily converted into an interesting script. The choice was easy. I had

always been enamoured by 'The Young King' by Oscar Wilde. I thought it had all the ingredients to make a perfect dramatic presentation.

The first step was to call the members for a meeting. I narrated the story and all of them found it fascinating. The next step was to select the ones to work on the script. A team leader was selected who would also direct the play. We realised Suhana was the right person to helm the show. She was also given a free hand to do the casting.

The roles were allotted and we found the perfect person to be cast as the young king. Rishabh, with his royal look and the innocence of a 16-year-old, was perfect for the role. He embodied the prince in his walk and demeanour, and most importantly, he proved to be a tremendous actor.

However, the stage setting and props proved challenging as the scenes involved a palace, a cathedral, a dilapidated weavers' shed, a ship and a pearl diver, and a pit where rubies were mined. A diligent approach was required to make the scenes look authentic. Fortunately, Ravi, the son of an architect, and his artistic friend Devesh came to the rescue. Their expertise and creativity brought the scenes to life.

The whole project was the triumph of teamwork, and everyone did his best to make it a huge success. When responsibilities are entrusted and a synergy is created without any room for ego clashes, the outcome is simply marvellous. Through this project, we learned the importance of collaboration, the value of each team member's contribution, and the joy of bringing a creative vision to life.

**(iii) For the Statement**

When we hear 'peer pressure,' we often think of negative influences, like being pushed into doing something risky. But peer pressure can also be a good thing, encouraging positive changes and helping us grow. When used in the right way, peer pressure can improve our school performance, social skills, and even our health.

First, peer pressure can help us do better in school. If we are surrounded by friends who care about their grades and work hard, we're more likely to do the same. This creates a culture of learning where everyone supports each other to study, participate in class, and get good grades. For example, if all our friends are doing their homework and preparing for tests, we're likely to join in, which helps everyone succeed.

Next, peer pressure can help us develop better social skills and build good character. Positive peer influence encourages us to try new activities and meet new people. This helps us learn important life skills like teamwork, communication, and empathy. For instance, joining a volunteer group with friends can teach us the importance of giving back to the community and working together. These experiences help us grow into well-rounded and responsible individuals.

Peer pressure can also lead to healthier lifestyle choices. If our friends are into exercising and eating healthy, we're more likely to adopt these habits too. Positive peer pressure can motivate us to join a sports team, go to the gym, or choose healthier foods. This focus on wellness can improve our health and overall well-being in the long run.

Lastly, peer pressure can be a great source of support and encouragement. During tough times, having friends who understand what we're going through can be really comforting. They can offer advice and support based on their own experiences, helping us get through challenges more easily. This feeling of being understood and supported by our peers can be very empowering.

In conclusion, peer pressure, when positive, can be a strong force for good. It can motivate us to do better in school, develop social skills, make healthier choices, and provide emotional support. By focusing on the positive aspects of peer pressure, we can help each other become more motivated, capable, and caring individuals.

**Against the Statement**

Peer pressure is a strong influence that significantly impacts individuals, especially during their formative years. While some may argue that peer pressure can have positive effects, real-life experiences often paint a different picture. It is important to recognise that not all influences from peers lead to good outcomes.

When individuals of the same age group bond together, there is no guarantee that their actions will be well-meaning. Unfortunately, the thrill of being different, the desire to stand out, and the

temptation to follow the forbidden path often overshadow sound judgment. Young minds, being highly impressionable, are particularly vulnerable to these influences.

A glance at media reports reveals numerous stories of crimes committed by teenagers, often spurred on by their mischievous peers. The initial allure of impressing friends can lead to dangerous behaviours such as addiction to alcohol, drugs, and smoking. The misguided perception of gaining approval through such actions can drive individuals to engage in activities that are harmful to themselves and others. Thus, peer pressure, in these cases, stands as a negative force.

Moreover, many petty thefts, serious robberies, and even heinous crimes are frequently encouraged by ill-intentioned associates. Innocent and vulnerable individuals can be easily swayed into wrongful activities, trying to gain acceptance within the group. Their vulnerability can lead them to fall on the wrong side of the law. For example, a tragic case involved the murder of a young boy, which was the result of a misguided attempt by older boys to demand money. Influenced by their peers, they lost all sense of humanity and became criminals.

While it is true that one cannot completely avoid the influence of peer groups, making a blanket statement that peer pressure is inherently good is misleading. It is crucial to exercise judiciousness when becoming part of any group. By exercising caution and critical thinking, individuals can mitigate the negative effects of peer pressure and avoid regrettable decisions.

In conclusion, while peer pressure can sometimes lead to positive outcomes, it is essential to acknowledge its potential dangers. By promoting awareness and encouraging individuals to make informed choices, society can help mitigate the adverse impacts of peer pressure and foster a healthier environment for all.

**(iv)** I live in a charming suburban neighbourhood that offers a perfect blend of tranquillity and community. I'm fortunate to live in this haven tucked away from the dust and noise of the city centre. As I step out of my front door each morning, I am greeted by the gentle rustling of leaves from the towering palm and coconut trees that line our streets. The air is fresh, carrying the subtle scent of blooming flowers from well-tended gardens. Walking down the main avenue, I notice the neatly paved sidewalks and the occasional friendly wave from familiar faces. The sound of children's laughter fills the air as they ride their bikes or play tag in the nearby park. The chirping of birds from the trees above adds a delightful soundtrack to my walks. The streets are lined with a mix of charming old houses and modern homes, each with its unique character. Some have vibrant, flower-filled gardens, while others boast meticulously trimmed hedges and lush lawns. The neighbourhood is always buzzing with activity, whether it's the joggers taking their early morning runs, dog owners walking their pets, or families enjoying a leisurely evening walk.

As I stroll, I pass by a small, family-run bakery that always has a line out the door. The aroma of freshly baked bread and pastries is irresistible, drawing people from all around. A little further down is a cozy café, where locals gather for their morning coffee and a chat, creating a warm and welcoming atmosphere.

What I especially love about my locality is the strong sense of community. Neighbours know each other by name and look out for one another. We have different community events which bring everyone together and foster a spirit of belongingness and friendship. In the evenings, as the sun sets, the streetlights cast a warm glow, and the neighbourhood takes on a peaceful, almost magical quality. The salubrious surroundings tucked in the corner of the city are undoubtedly a charming fairyland where one can indulge in one's most fanciful dreams and forget for a while the nitty gritty of busy city life. My locality is a place where the simple joys of life are cherished, and the bonds of community are strong. It's a place that feels like home in every sense.

**(v)** Childhood is a time of innocence and playfulness. Children make friends instinctively. They do not bother about class, creed or colour. They have only one creed, that is humanity and oneness. Regardless of their mother tongue, upbringing, or family ethos; their primary goal is to play and derive maximum pleasure from it.

Anu, Shree, and Shaji are classmates who live in the same apartment building. During holidays, they plan to spend as much time together as possible. Their favorite pastime is playing trains. Each child takes on the role of a train car, forming a line and heading to the car park, which they imagine to be a railway station. On certain days, other children join in, creating a long train that winds, chugs, and comes to a shuddering stop. The watchman acts as the guard, while the drivers of parked cars become

vendors and passersby. Watching their game brings back nostalgic memories of station masters flagging off and steam engines hooting amidst columns of smoke.

One day, Anu suddenly stopped. She had a catch in her leg and couldn't move. It turned out to be a ligament tear, immobilising her leg. Her friends immediately rallied around her, offering moral support. Not a single child continued the train game. Instead, they all sat down to play passing the ball, ensuring Anu won the game.

Adults can learn a lot from children because they are sensible and sensitive, qualities that are often lost in the gritty race of life. Their egocentric thoughts and indifference to the suffering of others dehumanise them. Highly strung, they forget the small pleasures of give and take. When someone is indisposed, others often remain blissfully unaware, continuing at their own pace without slowing down or offering help. Their natural kindness and willingness to support one another are qualities we should strive to inculcate within us, fostering a more compassionate and connected society.

The children, on the other hand, are blessed with fellow feelings, empathy and close bonds of friendship. Let the adults take a leaf out of their small world where only friendship thrives and humanness rules.

**Answer 3.**

**(i) (a)**

War of Words (*2 – 3 words*)
**Bright High Inter-School Debate Competition**
on 25 July 2025 (*10 – 14 days from examination date*)
from 9.00 a.m. to 12 noon
at **Subhash Hall, Bright High School**
Pupils from Classes IX and X who wish to participate are to give
their names to Mrs N. Sharma on or before 18 July 2025
(*2-3 days from exam date*)

**(b)** principaldps456@gmail.com

Team for Bright High Inter School Debate Competition

Madam,

We would like to invite you to send a team to participate in 'War of Words', an inter-school debate competition being organized by our school as part of its 50th anniversary celebration this year.

It will be held on 25 July 2025 from 9.00 a.m. till 12 noon in the Subhash Hall of Bright High School.

Two member teams from Classes IX and X will participate in the event.

We request you to send us the registration form as confirmation. We look forward to hosting the team from your school at the competition.

Thank you.

Yours faithfully,

Ashish Roy (Debating Secretary)

**(ii) (a)**

Telling Tales
**Annual Inter School Story Writing Competition**
on 25 July 2025
from 10.00 a.m. — 3.00 p.m.
at **Blossom Hall, Silver Pine School**
All pupils of Classes 9 to 12 who wish to register should give their names to
their Class teachers on or before 18 July 2025.

**Note:** Creative title should not be longer than 3 words. It should not contain any words from the topic like 'story' or 'writing'.

**Event:** The competition should be specified by ensuring a word or two (like 'Annual') is added to the event as named in the question.

**Date:** Accept a single date 10-14 days from the date of the exam or, in other words, the date the notice is being put up.

**Time:** Accept a range as shown.

**Venue:** smaller place (for example a hall) to larger (for example school name)

**Participation:** Should mention 3 things – which classes or specific target audience, person with whom to register, date by which to register (2-3 days from date of exam only)

**(b)** ruskinbond123@gmail.com

Invitation to judge Annual Inter School Story Writing Competition

Dear Sir,

We would like to invite you to judge 'Telling Tales' our Annual Inter School Story Writing Competition.

It will be held on 25 July 2025 from 10.00 a.m. to 3.00 p.m. in the Blossom Hall of Silver Pine School.

We would be honoured if you accept the invitation.

Thank you.

Yours faithfully,

Ashish Roy, (Head Boy)

**Note:** Receiver's address should be specific and not merely have words like 'famous author' or 'principal'.

Subject may have the 2nd or event line of the notice quoted verbatim or add words like 'Invitation to judge' before the event

Salutation to follow formal letter rule (Sir, OR Madam, preferably)

Opening sentence of mail should carry the invitation with creative title and event specified for good measure.

Second paragraph should carry date, time, venue details to match notice.

Last paragraph may have a polite closing sentence, formal in tone, perhaps asking for a line in confirmation etc.

Subscription should follow formal letter rule (preferably Yours faithfully,)

**Answer 4.**

**(i)** 1. (d) skin

2. (c) satisfied

**(ii)** (b) difficult

**(iii)** (a) Once he had climbed on the back of a buffalo, Ramu loved to stretch his naked brown body out on the animal's shining back and sing to himself.

(b) When the narrator expressed his inability to swim, Ramu offered to give him swimming lessons every afternoon.

(c) At times the narrator would slip into the water and emerge out covered by green algae or other vegetation and brown mud resembling khaki colour. He would sneak into the bathroom to escape from the notice of his parents and face them only after bathing and looking clean to avoid being scolded.

(d) The large tub of water was for a tortoise that the narrator and Ramu had found. The narrator's grandfather particularly liked tortoises, so he provided it with a big tub filled with water and a pile of rocks in the middle.

(e) If the tortoise was disturbed by dogs, it would withdraw its head and limbs into its shell and discourage all attempts at rough play.

**(iv)** Ramu was well-versed in folklore and knew much about birds and animals, many of which he considered sacred. According to him and grandfather, all creatures should be treated with kindness. Humans should not indiscriminately kill them and destroy their habitats. It is important to respect their rights to survive. **[50 words]**

**Answer 5.**

**(i)** (1) was not working (2) had used (3) halted/would halt (4) need

(5) disappeared (6) could not believe (7) are you doing (8) will never see

(ii) (a) across (b) against (c) for (d) since
(e) up (f) down (g) to (h) aback

(iii) (1) (c) Unless you stay still we cannot take your photograph.
(2) (b) Roy's mother rang up the school office to enquire about the swimming classes at the summer camp.
(3) (c) Do you know where I left my keys?
(4) (b) Neither the captain nor the players should be blamed for the team's defeat.

(iv) (1) (c) No sooner did he finish speaking than the audience broke into loud applause.
(2) (a) The news took everyone in my family by surprise.
(3) (d) Yesterday was so much fun, wasn't it?
(4) (d) I wouldn't eat that food unless I was really hungry.
(5) (b) It is too hot and humid to sleep.
(6) (a) I would rather go out with friends than stay alone at home.
(7) (c) The teacher asked me why I was absent the day before.
(8) (a) She is one of the most graceful dancers.

□□

# 1 Sample Paper

## English Language (English-I)

### Questions

**Question 1.**

**Select any one of the following :**

(i) "A friend in need is a friend indeed." Write a letter to your friend thanking for all the help provided to you during a difficult situation.

(ii) You have accidentally left your suitcase behind when you got off the train. You only realised it after the train left the platform. Write a letter to the Station Master reporting your loss and request that the suitcase be located and kept till you claim it.

**Question 2.**

**Write a composition (300-350 words) on any one of the following.**

(i) Write an original short story titled 'We regret when it's too late to repent'.

(ii) You have recently interviewed a famous personality. Narrate the whole experience.

(iii) "School days are the happiest days of our lives." Express your views either for or against this statement.

(iv) You had been waiting outside the examination hall. Describe what you saw and the sounds you heard when you arrived at the place. What were your feelings? Describe how the scene changed once you entered the hall and the examination started.

(v) Study the picture given below. Write a story or a description or an account of what it suggests to you. Your composition may be about the subject of the picture or you may take suggestions from it.

**Question 3.**

**(a) Write the text for a notice based on given directions.**

**(b) Write an e-mail on the same content as the notice.**

(i) You are the Cultural Secretary of your school. You and your class are planning to organise a cultural programme in your school to celebrate Teacher's Day. Write a notice to be put up in the school notice board, giving details of the programme to create an awareness of the event.

(ii) Write an e-mail to the principal of your school seeking permission to organise a cultural programme.

**Question 4.**

**Read the following passage carefully and answer the questions that follow:**

When Farmer Oak smiled, the corners of his mouth spread till they were within an unimportant distance of his ears, his eyes were reduced to chinks, and diverging wrinkles appeared round them, extending upon his countenance like the rays in a rudimentary sketch of the rising sun. His Christian name was Gabriel, and on working days he was a young man of sound judgment, easy motions, proper dress, and general good character. On Sundays he was a man of misty views, rather given to **postponing**, and hampered by his best clothes and umbrella: upon the whole, one who felt himself to occupy morally that vast middle space of Laodicean neutrality which lay between the Communion people of the parish and the drunken section,—that is, he went to church, but yawned privately by the time the congregation reached the Nicene creed, and thought of what there would be for dinner when he meant to be listening to the sermon. Or, to state his character as it stood in the scale of public opinion, when his friends and critics were in tantrums, he was considered rather a bad man; when they were pleased, he was rather a good man; when they were neither, he was a man whose moral colour was a kind of pepper and salt mixture. 10

Since he lived six times as many working days as Sundays, Oak's appearance in his old clothes was most peculiarly his own—the mental picture formed by his neighbours in imagining him being always dressed in that way. He wore a low-crowned felt hat, spread out at the base by tight jamming upon the head for security in high winds, and a coat like Dr. Johnson's, for his lower extremities being encased in ordinary leather leggings and boots emphatically large, affording to each foot a roomy apartment so constructed that any wearer might stand in a river all day long and know nothing of damp—their maker being a conscientious man who endeavoured to **compensate** for any weakness in his cut by unstinted dimension and solidity. 20

Mr. Oak carried about him, by way of watch, what may be called a small silver clock; in other words, it was a watch as to shape and intention, and a small clock as to size. This instrument being several years older than Oak's grandfather had the peculiarity of going either too fast or not at all. The smaller of its hands, too, occasionally slipped round on the pivot, and thus, though the minutes were told with precision, nobody could be quite certain of the hour they belonged to. The stopping peculiarity of his watch Oak remedied by thumps and shakes, and he escaped any evil consequences from the other two defects by constant comparisons with and observations of the sun and stars, and by pressing his face close to the glass of his neighbours' windows, till he could discern the hour marked by the green-faced timekeepers within. It may be mentioned that Oak's fob being difficult of access, by reason of its somewhat high situation in the waistband of his trousers (which also lay at a remote height under his waistcoat), the watch was as a necessity pulled out by throwing the body to one side, compressing the mouth and face to a mere mass of ruddy flesh on account of the exertion, and drawing up the watch by its chain, like a bucket from a well. 30

*[From 'Far From the Madding Crowd', by Thomas Hardy]*

(i) For each word given below choose the correct meaning (as used in the passage) from the options provided:

1. postponing *(line 6)*
   (a) cancelling (c) recreating
   (b) suspending (d) inactivating
2. compensate *(line 22)*
   (a) to make for something (c) pay off
   (b) company given benefits (d) to borrow

(ii) Which word in the passage means the opposite of the word "Compensate"?
   (a) Repay (c) Extort
   (b) Receive (d) Abandon

(iii) Answer the following questions briefly in your own words.
   (a) Describe how the eyes of Farmer Oak have been explained in the passage.

(b) Why is Gabriel placed in the Laodicean neutrality according to the passage?

(c) What was the opinion of Farmer Oak's friends and his critics when they were neither pleased nor unhappy with him?

(d) What kind of a man was Gabriel on working days?

(e) Why was Oak's fob difficult to access?

(iv) In not more than 50 words describe in brief the clock that Mr. Oak carried with him?

**Question 5.**

(i) Fill in the blanks with the correct forms of the words provided after the passage:

**Example:**

(0) I _____ (sleep) when the plane crashed.

**Answer:** was sleeping.

'No for God's sake don't kill him. I agree to everything you say.' The scream of the girl (1) _____ (shake) the corner, where she was cringing with fear (2) _____ (wear) one shoe on her feet. I was (3) _____ (lay) on the floor, a little distance away (4) _____ (watch) helplessly this heartrending spectacle. I (5) _____ (feel) the bones of his skull cracking under the impact of heavy iron rod. A strange sound (6) _____ (escape) from his mouth and he fell on the floor. The mouth of the girl (7) _____ (remain) open for a delirious scream. Her thin, stick like arms (8) _____ (spread) out in space.

(ii) Fill in the blanks with appropriate words.

(a) He sat _____ the tree and told me his story.

(b) He didn't come _____ his identity proof at the examination hall.

(c) John came back home _____ evening.

(d) The church is not far away _____ his house.

(e) The soldiers passed _____.

(f) He purchased it _____ hundred rupees.

(g) Do not cry _____ spilt milk.

(h) They live _____ the same floor.

(iii) Choose the correct option to join the following sentences without using 'and', 'but' or 'so':

1. The cat is far off. The mice will play.
   (a) When the cat is far off, the mice will play.
   (b) The mice would play when it finds cat far off.
   (c) The cat is far off then mice will play.
   (d) The cat is far off and the mice will play.
2. I have been ill. I returned from Delhi.
   (a) I have been ill when I returned from Delhi.
   (b) I have been ill since I returned from Delhi.
   (c) I returned from Delhi since then I have been ill.
   (d) I have been ill when I returned from Delhi.
3. Where is the book I gave you? Is it lost?
   (a) Where is the lost book which I gave you?
   (b) Is the book lost, that I gave you?
   (c) Is the book which I gave you, lost?
   (d) Have I lost the book that you gave me?
4. Why he told a lie? The reason is not known.
   (a) The reason he told a lie is not known.
   (b) The reason why he told a lie is not known.
   (c) The reason for which he told a lie is not known.
   (d) The reason can never be known why he told a lie.

(iv) Read each sentence with its instructions. Choose the correct answer from the options provided beneath each:

1 He didn't eat his breakfast as he was getting very late.
*(Use 'so' ...)*
(a) He was getting so late that he couldn't eat his breakfast.
(b) He was getting so late that he didn't eat his breakfast.
(c) He didn't eat his breakfast so he was getting very late.
(d) He didn't eat his breakfast so he got late.

2. As soon as the teacher sat, he called the names of the selected students.
*(Begin: No sooner...)*
(a) No sooner did the teacher sit than he called the names of the selected students.
(b) No sooner does the teacher sit than he called the names of the selected students.
(c) No sooner did the teacher sit than he calls the names of the selected students.
(d) No sooner the teacher sat he called the names of the student.

3. He said to her, "Please come with me to the cafeteria".
*(Begin: He requested her...)*
(a) He request her to come to the cafeteria with him.
(b) He requested to her to come to the cafeteria with him.
(c) He requested her to come with him to the cafeteria.
(d) He requested her to come to the cafeteria together.

4. He reached the station on time. He would have lost the train.
*(Begin: Had...)*
(a) Had he not reached the station on time, he would have lost the train.
(b) Had he reached the station on time, he would have not lost the train.
(c) Had he would have lost the train if not reached on time.
(d) Had he reached on time he would have lost the train.

5. Rohit offered prayers in the temple before going abroad.
*(Begin: Rohit did not ...)*
(a) Rohit did not offer prayers in the temple before going abroad.
(b) Rohit did not go to temple to offer prayers before going abroad.
(c) Rohit did not go abroad without offering prayers in the temple.
(d) Rohit did not go to pray without going abroad.

6. The earthquake had caused lot of destruction before the people were rescued.
*(Begin: The people...)*
(a) The people were rescued after the earthquake had caused lot of destruction.
(b) The people were rescued before the earthquake had caused lot of destruction.
(c) The people were rescued while the earthquake had caused lot of destruction.
(d) The people were rescued before the earthquake could cause destruction.

7. Stay away from the sea shore, you may drown.
*(Use: lest ...)*
(a) Stay away from the sea shore lest you may not drown.
(b) Stay away from the sea shore lest you should drown.
(c) Stay away, from the sea shore lest you may not drown.
(d) Stay away from the sea lest before you drown.

8. I would buy a car. I get a good job.
*(Use 'If': ...)*
(a) If I get a good job, I would buy a car.
(b) If I get a good job then only I would buy a car.
(c) If I would buy a car, I get a good job.
(d) If I would get a job, I would buy a car.

□□

# 2 Sample Paper

## English Language (English-I) [Unsolved]

### Questions

**Question 1.**

**Select any one of the following :**

(i) Write a letter to your friend congratulating him/her on his/her outstanding result in the Board exam.

(ii) Write a letter to the Editor of a newspaper drawing attention to the constant bandhs and protests that are disrupting the daily life in your city.

**Question 2.**

**Write a composition (300-350 words) on any one of the following:**

(i) Write an original short story about a mysterious package without any name or address that the protagonist of the story found at her doorstep.

(ii) Have you ever faced a fear that seemed insurmountable? Explain what helped you to overcome it, and the positive impact it had. What did you learn from the experience?

(iii) Grading system is an effective way to measure student achievement. Express your views either for or against this statement.

(iv) Describe in detail how the coronavirus pandemic has changed our lives forever and what are the lessons we have learnt from it.

(v) Study the picture given below. Write a story or a description or an account of what it suggests to you. Your composition may be about the subject of the picture or you may take suggestions from it.

**Question 3.**

**(a) Write the text for a notice based on given directions.**

**(b) Write an e-mail on the same content as the notice.**

(i) You are the Head boy/girl of your school. Your school is organising remedial classes for students of classes IX-XII before school hours. Write a notice for the school notice board informing students about this programme.

(ii) You are the Principal of the school. Write an e-mail to parents of the students of classes IX-XII about the same.

**Question 4.**

**Read the following passage carefully and answer the questions that follow:**

We have been brought up to fear insects. We regard them as unnecessary creatures that do more harm than good. Man continuously wages war on them, for they contaminate his food, carry diseases or devour his crops. They sting or bite without provocation, they fly uninvited into our rooms on summer nights or beat against our lighted windows. We live in dread not only of unpleasant insects like spiders or wasps but of quite harmless ones like moths. Reading about them increases our understanding without dispelling our fears. Knowing that the industrious ants live in a highly organised society does not prevent us from being filled with **revulsion** when we find hordes of them crawling over a carefully prepared picnic lunch. 7

No matter how much we like honey, or how much we have read of the uncanny sense of direction that bees possess, we have a horror of being stung. Most of our fears are unreasonable, but they are difficult to erase. At the same time, however, insects are strangely fascinating. We enjoy reading about them, especially when we find that like the Praying Mantis, they lead perfectly horrible lives. We enjoy staring at them, as they go about their business, unaware, we hope, of our presence. Who has not stood in awe at the sight of a spider pouncing on a fly, or a column of ants triumphantly carrying home an enormous dead beetle?

Last summer, I spent many days in the garden watching thousands of ants crawling up the trunk of my prized peach tree. The tree has grown against a warm wall on a sheltered side of the house. I am especially proud of it, not only because it has survived several severe winters, but because it occasionally produces luscious peaches. During the summer I noticed that the leaves of the tree had begun to wither. Clusters of tiny insects called Aphids were to be found on the underside of the leaves. They were visited by a large column of ants which obtained a sort of honey from them. I immediately embarked on an experiment which, even though it failed to get rid of the ants, kept me fascinated for twenty-four hours. I bound the base of the tree with sticky tape, making it impossible for the ants to reach the Aphids. The tape was so sticky that they did not dare to cross it. For a long time, I watched them scurrying around the base of the tree in bewilderment. I even went out at midnight with a torch and noted with satisfaction and surprise that the ants were still swarming around the sticky tape without being able to do anything about it. I got up early the next morning to find the ants climbing up the wall of the house and then onto the leaves of the tree. I realised sadly that I had been completely defeated by their ingenuity. The ants had been quick to find an answer to my thoroughly unscientific methods. 29

(i) For each word given below, choose the correct meaning (as used in the passage) from the options provided:

(1) revulsion (line 7)

(a) attraction
(b) disgust
(c) curiosity
(d) indifference

(2) ingenuity (line 29)

(a) clever
(b) foolish
(c) lazy
(d) simple

(ii) Which word in the passage is the opposite of "irrational"?

(a) revulsion
(b) ingenious
(c) reasonable
(d) bewilderment

(iii) Answer the following questions briefly in your own words:

(a) Why do people wage war on insects?
(b) How do insects invade our personal spaces during summer nights?
(c) What realisation did the narrator come to after the experiment with the sticky tape?
(d) What do ants obtain from aphids?
(e) Describe the experiment conducted with the sticky tape.

(iv) Despite the revulsion towards insects, what makes them fascinating? How did the narrator's experiment with the sticky tape fail? Answer in not more than fifty words.

**Question 5.**

(i) Fill in the blanks with the correct forms of the words provided after the passage:

**Example:**

(0) beginning

Alice was (0) _____ (begin) to get very tired of (1) _____ (sit) by her sister on the bank and of having nothing to do : once or twice she had (2) _____ (peep) into the book her sister was reading, but it (3) _____ (have) no pictures or conversations in it, "and what is the use of a book," (4) _____ (think) Alice, "without pictures or conversations ?" Alice wondered whether the pleasure of (5) _____ (make) a daisy-chain would be worth the trouble of getting up and picking the daisies, when suddenly a White Rabbit with pink eyes (6) _____ (run) close by her. Alice did not think this was very remarkable, until the Rabbit actually (7) _____ (take) a watch out of its waistcoat-pocket, and (8) _____ (look) at it, and then hurried on.

(ii) **Choose the correct option to fill in the blanks:**

(a) The river flowed _____ the banks.

(b) He opened the can _____ an opener.

(c) She filled the jug _____ water.

(d) He was patient _____ being very annoyed.

(e) The teacher finished his class _____ making corrections in the notebooks.

(f) The doctor _____ examined the medical reports.

(g) Always aim _____ high.

(h) The deaf man lost his hearing _____ an accident.

(iii) Choose the correct option to join the following sentences without using 'and', 'but' or 'so':

1. The cat ran out of the door. The dog chased the cat.
   (a) Since the cat ran out of the door, the dog chased it.
   (b) The cat ran out of the door because it was chased by the dog.
   (c) Having been chased by the cat, the dog ran out of the door.
   (d) The cat ran out of the door, the dog chased it.
2. Smitha is usually calm and peaceful. She doesn't lose her temper easily.
   (a) She loses her temper easily, therefore, Smitha is calm and peaceful.
   (b) Smitha is usually calm and peaceful or she loses her temper easily.
   (c) Since Smitha is usually calm and peaceful, she doesn't lose her temper easily.
   (d) Being calm and peaceful Smitha never lost her temper.
3. She did such intricate embroidery. Her eyesight was affected.
   (a) Since she did such intricate embroidery, her eyesight was affected.
   (b) For she did such intricate embroidery her eyesight was affected.
   (c) Her intricate embroidery resulted in her bad eyesight.
   (d) She did such intricate embroidery so her eyesight was affected.
4. The apples were delicious. The children relished them.
   (a) The children having relished the apples they were delicious.
   (b) Since the children relished the apples were delicious.
   (c) The children relished the apples as they were delicious.
   (d) The children did not relish the delicious apples.

(iv) Read each sentence with its instructions. Choose the correct answer from the options provided beneath each:

1. It was a hot day. Everyone bought ice-cream.
   *(use: being)*
   (a) As everyone bought ice cream, it was a hot day.
   (b) It being a hot day everyone bought ice-cream.
   (c) Being a day that was cold, everyone bought ice-cream.
   (d) Even being a hot day, everyone did not buy ice-cream.

2. He suffered from unemployment. He has health problems.
*(use: owing)*
(a) Owing to suffering he suffered health problems.
(b) Owing to health problems, he suffered from unemployment.
(c) On account of his health problems he faced unemployment.
(d) Owing to unemployment he has to suffer from health problems.
3. It was raining heavily. People opened their umbrellas.
*(use: since)*
(a) Since it was raining heavily, people opened their umbrellas.
(b) Since people opened their umbrellas, it was raining heavily.
(c) Since the umbrellas were opened by the people, it was raining heavily.
(d) Since people were opening their umbrellas therefore it rained heavily.
4. She missed the bus. The dog bit her.
*(use: not only)*
(a) Not only did she miss the bus, but also the dog bit her.
(b) The dog bit her, not only did she miss the bus.
(c) The bus was missed, not only did the dog bite her.
(d) Not only the dog bit her and she missed the bus.
5. The fever left him. He got up and worked.
*(use: No sooner-than)*
(a) As soon as he got up and worked, the fever left him.
(b) No sooner had he got up and worked than the fever left him.
(c) No sooner had the fever left him than he got up and worked.
(d) The fever left him when no sooner he had got up and worked.
6. He should have studied hard. He would have passed his exams.
*(use: if only)*
(a) If only he had passed his exams, he would have studied hard.
(b) If only he had studied hard, he would have passed his exams.
(c) Had he only studied hard, he would not have failed.
(d) If only he passed his exams he would have studied hard.
7. He took part in sports. He had an athletic physique.
*(use: on account of)*
(a) On account of sports, he also had an athletic physique.
(b) On account of his athletic physique, he took part in sports.
(c) On account of his physique, he loved sports.
(d) On account of sports he participated an athletic physique.
8. She was considered a dare devil. She loved adventure sports.
*(use: as a result)*
(a) As a result of loving adventure sports, she was considered a dare devil.
(b) As she loved adventure sports, she was a dare devil.
(c) As a result of loving adventure sports, she was not a dare devil.
(d) She loved adventure sports as a result she was a dare devil.

□□

# 3 Sample Paper

## English Language (English-I) [Unsolved]

### Questions

**Question 1.**

**Select any one of the following :**

(i) You, along with some of your friends, have visited a place of tourist interest recently. Write a letter to your uncle about the visit, describing the attractions of the place and its impact on you.

(ii) Write a letter to the editor of a national daily about the increasing level of noise pollution in the world. Suggest a few ways in which the menace of noise pollution can be controlled.

**Question 2.**

**Write a composition (300-350 words) on any one of the following.**

(i) Write an original short story entitled 'Man is often ruined by his pride'.

(ii) Have you ever forgiven someone when it was hard to do so? Explain what helped you to forgive them, and the positive impact it had. What did you learn from the experience?

(iii) *'Competition hampers the overall development of students.'* Express your views either for or against this statement.

(iv) School is a temple of learning. But this belief is fast changing now. Give your views on the statement.

(v) Study the picture given below. Write a story or a description or an account of what it suggests to you. Your composition may be about the subject of the picture or you may take suggestions from it.

**Question 3.**

***(a) Write the text for a notice based on given directions.***

***(b) Write an e-mail on the same content as the notice.***

*(i)* You are Priya/Prem, the Cultural Secretary of S.K.M. Public School, Bengaluru. You have been asked to inform the students about a forthcoming Inter-school Dramatics Competition.

*(ii)* Write an e-mail addressing The Principal of your neighbouring school inviting him/her to be the Chief Guest of the competition.

**Question 4.**

***Read the following passage carefully and answer the questions that follow:***

The Battle of Chancellorsville was one of the most famous battles fought during the turbulent years of the American Civil War. This battle was fought between the Union Army of Potomac and the Confederate Army of Northern Virginia. It took place in Virginia in the spring of 1863. For days at stretch, the two armies had been staked out on opposite banks of a narrow river. The

Confederate troops were led by perhaps the most **revered** military tactician in American history, General Robert E. Lee. The Union soldiers were led by "Fighting" Joe Hooker. 5

In appearance, personality, and lifestyle, the two commanders were nearly perfect opposites. Robert Lee, the Commander of the Confederate Army, was an older man in poor health with a gray beard, and somber, measured demeanor. Quite unlike him, Joe Hooker was a blond, strapping young man whose vanity over his appearance was but one aspect of his egotism. While Lee was devout and principled, Hooker was known for his rollicking enjoyment of both women and whiskey. 10

Despite the fact that the Confederacy had won the last four major battles and the Union soldiers were famished, exhausted, and demoralised, Hooker proclaimed, "My plans are perfect. And when I start to carry them out, may God have mercy on Bobby Lee, for I shall have none." Why, aside from a propensity for narcissism, was Hooker so confident? Hooker had used spies, analysts, and even hot air balloons to compile a vast amount of intelligence about Lee's army. He had discerned, for example, that Lee had only 61,000 men to Hooker's own 134,000. 15

Buoyed by his superior numbers, Hooker **covertly** moved 70,000 of his men fifteen miles up and across the river, and then ordered them to sneak back down to position themselves behind Lee's army. In effect, Hooker had cut off the Confederate soldiers in front and behind. They were trapped. Satisfied with his advantage, Hooker became convinced that Lee's only option was to retreat to Richmond, thus assuring a Union victory. 20

Yet Lee, despite his disadvantages of both numbers and position, did not retreat. Instead, he moved his troops into position to attack. Union soldiers who tried to warn Hooker that Lee was on the offensive were dismissed as cowards. Having become convinced that Lee had no choice but to retreat, Hooker began to ignore reality. When Lee's army attacked the Union soldiers at 5:00 p.m., they were eating supper, completely unprepared for battle. They abandoned their rifles and fled as Lee's troops came shrieking out of the brush, bayonets drawn. Against all odds, Lee won the Battle of Chancellorsville, and Hooker's forces withdrew in defeat. 25 30

(i) For each word given below choose the correct meaning (as used in the passage) from the options provided:

(1) revered (line 5)
(a) feared
(b) admired
(c) unknown
(d) despised

(2) covertly (line 19)
(a) secretly
(b) openly
(c) loudly
(d) carefully

(ii) Which word in the passage is the opposite of "confident"?
(a) defeated
(b) demoralised
(c) retreated
(d) exhausted

(iii) Answer the following questions briefly in your own words.
(a) When and where did the Battle of Chancellorsville take place ? Between whom was this battle fought ?
(b) Why did Hooker lose the battle?
(c) Draw a contrast between the personalities of Lee and Hooker.
(d) Why was Hooker confident of victory against Lee?
(e) What was Lee's plan to win the battle?

(iv) In not more than 50 words write how Hooker planned to defeat Lee.

**Question 5.**

(i) Fill in the blanks with the correct forms of the words provided after the passage:

**Example:**

I _____ (eat) the cake by the time you came.

**Answer:** had eaten

By the time she was three, Matilda had (1) _____ (teach) herself to read by (2) _____ (study) newspapers and magazines that (3) _____ (lie) around the house. At the age of four, she could

(4) _____ (read) fast and well and she naturally began (5) _____ (hanker) after books. The only book in the whole of this enlightened household was something called Easy Cooking which (6) _____ (be) her mother's favourite. When she had read this from cover to cover and had (7) _____ (learn) all the recipes by heart, she (8) _____ (decide) she wanted something more interesting.

(ii) Fill in the blanks with appropriate words.

(a) You cannot expect respect from him because he has lost his sense _____ shame.

(b) We have the habit of exulting _____ the discomfiture of our rivals.

(c) On the eve of the Prime Minister's visit, Civil Lines area has been cordoned _____.

(d) The Hindus believe in many rituals to ward _____ the evils.

(e) The robbers not only injured the landlord but also decamped _____ body.

(f) At the sight of his former wife, he flew _____ a rage.

(g) Dishonesty is always detrimental _____ progress in life.

(h) The rich are not inured _____ manual labour.

(iii) Choose the correct option to join the following sentences without using 'and', 'but' or 'so':

1. Rohan does not like to play cricket. He does not like to play hockey either.
   (a) Neither does Rohan like to play cricket, nor does he like to play hockey.
   (b) Rohan does not like to play cricket since he does not like to play hockey.
   (c) Rohan does not like to play cricket. He also not like to play cricket.
   (d) Either Rohan does not like to play cricket or he does not like to play hockey.
2. Sania pushed as hard as she could. The door would not open.
   (a) Sania pushed as hard as she could as the door would not open.
   (b) Although Sania pushed as hard as she could, the door would not open.
   (c) Sania pushed as hard as she could because the door would not open.
   (d) If Sania pushed hard the door would have opened.
3. The school bus drove through the gate. The clock was striking eight at that moment.
   (a) The school bus drove through the gate when the clock was striking eight at that moment.
   (b) The school bus drove through the gate as the clock was striking eight at that moment.
   (c) When the school bus drove through the gate, the clock was striking eight.
   (d) The clock was strike the gate while the school bus drove through the gate.
4. We reached the port. The storm came on.
   (a) We reached the port so the storm came on.
   (b) We reached the port while the storm came on.
   (c) As soon as we reached the port, the storm came on.
   (d) The storm did not come by the time we reached the port.

(iv) Read each sentence with its instructions. Choose the correct answer from the options provided beneath each:

1. He is so old that he cannot remember events of the past.
   *(Begin: He is too ...)*
   (a) He is too old to remember events of the past.
   (b) He is too old that he cannot remember events of the past.
   (c) He is too old that he remember events of the past.
   (d) He is too old for remembering the events of the past.
2. As soon as the bell rings, the children run out to play.
   *(Begin: No sooner...)*
   (a) No sooner did the bell rang than the children run out to play.
   (b) No sooner does the bell ring than the children run out to play.
   (c) No sooner does the bell rings than the children run out to play.
   (d) No sooner did the ball rang than the children were running out to play.

3. No other planet is as big as Jupiter.
*(Begin: Jupiter....)*
(a) Jupiter is bigger than many other planets.
(b) Jupiter is very big as a planet.
(c) Jupiter is the biggest planet.
(d) Jupiter is the most biggest planet.

4. She was so tired that she could not stand.
*(Begin: She was too.....)*
(a) She was too tired to stand.
(b) She was too tired that she could not stand.
(c) She was too tired and could not stand.
(d) She was too tired and so she could not stand.

5. I have found my mobile phone that I had lost.
*(Begin: I had lost....)*
(a) I had lost my mobile phone that I have found.
(b) I had lost my mobile phone but I have found it.
(c) I had lost my mobile phone that I have found it.
(d) I had lost my mobile phone which I have found it.

6. You are too young to understand the ways of the world.
*(Begin: You are so)*
(a) You are so young that you cannot understand the ways of the world.
(b) You are so young to understand the ways of the world.
(c) You are so young that understand the ways of the world.
(d) You are so young, you need to grow up to understand the ways of the world.

7. He is faster than me.
*(Begin: I am....)*
(a) I am not as fast as him.
(b) I am as fast as him.
(c) I am faster than him.
(d) I am not slower than him.

8. He cleaned the house and washed the dishes.
*(Begin: Not only ...)*
(a) Not only did he cleaned the house but he also washed the dishes.
(b) Not only does he clean the house but he also washed the dishes.
(c) Not only did he clean the house but also washed the dishes.
(d) Not only did he clean the house and washed the dishes, he completed the other work too.

# 1 Sample Paper

## English Language [English-I]

### Answers

**Answer 1.**

(i) New Colony

Ramnivas Building

Allahabad

U.P.-220 301

16 June 20XX

Dear Radhika,

I hope my letter finds you in the best of your health and spirit. This is to thank you, for the way you helped me during my difficult days. Still, I remember my first breakdown after my poor results in the half-yearly. But you counselled me to regain self-confidence in myself and pull up my socks to prepare well for my annual exams and take it as a chance to prove myself. I often think of those evil days and my gloomy thoughts, how many negative thoughts had wrapped themselves around me. I used to sit idle, gazing here and there aimlessly, as if nothing is left for me. But I thank you, dear friend for your kind and blessed words which brought me back to proper senses to face the problems as a challenge and not escape them like a coward. It is all because of you that today I am preparing well for my competitive exams after my school.

I am ending my letter here. Do write back. Pay my regards to uncle and aunt.

Yours lovingly,

Deepika

(ii) House no. 53

E Block, Anna Nagar East

Chennai-102

10 February 20XX

The Station Master

Egmore Railway Station

Egmore, Chennai- 8

Dear Sir,

I am Camilla from Anna Nagar, Chennai, and I recently travelled by Chennai–Kanyakumari Express 12633 on the 8th of February and reached Egmore, Chennai on 9th February. This is to inform that I left my suitcase in the train and only realised it after the train had left the station.

I humbly request you to kindly locate my suitcase as all of my important documents are in it. It is a blue American Tourister suitcase tied with a red ribbon and my home address stuck on it. I hope you will be able to locate the suitcase. I request you to please contact me on the given mobile number as soon as you trace my suitcase.

Thanking you,

Yours faithfully,

Camilla Peter

Answer 2.

(i)

## WE REGRET WHEN IT'S TOO LATE TO REPENT

It was when I used to live in the college hostel. One Monday morning I received a call from home. Beyond the limit of all shocks, I got the news that my beloved babuji (father) was no more.

Oh! That moment. What a dreadful devilish moment! All the hell seemed to have broken upon me. Oh God, how will I face it? How will I survive without him? Not a single day passed when we didn't have a conversation on the phone. Now, where will I go to find him? Who will console, guide or encourage me? Many such emotional queries overflooded my mind. Tears filled my eyes and I was full of shock. I couldn't understand how to repent as I was full of regret. It was because, in the morning, I had made a call to home as usual, but due to low balance, I preferred to talk first to my mother and siblings and then to my father. It was because I thought he'll take a lot of time or maybe he won't be at ease to talk. Such an unexpected unfortunate turn of events!

I fell short of words to express my grief. It was a dreadful realisation that I would never hear his voice again. My heart was aching and I felt like killing myself. A voice echoed within me that now you would save money and use time more aptly, as babuji is no more to give money. How sad it was that though I was full of regret, I had no way to repent. Now, a year is about to pass since his passing away but I am still burning in the flames of regret and often it feels too suffocating.

From that incident, I learned that we must always find time for our parents as they are not here to stay with us forever. I consoled myself by the thought that I had the privilege to know him and I am blessed enough to be his daughter. He taught me how to be happy with life and gave me so much support just because he wanted me to succeed. Though he has left this mortal world, he will always keep on inspiring me. His support and blessing will shower upon me as he is still watching over me from heaven. So, to glorify his grandeur I will strive to continue his legacy, all my life.

(ii) Few days ago I got a chance to interview a famous personality. Generally, interviewing sounds an easy process, but not always. It becomes quite mind-numbing as a lot of research work is required. I followed the following steps to prepare for a successful interview.

1. Research the person.
2. Clarify your objective.
3. Prepare questions and stay focused.
4. Check your recording equipment.
5. Be clear and polite.

With mixed feelings of anxiety and excitement, I reached the house of Mr. Vishwajit Thapar, the renowned former cine star and a well-known social and child rights activist. He had worn his all-time favourite peach coloured long pathani kurta-pyjama with a dust brown coloured jawahar jacket.

To make him feel comfortable, I introduced myself and told him the purpose and duration of the interview. By his appearance and gentle gesture, I easily made out that he is a really caring person.

He welcomed me to his spacious, cross-ventilated, well-crafted beautiful house, away from the noisy congested environment of city life. It was organised with unique interiors like antique terracotta white flowers and classic posters in wooden frames. When I asked him why he chose to live away from the city and have such an antique interior inside, he said with a friendly smile, that it gives him a soothing and calm feeling. It gives him peace of mind.

Then I asked about the achievements of his career spread in various dimensions of life. He said that he got critical acclaim for his first movie along with the jury award. He made several documentaries to spread awareness for child rights, which were given state government's approval and honour. He has been appointed as the brand ambassador for the national awareness programme to rehabilitate slum dwellers.

Throughout the interview, one thing that I noticed in Mr. Vishwajit Thapar, was his inclination toward nature and rustic classics. I couldn't stop myself from asking about his hobbies and recreations. "Collecting antiques, souvenirs, and terracotta of various types are my hobbies," he said.

Later I asked him about the honour and awards he has received so far. I was stunned to see his display of numerous certificates and medals received for excellence in social services, child protection activity and as a social awareness leader. He has also been nominated for the Padma Shri award this year.

I asked him to name someone most influential in his life. He spoke about his parents who had a great

influence on his life. He said they were his role models and they worked too hard to get him better education and achieve the career of his choice.

I started admiring him more than ever before. He is really a great role model of our society.

(iii) **FOR THE STATEMENT**

The statement "School days are the happiest days of our lives" has been a popular sentiment expressed by many individuals. Although one's personal experiences may vary, there are several compelling arguments that support this statement.

Firstly, school days are often characterised by a sense of innocence and carefreeness. During this period, children and adolescents are shielded from the burdens and responsibilities of adulthood. They can indulge in the simple joys of learning, making friends, and engaging in extracurricular activities without the worries that come with adulthood. The absence of financial pressures, job responsibilities, and complex relationships allows students to fully immerse themselves in the present moment, fostering a sense of happiness and contentment.

Secondly, school days provide numerous opportunities for personal growth and development. The educational environment encourages exploration, creativity, and self-discovery. Students are exposed to a wide range of subjects, enabling them to explore their interests and discover their passions. They have access to mentors and teachers who guide and inspire them, helping them unlock their potential. The sense of achievement and progress that comes from learning and mastering new skills contributes to a deep sense of fulfillment and happiness.

Moreover, school days are a time of strong social connections and friendships. The school environment brings together individuals from diverse backgrounds, fostering an atmosphere of camaraderie and shared experiences. Friendships formed during school days often last a lifetime, as they are built on a foundation of shared memories and growth. The support and companionship provided by these friendships contribute significantly to one's overall happiness and well-being.

Lastly, school days offer a structured routine that provides a sense of stability and purpose. Students have a clear path to follow, with defined goals and objectives. This structure helps instill discipline, time management skills, and a sense of accomplishment as students work towards their academic goals. The routine and sense of purpose give students a sense of direction and contribute to their overall happiness.

While everyone's life experiences differ, there are strong arguments in support of the statement that school days are the happiest days of our lives. The innocence, carefreeness, opportunities for personal growth, social connections, and structured routine all contribute to a sense of happiness and fulfillment during this period. However, it's important to acknowledge that happiness is subjective, and individuals may find happiness in various stages of their lives.

**AGAINST THE STATEMENT**

The idea that school days are the happiest days of our lives is often heard, but it's not true for everyone. While some people have fond memories of school, many others remember it as a time full of challenges and difficulties.

First, not everyone has the same experience in school. Factors like family background, personal issues, and relationships with peers greatly affect how we view our school years. For those who faced bullying, struggled with studies, or had personal problems, saying that school days were the happiest can feel insensitive to their pain and struggles.

The pressure to perform well in academics, participate in extracurricular activities, and get into good colleges can cause a lot of stress and anxiety for students. Instead of feeling happy and carefree, many students feel overwhelmed and exhausted by the constant demands.

The way traditional schools are structured doesn't always suit everyone. The focus on exams and memorizing facts can kill creativity and critical thinking. Students who don't fit into the traditional academic mold often feel left out and unmotivated. School, for them, can be more of a place of boredom and frustration than happiness.

We also need to consider the larger social issues in schools. Problems like inequality, discrimination, and lack of resources affect many students, especially those from marginalized communities. For them, school can be a place where they feel oppressed rather than happy.

In conclusion, while some people may look back on their school days with joy, it's important to remember that this isn't the case for everyone. Many people find school to be a time of stress, struggle,

and unhappiness. Instead of idealising the past, we should work towards creating schools that are supportive and nurturing for all students. Happiness shouldn't be limited to our school years but should be something we strive for throughout our lives.

iv) Entering the examination hall is pivotal in every student's academic journey. It is a place where nerves and anticipation merge, where the culmination of countless hours of study meets the challenges of a test. As I approached the examination hall, the sight and sounds that greeted me amplified the weight of the upcoming examination. The scene outside the hall and the ambiance within underwent a remarkable transformation, evoking a range of emotions that mirrored the intensity of the situation.

As I made my way towards the examination hall, a vibrant mix of sights and sounds unfolded before me. The corridor leading to the hall was teeming with students, each one wearing a unique expression that mirrored their state of mind. Some had their brows furrowed in deep concentration, poring over last-minute notes, while others engaged in animated discussions, sharing knowledge and reviewing concepts. The air hummed with a palpable energy, a blend of determination, and nervous anticipation.

The surroundings were alive with activity and sounds. The steady rhythm of footsteps echoed against the corridor walls, intermingling with the rustling of papers and the soft murmur of anxious voices. The tension was tangible, hanging in the air like a heavy cloud. It was a symphony of anticipation, each note playing a part in the collective narrative of the examination day.

However, as I stepped through the doors of the examination hall, the scene underwent a remarkable shift. The bustling corridor faded into the background, replaced by orderly rows of desks that stretched before me. The atmosphere transformed into one of solemnity and focus. The once vibrant soundscape became hushed as if a blanket of silence had descended upon the room. Inside the hall, the air seemed thick with a sense of purpose. The scratching of pens against paper became the dominant sound, a testament to the students' engagement with the examination. The occasional sigh or the soft turning of pages added a rhythm to the silence, punctuating the room's stillness. The clock on the wall, with its steady ticking, served as a reminder of the limited time remaining to showcase one's knowledge and skills.

Within this environment, my initial apprehension gradually subsided, giving way to a peculiar calmness. A sense of determination took hold as I focused on the questions before me. The world outside the examination hall faded into insignificance as I delved into the task at hand. The surrounding sounds became a backdrop to my thoughts, the conduit through which my answers flowed onto the pages.

Stepping into the examination hall is a transformative experience, marked by a shift in atmosphere and a surge of emotions. The vibrant scenes and sounds outside give way to a solemn and focused ambiance within. The symphony of nerves and determination resonates through the scratching of pens and turning pages. At that moment, the examination hall becomes a cocoon, enveloping students in a world where knowledge and effort are put to the test, and the pursuit of success takes center stage.

) For a healthy and balanced life, taking good care of your mental health is mandatory. According to a study in 2017, 1 in 7 Indians have some form of mental health issue. Such statistics is enough to make us understand that someone we know —a family member, a friend, a colleague and even us, are at the risk of developing serious psychological issues in the absence of timely intervention.

Mental health is an umbrella term comprising emotional, psychological, and social well-being. It then stands to reason that mental health issues have the power to impact feeling, thoughts and daily behaviour. Our mental health affects our decision-making abilities, our coping mechanisms regarding stress and govern our relationships too that is our interaction with people in our lives and how we deal the various situations.

This is a vital reason why emotional health is utmost important for a positive mind. Recent news of tragic suicides of famous personalities or common people can bring to light how emotional well-being has to be made paramount. Emotional health is important because it's a crucial part of your life and impacts your thoughts, behaviour and emotions. Being emotionally healthy can guarantee a more productive life and more efficiency in all our work— school, play or others. Positive emotional health also has a part to play in how good you are at handling relationships, the maturity you show in decision-making and how well to adapt and adjust to changes in life's many problems.

So how can we work on making ourselves mentally stronger? Well, the answer is simple. A well-balanced diet, eating regularly, sleeping eight hours daily, taking morning walks, or exercising sessions go a long way to improve our mental health. Talking to our loved ones, sharing our problems, being more open-minded, taking help from experts if needed, can help us deal with the chaotic situations in our lives in a better way. Making good decisions for oneself, and working on ourselves is the key.

**Answer 3.**

(i)

**THANK YOU TEACHERS!**

A cultural programme to celebrate Teachers' Day
on 5th September, 20XX
from 2.00 p.m. to 3.30 p.m.
at Auditorium, DNV School
All the teachers are cordially invited

(ii)

To : principaldnvschool@gmail.com

Subject : Teachers' Day Celebration

Dear Sir,

Teachers' Day is around the corner and the students of class X would like to express our gratitude to our teachers by hosting a brief cultural programme on the 5th of September between 2.00 p.m. to 2.30 p.m.

We students are working hard to give our best performances.

We would humbly request you to allow us to host the cultural programme in our school auditorium on Teacher's Day.

We look forward to a favourable response.

Thanking you,

Your faithfully,

Ashish Roy

Cultural Secretary

DNV School

**Answer 4.**

(i) 1. (b) suspending

2. (c) pay off

(ii) (c) Extort

(iii) (a) In the given passage, Farmer Oak's smile has been described right at the very beginning. It is said that when he smiled his eyes reduced to chinks, and diverging wrinkles appeared around them. It extended upon his countenance like the rays in a crude sketch of the rising sun.

(b) Gabriel is placed in a Laodicean neutrality because when he went to the church, he yawned at the end of the sermons and thought of what kind of dinner might be waiting for him when he reached home. Thus he was between the Communion people of the Parish and the drunken section.

(c) When Farmer Oak's friends were neither pleased nor happy with him they thought of him as a man whose moral colour was a kind of pepper and salt mixture.

(d) On working days Gabriel was a young man of sound judgment, easy motions, proper dress and general good character.

(e) Oak's fob was difficult to access because of its somewhat high situation in the waistband of his trousers which in turn lay at a remote height under his waistcoat. As a result it was pulled out by throwing the body to one side and compressing the mouth and face to a mere mass of ruddy flesh due to exertion and then pulling up the watch like a bucket from a well.

(iv) Mr. Oak carried with him a small silver clock. It was even older than his grandfather. It had the peculiarity of either going too fast or not at all. The hour hand occasionally slipped around the pivot. None could be quite certain of the hour. **(45 words)**

**Answer 5.**

(i) (1) shook (2) wearing (3) lying (4) watching
(5) felt (6) escaped (7) remained (8) spread

(ii) (a) under (b) with (c) before (d) from
(e) by (f) for (g) over (h) on

(iii) (1) (a) When the cat is far off, the mice will play.
(2) (b) I have been ill since I returned from Delhi.
(3) (c) Is the book which I gave you, lost?
(4) (b) The reason why he told a lie is not known.

(iv) (1) (b) He was getting so late that he didn't eat his breakfast.
(2) (a) No sooner did the teacher sit than he called the names of the selected students.
(3) (c) He requested her to come with him to the cafeteria.
(4) (a) Had he not reached the station on time, he would have lost the train.
(5) (c) Rohit did not go abroad without offering prayers in the temple.
(6) (a) The people were rescued after the earthquake had caused lot of destruction.
(7) (b) Stay away from the sea shore lest you should drown.
(8) (a) If I get a good job, I would buy a car.

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# Specimen Question Paper

(The format of the same as followed in the ICSE year 2025 Examination )

## English Literature [English-II]

Maximum Marks: 80
Time allowed: Two hours

### General Instructions

*Answers to this paper must be written on the paper provided separately.*
*You will not be allowed to write during the first 15 minutes.*
*This time is to be spent in reading the question paper.*
*The time given at the head of this paper is the time allowed for writing the answers.*
*The paper has **four** Sections.*
***Section A** is compulsory – **All** questions in **Section A** must be answered.*
*You must attempt **one** question from each of the **Sections B, C and D** and **one** other question from any Section of your choice.*
*The intended marks for questions or parts of questions are given in brackets [ ].*
***Instruction for the Supervising Examiner***
*Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.*

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options.** [16]
**(Do not copy the question, write the correct answers only.)**

(i) Where was Caesar put to death?
(a) On a street in Rome
(b) On the battleground of Philippi
(c) At the foot of Pompey's statue
(d) In Brutus' orchard [Recall]

(ii) Who asks permission to speak at Caesar's funeral?
(a) Brutus
(b) Antony
(c) Cassius
(d) Octavius [Recall]

(iii) "Woe to the hand that shed this costly blood!
Over thy wounds now do I prophesy..."
These lines tell us that Antony is _____ .
(a) enraged
(b) sorrowful
(c) anxious
(d) frustrated [Analysis]

(iv) When Antony says, 'This is a slight unmeritable man, / Meet to be sent on errands' he refers to _____.
(a) Lepidus
(b) Octavius
(c) Pindarus
(d) Lucilius [Recall]

(v) What strategy does Cassius suggest that the conspirators follow?
(a) march towards Philippi
(b) remain where they are
(c) raise an army of foot soldiers
(d) set fire to the surrounding villages [Understanding]

(vi) When Cassius says, 'My life is run his compass', he means that _____ .
(a) it is the day on which Brutus was born

(b) his life had come full circle
(c) his life could be measured with a compass
(d) his life could be compared to a race **[Understanding]**

(vii) Which of the given options contains the figure of speech that appears in the following line from Leigh Hunt's poem 'The Glove and the Lions': *'Ramped and roared the lions'*:
(a) 'Your eyes are like the diamond bright,'
(b) 'Suddenly the black night showed its teeth in a flash of lightning.'
(c) 'Rich gifts of raiment or grain or gold?'
(d) 'Pack up the moon and dismantle the sun.' **[Application]**

(viii) Which of the following is NOT an effect of Bhisma Lochan Sharma's powerful singing in Sukumar Ray's poem 'The Power of Music'?
(a) The sky weeps tears
(b) The trees shake and crash
(c) The people retire amazed
(d) The turtles whine and stare **[Understanding]**

(ix) Which of the following words does H. W. Longfellow use to describe the movement of the phantoms in his poem, 'Haunted Houses'?
(a) slide
(b) glide
(c) noiseless
(d) invisible **[Recall]**

(x) The theme of Maya Angelou's poem 'When Great Trees Fall' is _____.
(a) the impact of the death of a loved one on those left behind
(b) the effect of felling trees on the environment
(c) how the death of trees affects humanity
(d) the impact of natural calamities on a forest **[Analysis]**

(xi) The poem, 'A Considerable Speck', captures _____.
(a) the journey of a mite across a sheet of paper
(b) The poet's determination to kill the mite
(c) The poet's encounter with a gigantic fly
(d) The mite's attempt to escape from the fly **[Understanding]**

(xii) In Stephen Leacock's With the Photographer', while waiting for the photographer, the narrator spent time _____.
(a) examining the studio
(b) talking on his phone
(c) writing in his diary
(d) reading magazines **[Recall]**

(xiii) In Ama Ata Aidoo's short story, 'The Girl Who Can', Nana expressed her disapproval of Adjoa's legs because _____.
(a) they were slender
(b) they were muscular
(c) they were bent
(d) they were short **[Understanding]**

(xiv) Choose the option that lists the sequence of events from Alphonse Daudet's short story 'The Last Lesson' in the correct order.
1. But, when he arrived at school, Franz was dismayed to find his classmates already seated quietly and solemnly in their places ... and shocked when M. Hamel simply urged him to take his place.
2. Franz hurried to school that morning he was very late and dreaded being scolded by M. Hamel, the teacher.
3. After he had settled at his desk, he noticed something really odd: the back benches of the classroom were occupied by adults from the village!
4. He hoped to slip into the classroom unnoticed, under cover of the bustle and noise of a typical school day morning.

(a) 1, 3, 2, 4
(b) 2, 4, 1, 3
(c) 3, 1, 4, 2
(d) 4, 2, 3, 1 **[Understanding]**

(xv) Select the option that shows the correct relationship between statements (1) and (2) from William Sleator's short story, 'The Elevator'.
**Statement 1:** Terrified of the fat lady in the elevator, Martin ran down the dark stairs, fell and broke his leg.

**Statement 2:** Angry and disappointed that his son had behaved like a fool and a coward, Martin's father did not talk to him on the way to the hospital.

(a) (1) is true and (2) is false.
(b) (2) is true and (1) is false.
(c) (1) is the cause for (2).
(d) (1) and (2) are independent of each other. **[Analysis]**

(xvi) Ray Bradbury's short story 'The Pedestrian', can be best described as _____.

(a) utopian
(b) dystopian
(c) humorous
(d) a fairy tale **[Evaluative]**

## Section-B (Answer one or more questions from this Section)

### DRAMA

### (Julius Caesar by William Shakespeare)

**Question 2.**

**Read the extract given below and answer the questions that follow:**

*Caesar:* *Are we all ready? What is now amiss,*
*That Caesar and his Senate must redress?*
*Metellus:* *Most high, most mighty, and most puissant Caesar,*
*Metellus Cimber throws before thy seat*
*A humble heart, — [He kneels]*

(i) Where are the speakers? [2]
What does 'puissant' mean?
Explain: *'Metellus Cimber throws before thy seat a humble heart'.* **[Recall & Understanding]**

(ii) At the beginning of the scene, Caesar says, *'The Ides of March are come.'* [3]
Why do you think Caesar said this?
What does the Soothsayer say in response? **[Recall & Understanding]**

(iii) What specific duties do the conspirators allot to Trebonius and Casca? [3]
Why does Cassius become nervous when Popilius Lena speaks to him as they enter? **[Recall & Understanding]**

(iv) What does Artemidorus want of Caesar? [3]
How does Caesar respond to his plea? **[Recall]**

(v) Shortly after this exchange, Caesar is stabbed to death by the conspirators. Whom do you sympathise with — Julius Caesar or the conspirators? Give reasons for your choice. [4] **[Evaluative & Analysis]**

**Question 3.**

**Read the extract given below and answer the questions that follow:**

*Brutus:* *I did send to you*
*For certain sums of gold, which you denied me;*
*For I can raise no money by vile means:*
*By heaven, I had rather coin my heart,*
*And drop my blood for drachmas, than to wring*
*From the hard hands of peasants their vile trash*
*By any indirection.*

(i) To whom are these words addressed? [3]
Why is Brutus angry with this person? **[Recall & Understanding]**

(ii) How does this person feel when he hears these words? [3]
What does he say to defend himself? **[Analysis & Recall]**

(iii) Why did Brutus need 'certain sums of gold'? [3]
Why was he unable to raise these sums of money? **[Understanding]**

(iv) Earlier in this scene, Brutus refers to Lucius Pella. [3]
What had he been accused of?
Who had supported him and how? [Recall]

(v) Mention any two aspects of Brutus' character that are revealed in the above extract. [4]
What do you understand about the relationship between Brutus and the person he addresses? [Analysis]

## Section-C (Answer one or more questions from this Section)

### PROSE – SHORT STORIES

### (Treasure Chest — A Collection of ICSE Short Stories and Poems)

**Question 4.**

**Read the following extract from Stephen Leacock's short story, 'With the Photographer' and answer the questions that follow:**

*"The photographer beckoned me in. I thought he seemed quieter and graver than before. I think, too, there was a certain pride in his manner.*

*He unfolded the proof of a large photograph, and we both looked at it in silence.*

*'Is it me?' I asked.*

*'Yes,' he said quietly, 'it is you,' and we went on looking at it."*

(i) Where was the narrator? [3]
Why had he gone there? [Recall & Understanding]
Why do you think that there was a certain pride in the photographer's manner?

(ii) What does the word 'proof' mean in this context? [3]
Why did the narrator ask, "Is it me?"? [Understanding]

(iii) Which of the narrator's facial features had the photographer altered? [3] [Recall]

(iv) What was the only part of the narrator's face that seemed original in the photograph? [3] [Recall]
How did the photographer plan to 'fix' this?

(v) At the end of the story the narrator flies into a rage. [4]
What makes him angry? [Understanding & Analysis]
How would you justify the narrator's angry outburst?

**Question 5.**

**Read the following extract from Ray Bradbury's short story, 'The Pedestrian' and answer the questions that follow:**

*"He would stand upon the corner of an intersection and peer down long moonlit avenues of sidewalk in four directions, deciding which way to go, but it really made no difference;"*

(i) What was Leonard Mead's occupation? [3]
What did he love to do? [Recall, Understanding & Recall]
When is the story set?

(ii) To what does Mead compare his walk through the empty streets? [3]
Mention TWO reasons he gives for making this comparison? [Recall & Understanding]

(iii) Why had Mead decided to change his footwear from hard-heeled shoes to sneakers? [3] [Understanding]

(iv) What happened quite suddenly as he was making his way home? [3]
What was Mead's immediate reaction? [Recall]

(v) Why was Mead taken away by the police car? [3]
Would you call this a horror story or a piece of science fiction? [Understanding & Analysis]
Give reasons for your answer.

## Section-D (Answer one or more questions from this Section)

### POETRY

### (Treasure Chest – A Collection of ICSE Short Stories and Poems)

**Question 6.**

**Read the following extract from H.W. Longfellow's poem, 'Haunted Houses' and answer the questions that follow:**

*The stranger at my fireside cannot see*
*The forms I see, nor hear the sounds I hear;*
*He but perceives what is; while unto me*
*All that has been is visible and clear.*

(i) What makes the poet-narrator different from the stranger at his fireside? **[3]**
**[Understanding]**

(ii) What, according to the poet, turns a house into a 'haunted' house? **[3]**
**[Understanding]**

(iii) Where is one likely to meet the 'phantoms' in a haunted house? **[3]**
**[Recall]**

(iv) What are the poet-narrator's views on owning property? **[3]**
**[Recall & Understanding]**

(v) How do the poet's views of ghosts differ from the traditional perception of ghosts? How would you describe the **mood** that the poem evokes? Give ONE reason for your answer. **[4]**
**[Understanding & Analysis]**

**Question 7.**

**Read the following extract from Maya Angelou's poem, 'When Great Trees Fall' and answer the questions that follow:**

*When great trees fall*
*in forests,*
*small things recoil into silence,*
*their senses*
*eroded beyond fear.*

(i) What effect does the falling of a 'great tree' have on the creatures of the forest? **[3]**
**[Recall & Understanding]**

(ii) How does the death of a great soul affect the lives of those left behind in the immediate aftermath of their passing? **[3]**
**[Understanding]**

(iii) What long-term effect does the death of a 'great soul' have? **[3]**
**[Understanding]**

(iv) What **feeling** is being expressed by the following lines / phrases? **[3]**
(a) small things recoil into silence
(b) kind words unsaid,
(c) Be and be better. For they existed
**[Analysis]**

(v) What is a 'Great tree' a metaphor for? **[4]**
What is the central message of Angelou's poem, 'When Great Trees Fall'? **[Application & Analysis]**

## Answers

## Section-A

**Answer 1.**

(i) (c) At the foot of Pompey's statue

(ii) (b) Antony
(iii) (a) enraged
(iv) (a) Lepidus
(v) (b) remain where they are
(vi) (b) his life come full circle
(vii) (c) 'Rich gifts of raiment or gain or gold?'
(viii) (d) The turtles whine and stare
(ix) (b) glide
(x) (a) the impact of the death of a loved one on those left behind
(xi) (a) the journey of a mite across a sheet of paper
(xii) (d) reading magazines
(xiii) (a) they were slender
(xiv) (b) 2, 4, 1, 3
(xv) (c) (1) is the cause for (2).
(xvi) (b) dystopian

## Section-B

**Answer 2.**

(i) The speakers have gathered in the Roman Senate House, known as the Capitol. This is where important political decisions and discussions took place.

"Puissant" means "powerful". Here Metellus emphasises Caesar's authority, though it is meant to flatter him and gain favour for his request.

*'Metellus Cimber throws before thy seat a humble heart'.* : This line is spoken by Metellus Cimber where he shows his utmost humility and submission, thereby reiterating Caesar's authority in an attempt to get his brother Publius' exile order reversed.

(ii) Caesar says "The Ides of March are come" because he wanted to state that the ominously predicted date has arrived and yet he has not been harmed. This directly shows his overconfidence and arrogance, even disregard for the prediction.

The Soothsayer says in reply, "Ay Caesar but not gone" meaning that the ominous day has not passed yet so Caesar must stay cautious to prevent any harm.

(iii) Trebonius was given the role of luring Mark Antony away from Caesar, so he cannot interfere with their plans since Antony is a close ally of Caesar and could potentially protect him. Casca's task was to strike Caesar first setting the momentum for the rest of the conspirators to follow through. Casca's initial action signals the commencement of their coordinated attack.

As they enter, Popilius says to Cassius that he wishes the latter's venture to be successful. This causes him to become nervous since he fears Popilius might know about the conspiracy which can cause their meticulously planned affair to fail.

(iv) Artemidorus has written a letter to Caesar, detailing the plot against his life and naming the conspirators involved. All he wants is to hand this letter directly to Caesar in the hopes of preventing the assassination.

When Artemidorus tries to give Caesar the letter, he says, "What touches us ourself shall be last served." This means that Caesar prioritises matters concerning the state over personal matters and therefore, decides to deal with it later, not realising the immediate danger it represents.

(v) I sympathise with Julius Caesar. While the conspirators believed they were saving Rome from his potential tyranny, the way they betrayed and murdered Caesar is profoundly unjust. Caesar was a capable leader and trusted his friends, making their betrayal even more heart-wrenching. The conspirators' actions were driven by a mix of fear, personal ambition, and political motives. Caesar's downfall was partly due to his ambition, but the brutal way he was killed by those he trusted most makes his fate especially tragic and evokes a strong sense of sympathy.

**Answer 3.**

(i) These words are directed to Cassius. Brutus is angry with Cassius since he has denied the former's request for gold and now he is unable to pay his army. The anger stems from the moral stance too as Brutus insists that he cannot resort to dishonourable means ("vile means") to raise money, even for the sake of their cause.

(ii) Cassius feels deeply hurt and defensive when Brutus accuses him of denying gold and being corrupt. He is shocked that Brutus would think so poorly of him, especially since they are supposed to be allies and friends. To defend himself, Cassius insists that he did not refuse Brutus the money and blames the misunderstanding on a foolish messenger. He expresses his frustration and sorrow, emphasising that he values their friendship and would never intentionally wrong Brutus. Cassius's response is emotional, highlighting his distress.

(iii) Brutus needed the gold to pay their soldiers, buy supplies, and sustain their war against Antony and Octavius Caesar.

Brutus was unable to raise the sum of money because of strict ethics. He has clearly stated that he would never dupe the poor peasants. He would rather turn his heart into gold and his drops of blood into silver coins/drachmas than do such a thing.

(iv) Lucius Pella has been accused of taking bribes from the people of Sardis by Brutus.

Lucius Pella is supported by Cassius. Cassius had written letters to Brutus, asking for leniency on Pella's behalf because he knew the man. However, Brutus disregards Cassius's letters and condemns Pella, causing tension between Brutus and Cassius.

(v) The above extract shows Brutus' high moral standards and his strong sense of integrity. He refrains from using "vile means" to raise money because it is an immoral practice. He would rather die than resort to such means. Secondly, it also shows his unwavering idealism and stance. Brutus stands by what he believes in even in times of crisis.

The relationship between Brutus and Cassius is strained, marked by tension due to their differing values and approaches.. They both are united for a common cause but then their moral stance does not align. There are occasional frictions between them due to the conflict between Cassius' pragmatism and Brutus' idealism revealing underlying distrust and frustration in their alliance.

## Section-C

**Answer 4.**

(i) The narrator was in the photography studio, as stated in the short story 'With the Photographer' by Stephen Leacock.

He went to the photography studio to get a picture of him.

There was a certain pride in the photographer's manner. He was proud of his expertise at correcting photographs with technical tools.

(ii) The word 'proof' in the short story 'With the Photographer' by Stephen Leacock is used to refer to a sample print before final printing.

The narrator asked, "Is it me?" because the photograph was so heavily edited and altered by the photographer that it no longer resembled their actual appearance, leaving the narrator in disbelief and unable to recognise his own face in the highly manipulated image.

(iii) The photographer altered several features of the narrator's face: the eyes were retouched, the eyebrows were removed and replaced, the hairline was adjusted to create a new brow line, the forehead was modified, and the mouth was adjusted to fit the photographer's preferences.

(iv) The photographer did not like any facial features of the narrator, but only the ears of the narrator seemed original to him. The photographer decided to fix the ears of the narrator with the help of a particular process, 'Sulphide'. This is a process by which one can remove the ears from the photograph completely and replace them.

(v) The narrator flew into a rage at the end of the story because he had found no resemblance to his facial features in the final photograph shown by the photographer.

The narrator's angry outburst at the end of the story is completely justified. The changes in facial features in the photograph are an attempt at body shaming and he felt offended and humiliated at the needless intervention. The activities of the photographer made the narrator doubt his self-worth.

**Answer 5.**

(i) The only named character, Leonard Mead, in the short story 'The Pedestrian' was a writer by profession.
Mr. Mead loved to go out on long walks in the evening in silence. He loved to walk on concrete sidewalks on grassy patches.
The short story 'The Pedestrian' has its setting in 2053 A.D.

(ii) The walk of Leonard Mead has been compared to the shadow of a hawk in the mid country.
He compares his walk to the shadow of a hawk because:
He was alone in the city as a hawk in mid country with no habitation or people.
The roads were as deserted as the centre of a plain in the Arizona desert with no house in a thousand miles.

(iii) Mead switched to sneakers from hard-heeled shoes as he did not want to attract the attention of the dogs on the streets. He wanted to move quietly and unobserved without making any sound.

(iv) As he was making his way home, suddenly a lone car turned the corner of the road and Mr. Mead was caught in its headlights.
Mr. Mead stood motionless, stunned by the illumination of the headlight of the car, and then moved towards it.

(v) Mr. Mead was taken away by the police car because he was walking without any purpose. Walking alone at night was considered unusual and suspicious in the society of 2053 A.D.
This story is best classified as science fiction. It is set in the futuristic year 2053 and showcases advanced technology, such as an automated police car capable of functioning without a driver, and mentions of viewing screens and air conditioners. The narrative highlights how human behaviour has shifted, with people no longer engaging in outdoor activities and instead being confined to their homes. These dystopian elements, where individuality and simple pleasures like walking are suppressed, are typical themes of science fiction.

## Section-D

**Answer 6.**

(i) The poet-narrator is different from the stranger at his fireside because he can see and hear things that the stranger cannot. While the stranger perceives only what is present, the narrator perceives all that has been in the past and the lingering presence of those who have lived and died in the house. The stranger is limited to only the immediate reality.

(ii) According to the poet, a house becomes a 'haunted' house when it is inhabited by the spirits of people who have lived and died there. The lingering presence of these spirits, revisiting the house and creating an atmosphere of the past, transforms it into a haunted place.

(iii) One is likely to encounter the 'phantoms' in a haunted house in places such as doorways, stairs, passageways, and halls. These are the areas where the spirits of former inhabitants are most likely to appear, moving through the spaces they once occupied in life and leaving an impression of their presence.

(iv) The poet-narrator's views on owning property suggest that the living cannot truly claim ownership of the houses or lands they occupy. Instead, he believes that the previous owners and occupants, now deceased, continue to have a connection to the property, reaching out from their graves to assert their historical claim over it.

(v) The poet's views of ghosts differ from the traditional perception in that he sees them as comfortable, secure, and benign, rather than frightening, vengeful, or malevolent. The mood that the poem evokes is one of comfort and security. This is because the presence of ghosts is portrayed as a natural and gentle continuation of life, where the spirits of past inhabitants peacefully coexist with the living, creating a sense of continuity and connection rather than fear.

**Answer 7.**

(i) The falling of the 'great tree' has a profound effect on the creatures of the forest. Lions hunker down, elephants lumber and small things recoil into silence. Their senses are eroded beyond fear. This collective reaction underscores the significance of the 'great tree' and the void its absence creates in the natural world.

(ii) The death of the great soul leaves those left behind in the immediate aftermath struggling to cope. The air becomes rarefied and sterile, making it difficult to breathe because they are choked with emotion. They see with hurtful clarity, recalling unfulfilled promises with regret, feeling a deep sense of loss and heaviness in their hearts.

(iii) The death of a 'great soul' has profound long-term effects on those left behind. Initially, it leaves us disoriented and struggling to manage on our own, coping with the emotional void and loss. This loss can make us feel maddened and unhinged, reducing us to the "unutterable ignorance of dark, cold caves." However, over time, a sense of peace slowly blooms. Our senses, though altered, eventually restore and remind us of their existence, encouraging us to be better because they once existed.

(iv) (a) **Small things recoil into silence:** This line expresses shock, numbness, and being stunned. The small creatures are so overwhelmed by the fall of the great tree that they become completely silent.

(b) **Kind words/unsaid:** This phrase conveys remorse and regret. It reflects the sadness of not having spoken kind words before it was too late.

(c) **Be and be better. For they existed:** This line shows optimism, hope, and joyful acceptance. It encourages us to be better because the great souls existed and inspired us.

(v) The 'Great Tree' is a metaphor for a great soul. The central theme of Angelou's poem 'When Great Trees Fall' is that the loss of a loved one is traumatic yet inevitable. The memory and influence of the great soul linger and will continue to shape and affect our lives positively. It brings hope and healing to be better versions of ourselves. Even though their death leaves us feeling lost and empty, their memory and influence continue to inspire us. This helps us to heal and encourages us to be better people because of the impact they had on our lives.

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# 1 Sample Paper

## English Literature (English-II)

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answer only)**

(i) What was Brutus' intention behind dividing the crowd before addressing them? **[Understanding]**

(a) Brutus felt that it would be unwise to make the citizens hear only his version of the assassination carried out

(b) Brutus did not feel confident enough to cater to such a large group of people

(c) Brutus wanted the speech to be done and dusted quickly

(d) He gave a free chance to people to pick and choose the speaker

(ii) What dream did Cinna have the previous night? **[Recall]**

(a) Ceasar came in his dream pleading justice

(b) He was feasting with Caesar

(c) He was attending Caesar's funeral

(d) He was attacked by a mob

(iii) "Let me tell you, Cassius, you yourself are much condemned to have an itching palm...."

With reference to the above, Brutus is trying to imply that Cassius is_____. **[Analysis]**

(a) Corrupt

(b) Generous

(c) Fraudulent

(d) Acquisitive

(iv) When Antony says, "His life was gentle, and the elements/So mix'd in him that Nature might stand up/And say to all the world 'This was a man!', he was referring to_____. **[Recall]**

(a) Caesar

(b) Brutus

(c) Octavius

(d) Cassius

(v) What task is Lepidus assigned? **[Recall]**

(a) Fetching Caesar's will

(b) Leading the army into battle

(c) Negotiating with Brutus and Cassius

(d) Arresting the conspirators

(vi) When Antony said, "as he pluck'd his cursed steel away," he meant that_____. **[Understanding]**

(a) Brutus regretted his decision to kill Caesar

(b) Caesar resisted the dagger and took it in his hands

(c) Brutus removed his dagger from Caesar's body

(d) Caesar did not survive the wound made by the steel

(vii) Which of the given options contains the figure of speech that appears in the title of Robert Frost's poem 'A Considerable Speck': **[Application]**

(a) 'He was as brave as a lion in battle.'

(b) 'The loud silence echoed in the library.'

(c) 'The music flowed like a river through the room.'
(d) 'The stars danced playfully in the moonlit sky.'

(viii) Which of the following is NOT an effect mentioned in Maya Angelou's poem 'When Great Trees Fall'? **[Understanding]**
(a) The air around us becomes light
(b) Our senses, restored, never to be the same
(c) The stars weep in sorrow
(d) Peace blooms slowly and irregularly

(ix) In the poem, 'The Power of Music', what does the phrase "The fishes dived below the lake" mean? **[Understanding]**
(a) The fish searching for food
(b) The fish searching for silence
(c) The fish saving their life from an attack
(d) The fish escaping the net of the fishermen

(x) What do you think is the mood of Leigh Hunt's poem, 'The Glove and the Lion'? **[Evaluative]**
(a) Melancholy
(b) Dramatic
(c) Funny
(d) Scary

(xi) What does the poet suggest about the relationship between the living and the dead in 'Haunted Houses'? **[Understanding]**
(a) The living are haunted by the dead who seek revenge.
(b) The living and the dead coexist, with the dead having a quiet presence among the living.
(c) The living are unaware of the dead and never encounter them.
(d) The dead are frightening apparitions that scare the living away from old houses.

(xii) In Ray Bradbury's short story, 'The Pedestrian', while walking through the city, Leonard Mead noticed _____. **[Recall]**
(a) that the streets were filled with people
(b) that every house was brightly lit
(c) that he was the only person outside
(d) that cars were passing by frequently

(xiii) In Stephen Leacock's short story, 'With the Photographer', the photographer was _____ with his retouches on the narrator's photo. **[Analysis]**
(a) sad
(b) satisfied
(c) indifferent
(d) dissatisfied

(xiv) In William Sleator's short story, 'The Elevator', Martin's biggest fear was _____. **[Recall]**
(a) Being bullied at school
(b) Being stuck in the elevator
(c) Not measuring up to his father's expectation
(d) Not getting selected in the school sports team

(xv) Choose the option that lists the sequence of events from Alphonse Daudet's short story, 'The Last Lesson' in the correct order. **[Understanding]**
1. Franz hurried to school that morning; he was very late and dreaded being scolded by M. Hamel, the teacher.
2. After he had settled at his desk, he noticed something really odd: the back benches of the classroom were occupied by adults from the village.
3. He hoped to slip into the classroom unnoticed, under cover of the bustle and noise of a typical school day morning.
4. But, when he arrived at school, Franz was dismayed to find his classmates already seated quietly and solemnly in their places... and shocked when M. Hamel simply urged him to take his place.

(a) 1, 3, 4, 2
(b) 1, 3, 2, 4
(c) 3, 1, 4, 2
(d) 2, 3, 4, 1

(xvi) Select the option that shows the correct relationship between statements (1) and (2) from Ama Ata Aidoo's short story, 'The Girl [illegible]n'. **[Analysis]**

**Statement 1:** Adjoa faced opposition from her family for challenging traditional gender roles.
**Statement 2:** Adjoa's family supported her decision to pursue higher education abroad.

**Options:**

(a) (1) is true and (2) is false.
(b) (2) is true and (1) is false.
(c) (1) is the cause for (2).
(d) (1) and (2) are independent of each other.

## Section-B (Answer one or more questions from this Section)

### DRAMA

### (Julius Caesar by William Shakespeare)

**Question 2.**

**Read the extract given below and answer the questions that follow:**

*Cassius:* *Go, Pindarus, get higher on that hill;*
*My sight was ever thick; regard Titinius,*
*And tell me what thou notest about the field.*
*[Pindarus ascends the hill.]*
*This day I breathèd first: time is come round,*
*And where I did begin, there shall I end.*
*My life is run his compass. [To Pindarus] Sirrah, what news?*

(i) Why does Cassius order Pindarus to 'get higher on that hill'? **[Understanding]**
(ii) Do you find the line "My sight was ever thick" ironic? **[Evaluative]**
(iii) What does Cassius say to himself after sending Pindarus higher on the hill? **[Recall]**
(iv) What does Pindarus report? **[Recall]**
(v) How does Pindarus confirm the news of Titinius being taken captive? **[Analysis]**

**Question 3.**

**Read the extract given below and answer the questions that follow:**

*Antony:* *A curse shall light upon the limbs of men;*
*Domestic fury and fierce civil strife*
*Shall cumber all the parts of Italy;*
*Blood and destruction shall be so in use*
*And dreadful objects so familiar*
*That mothers shall but smile when they behold*
*Their infants quarter'd with the hands of war;*
*All pity choked with custom of fell deeds:*
*And Caesar's spirit, ranging for revenge,*
*With Ate by his side come hot from hell,.....*

(i) What emotions are expressed in Antony's soliloquy? **[Understanding]**
(ii) How does Antony express his grief and anger? **[Analysis]**
(iii) How does Antony expect to aggravate the situation to spin out of control? **[Analysis]**
(iv) Who is "Ate" and why is she mentioned in Antony's soliloquy? **[Recall & Understanding]**
(v) What impact does Antony anticipate Caesar's assassination will have on the societal and moral fabric of Rome, as inferred from his vivid descriptions of future events and conditions? **[Recall]**

## Section-C (Answer one or more questions from this Section)

### PROSE – SHORT STORIES

### (Treasure Chest – A Collection of ICSE Poems and Short Stories)

**Question 4.**

**Read the following extract from William Sleator's short story, 'The Elevator' and answer the questions that follow:**

*"Martin's father worked at home. He wanted to know why Martin was out of breath. "Why didn't you take the elevator?" he asked, frowning at Martin. You're not only skinny and weak and bad at sports, his face seemed to*

*say, but you are also a coward. After that, Martin always took the elevator. He would have to get used to it, he told himself, just like he got used to being bullied at school."*

(i) Who is Martin in the story? Where does Martin live? With whom does Martin live? **[Recall]**

(ii) How was Martin's relationship with his father? Why did Martin's father call him a coward? **[Understanding]**

(iii) Why was Martin out of breath in front of his father? Is there any valid reason to make Martin out of breath? **[Understanding & Analysis]**

(iv) How has Martin's father described him? **[Recall]**

(v) Why did Martin start taking the elevator after the scolding of his father? **[Understanding]**

**Question 5.**

**Read the following extract from Ray Bradbury's short story, 'The Pedestrian' and answer the questions that follow:**

*"A metallic voice called to him:*

*"Stand still. Stay where you are! Don't move!"*

*He halted.*

*"Put up your hands!"*

*"But-" he said.*

*"Your hands up! Or we'll Shoot!"*

(i) Whose metallic voice has been heard? Whom the metallic voice asked to stand still? **[Recall]**

(ii) Who is the central character of the story? What is the profession of the central character of the story? What was the favourite leisure time activity of the central character? **[Recall]**

(iii) To which place was the iron voice going to take the narrator, and why? **[Recall & Understanding]**

(iv) With which shadow had the narrator compared his shadow while walking on the silent street? Where can the narrator imagine himself if he closed his eyes and stood still in the silent street? **[Recall]**

(v) What finally happened to the central character of the story 'The Pedestrian' by Ray Bradbury? In what genre would you like to categorise this story and why? **[Understanding & Analysis]**

## Section-D (Answer one or more questions from this Section)

**POETRY**

**(Treasure Chest – A Collection of ICSE Poems and Short Stories)**

**Question 6.**

**Read the following extract from Sukumar Ray's poem, 'The Power of Music' and answer the questions that follow:**

*The bullock-carts are overturned, and horses line the roadside;*
*But Bhisma Lochan, unconcerned, goes booming out his broadside.*
*The wretched brutes resent the blare the hour they hear it sounded,*
*They whine and stare with feet in air or wonder quite confounded.*

(i) What immediate effect does Bhisma Lochan's singing have on the bullock-carts and horses? **[Recall]**

(ii) Describe the reaction of the animals to Bhisma Lochan's singing. What words and phrases does the poet use to convey this reaction? **[Recall & Understanding]**

(iii) Imagine you are a bystander witnessing Bhisma Lochan's singing. Describe what you see and hear, and how you feel about the scene. **[Evaluative & Understanding]**

(iv) Examine the use of imagery in the extract. How does the poet create a vivid picture of the chaos caused by Bhisma Lochan's singing? **[Analysis]**

(v) Discuss the effectiveness of the poet's use of humour in this extract. How does it enhance the reader's experience of the poem? **[Understanding & Analysis]**

**Question 7.**

**Read the following extract from Robert Frost's poem, 'A Considerable Speck' and answer the questions that follow:**

*A speck that would have been beneath my sight*
*On any but a paper sheet so white*

*Set off across what I had written there.*
*And I had idly poised my pen in air*
*To stop it with a period of ink*
*When something strange about it made me think*

(i) What is the "speck" that the poet notices? **[Recall]**

(ii) Why does the poet initially notice the speck? **[Understanding]**

(iii) If you were the poet, how would you have reacted to noticing a small speck moving across your writing? Describe your initial thoughts and actions. **[Evaluative & Application]**

(iv) What might the poet mean by "something strange about it made me think"? How does this phrase change the way the poet views the speck? **[Understanding & Analysis]**

(v) Do you think the poet's decision to pause and reflect on the speck was meaningful? Why or why not? Provide reasons based on the extract. **[Evaluative & Analysis]**

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# 2 Sample Paper

## English Literature (English-II) [Unsolved]

### Questions

## Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answer only)** **[Recall]**

(i) Whose help does Brutus take to kill himself?

(a) Strato
(b) Mark Antony
(c) Octavius Caesar
(d) Cato

(ii) The military base of the armies of Octavius and Antony are located in: **[Recall]**

(a) A plain near Philippi
(b) Sardis
(c) The mountain ranges of Philippi
(d) A distant dessert

(iii) "I prithee, Strato, stay thou by thy lord. Thou art a fellow of a good respect." According to the above dialogue, Brutus feels Strato is _____. **[Understanding]**

(a) Reputed
(b) Adequate
(c) Reliable
(d) Decent

(iv) When Brutus said, "Remember March, the ides of March remember," he meant that _____. **[Understanding]**

(a) Ides of March marks the assassination of Caesar
(b) March is a significant month in Roman history
(c) The people idolised this day of March
(d) Caesar was born on this day

(v) What is the main purpose of Antony's speech? **[Understanding]**

(a) To negotiate a truce with Brutus
(b) To praise Caesar's accomplishments
(c) To reveal the true intentions of the conspirators
(d) To earn brownie points from Brutus and Cassius

(vi) When Cassius says, "A peevish schoolboy, worthless of such honour,/Joined with a masker and a reveller!" he is referring to _____. **[Recall]**

(a) Octavius and Mark Antony
(b) Mark Antony and Lepidus
(c) Octavius and Lepidus
(d) Lepidus and Mark Antony

(vii) Which of the following is NOT described in H.W. Longfellow's poem, 'Haunted Houses'? **[Understanding]**

(a) Shadows of the past lingering in the rooms
(b) The harmless movement of ghosts doing work inaudibly
(c) The spirits of those who have passed away
(d) The trees whispering secrets to the wind

(viii) Which animal in Sukumar Ray's poem, 'The Power of Music' became the people's rescuer? **[Recall]**
(a) Billy goat
(b) Horse
(c) Bullock
(d) Dog

(ix) Which phrase from the poem, 'A Considerable Speck', indicates the mite's intelligence? **[Application]**
(a) It ran with terror and with cunning crept
(b) It paused as with suspicion of my pen
(c) It faltered, I could see it hesitate
(d) Cower down in desperation to accept

(x) The theme of Leigh Hunt's 'The Glove and the Lions' is _____. **[Analysis]**
(a) The bravery and valour of knights in medieval times
(b) The nature of love and human relationships
(c) Absence of true love in the presence of vanity
(d) The dangers and excitement of animal combat

(xi) Maya Angelou, in her poem, 'When Great Trees Fall', uses the metaphor of a great tree falling to illustrate the impact of a great soul's passing.
What aspect of the environment does she describe as becoming "light, rare, sterile" after such a loss? **[Understanding]**
(a) The earth that supported the tree
(b) The forest canopy that sheltered under the tree
(c) The air around us
(d) The water sources near the tree

(xii) Choose the option that lists the sequence of events from Stephen Leacock's short story 'With the Photographer' in the correct order. **[Understanding]**
1. The photographer asked the narrator to turn his head to the left and then to the right, making numerous adjustments.
2. The narrator waited in the studio, observing the surroundings and feeling increasingly anxious.
3. The narrator finally took his seat in front of the camera, feeling awkward and uncomfortable.
4. The photograph so received bore no resemblance to his face.

(a) 1, 3, 2, 4
(b) 3, 1, 4, 2
(c) 2, 3, 1, 4
(d) 4, 2, 1, 3

(xiii) Which of the following statements is NOT true according to Ama Ata Aidoo's story, 'The Girl Who Can'? **[Understanding]**
(a) A women's legs should not be thin to be able to have children.
(b) The distance between the village and the small town was five kilometers.
(c) Adjoa's mother did not believe that going to school was a waste of time.
(d) The narrator was selected to participate in the state games.

(xiv) In Alphonse Daudet's short story, 'The Last Lesson', on reaching school, Franz noticed _____. **[Recall]**
(a) that the school was unusually quiet
(b) that he had forgotten his homework
(c) that his friends were playing in the field
(d) that M. Hamel was waiting for him at the gate

(xv) Select the option that shows the correct relationship between statements (1) and (2) from Ray Bradbury's short story, 'The Pedestrian'. **[Analysis]**
**Statement 1:** Leonard Mead found solace in taking solitary walks at night, enjoying the quiet streets.
**Statement 2:** The police car stopped Leonard Mead and took him away for breaking curfew regulations.
**Options:**
(a) (1) is true and (2) is false.
(b) (2) is true and (1) is false.
(c) (1) is the cause for (2).
(d) (1) and (2) are independent of each other.

(xvi) The setting of "The Elevator" contributes to the story's overall mood by creating a sense of _____. **[Evaluative]**
(a) excitement
(b) comfort
(c) unease
(d) curiosity

## Section-B (Answer one or more questions from this Section)

### DRAMA

### (Julius Caesar by William Shakespeare)

**Question 2.**

**Read the extract given below and answer the questions that follow :**

**Caesar:** : *I could be well moved, if I were as you:*
*If I could pray to move, prayers would move me:*
*But I am constant as the northern star,*
*Of whose true-fix'd and resting quality*
*There is no fellow in the firmament.*
*The skies are painted with unnumber'd sparks,*
*They are all fire and every one doth shine,*
*But there's but one in all doth hold his place:*
*So in the world; 'tis furnish'd well with men,*
*And men are flesh and blood, and apprehensive;*
*Yet in the number I do know but one*
*That unassailable holds on his rank,*
*Unshaked of motion:*

(i) To whom did Caesar address these words? What is the context of the speech? **[Recall]**

(ii) What does Caesar mean by "I am constant as the northern star"? Explain the figure of speech used here. **[Understanding]**

(iii) Comment on the aptness of Caesar's claim "constant as the northern star". How is it proved wrong minutes later? **[Understanding & Analysis]**

(iv) Based on this speech, how would you describe Caesar as a ruler and as a human being? **[Analysis]**

(v) In what ways does the speaker's declaration of constancy serve to foreshadow events later in the play? Do you think Caesar was a tragic hero? Point out his tragic flaw. **[Analysis & Evaluative]**

**Question 3.**

**Read the extract given below and answer the questions that follow:**

***Brutus:*** *I prithee, Strato, stay thou by thy lord:*
*Thou art a fellow of a good respect;*
*Thy life hath had some smatch of honour in it:*
*Hold then my sword, and turn away thy face,*
*While I do run upon it. Wilt thou, Strato?*

(i) What does Brutus say to Strato? **[Recall]**

(ii) Why does he wish to hold Strato back with him? **[Understanding]**

(iii) Does Strato accept his request? What does he do? **[Recall]**

(iv) "Caesar, now be still" are Brutus' last words. Why does he say so? **[Understanding]**

(v) How does Strato feel about Brutus' decision to kill himself? **[Analysis]**

## Section-C (Answer one or more questions from this Section)

### PROSE – SHORT STORIES

### (Treasure Chest – A Collection of ICSE Poems and Short Stories)

**Question 4.**

**Read the following extract from Stephen Leacock's short story, 'With the Photographer' and answer the questions that follow:**

*"After an hour the photographer opened the inner door.*

*"Come in," he said severely.*

*I went into the studio.*
*"Sit down," said the photographer.*
*I sat down in a beam of sunlight filtered through a sheet of factory cotton hung against a frosted skylight."*

(i) Who is 'I' in the above extract? Why was the photographer calling him to come inside? Has the purpose of going inside the room been served? **[Recall, Understanding & Analysis]**
(ii) What was the narrator doing before going inside the room? **[Recall]**
(iii) What is the central idea of the short story 'With the Photographer'? **[Understanding]**
(iv) Was the photographer happy with the final photograph of the narrator? Was the narrator happy with the final print that was finally given to the narrator? **[Evaluative]**
(v) "I wanted something that would depict my face as Heaven gave it to me, humble though the gift may have been." Do you agree with this opinion of the narrator? Why/Why not? **[Evaluative & Analysis]**

**Question 5.**

**Read the following extract from Ama Ata Aidoo's short story, 'The Girl Who Can' and answer the questions that follow:**

*But then Nana herself looked so pleased, out of surprise my mother shut her mouth up. In any case, since the first time they heard the news, I have often caught Nana staring at my legs with a strange look on her face but still pretending like she was not looking. All this week, she has been washing my school uniform herself. That is a big surprise. And she didn't stop at that, she even went to Mr Mensah's house and borrowed his charcoal pressing iron each time, came back home with it, and ironed and ironed the uniform, until, if I had been the uniform, I would have said aloud that I had had enough.*

(i) What news did Kaya and Nana hear? **[Recall]**
(ii) Why was Nana staring at Adjoa's legs with a strange look on her face? **[Understanding]**
(iii) Why was Nana so pleased with the news? **[Understanding]**
(iv) What was a matter of big surprise to Adjoa? **[Recall]**
(v) What does the extract tell you about Nana? **[Analysis]**

## Section-D (Answer one or more questions from this Section)

### POETRY

**(Treasure Chest – A Collection of ICSE Poems and Short Stories)**

**Question 6.**

**Read the following extract from Leigh Hunt's poem, 'The Glove and the Lions' and answer the questions that follow:**

*De Lorge's love o'erheard the King, a beauteous lively dame*
*With smiling lips and sharp bright eyes, which always seemed the same;*
*She thought, the Count my lover is brave as brave can be;*
*He surely would do wondrous things to show his love of me;*
*King, ladies, lovers, all look on; the occasion is divine;*
*I'll drop my glove, to prove his love; great glory will be mine.*

(i) What does the lady decide to do to prove her lover's bravery? **[Recall]**
(ii) Why does the lady think that the Count will retrieve her glove? **[Understanding]**
(iii) How does the lady's decision to drop the glove influence the events that follow in the poem? **[Analysis]**
(iv) How does the lady's decision to drop the glove illustrate her understanding of love and bravery? Provide evidence from the extract. **[Analysis & Application]**
(v) Do you think the Count's reaction to the lady's test was appropriate? Why or why not? Provide reasons based on the extract. **[Evaluative, Analysis & Application]**

**Question 7.**

**Read the following extract from Robert Frost's poem, 'A Considerable Speck' and answer the questions that follow:**

*But unmistakably a living mite*

*With inclinations it could call its own.*
*It paused as with suspicion of my pen,*
*And then came racing wildly on again*
*To where my manuscript was not yet dry;*
*Then paused again and either drank or smelt—*
*With loathing, for again it turned to fly.*

(i) What are the mite's actions as described in the extract? **[Recall]**

(ii) How does the poet describe the mite's behaviour and its interaction with the pen and manuscript? **[Understanding]**

(iii) How might the poet's description of the mite's behaviour be an analogy for human responses to new or unfamiliar situations? **[Evaluative]**

(iv) What can be inferred about the mite's sensory perception and decision-making from its actions in the extract? **[Analysis]**

(v) Do you think the poet attributes too much intelligence to the mite, or is it a fair assessment? Provide reasons for your answer. **[Evaluative & Application]**

□□

# 3 Sample Paper

## English Literature (English-II) [Unsolved]

### Questions

**Section-A** (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answer only)**

(i) Who kills himself on seeing Cassius' dead body? **[Recall]**

(a) Brutus
(b) Pindarus
(c) Titinius
(d) Lucilius

(ii) How does Portia kill herself? **[Recall]**

(a) Takes poison
(b) Hangs herself
(c) Swallows burning coal
(d) Slits her wrist

(iii) "But I am constant as the northern star ...." **[Understanding]**
Which of the following best describes the character of Caesar in the above line _____.

(a) Unchanging
(b) Flexible
(c) Stable
(d) Uniform

(iv) When Lucilius says, "He is at hand; and Pindarus is come/To do you salutation from his master", he refers to _____. **[Recall]**

(a) Antony
(b) Lepidus
(c) Cassius
(d) Brutus

(v) Who out of the assassinators stabbed Caesar first? **[Recall]**

(a) Publius
(b) Cassius
(c) Casca
(d) Metellus Cimber

(vi) When Clitus said, "Now is that noble vessel full of grief/That it runs over even at his eyes", he meant that_____. **[Analysis]**

(a) Brutus is mourning for Caesar's death
(b) Brutus' sorrow is overflowing and evident in his tears
(c) Brutus regrets his involvement in the conspiracy
(d) Brutus is deeply affected by Antony's speech

(vii) Which of the given options contains the figure of speech that appears in the following line from Maya Angelou's poem 'When Great Trees Fall': *'rocks on distant hills shudder'*: **[Application]**

(a) 'The leaves danced in the wind.'
(b) 'Her voice was like a melody.'
(c) 'Time is a thief.'
(d) 'I've told you a million times.'

(viii) What does the "bridge of light" thrown by the moon symbolise in H.W. Longfellow's poem, 'Haunted Houses'? **[Understanding/Analysis]**

(a) The pathway to heaven
(b) The connection between life and afterlife
(c) The divide between science and superstition
(d) The journey from ignorance to knowledge

(ix) Which of the following is NOT a reaction to the lady dropping her glove in Leigh Hunt's poem 'The Glove and the Lions'? **[Understanding]**

(a) The knights laugh at the challenge
(b) The lions did not react to the man's movement in the arena
(c) The lady shows off her lover's affection
(d) The knight retrieves the glove

(x) Which of the given options contains the figure of speech that appears in the following line from Sukumar Ray's poem, 'The Power of Music': '*And in the sky the feathered fly…*': **[Application]**

(a) 'The classroom was a beehive of activity.'
(b) 'Her smile was so bright; it could light up the entire universe.'
(c) 'The whispering winds paved the way.'
(d) 'The sun peeked down on the joyful children.'

(xi) The theme of Robert Frost's 'A Considerable Speck' is _____. **[Analysis]**

(a) The insignificance of small things in life
(b) The recognition of intelligence in unexpected places
(c) The beauty of nature and its minute details
(d) The temporary nature of life and existence

(xii) _____ indicates a situation of war in Alphonse Daudet's story, 'The Last Lesson'. **[Understanding]**

(a) There was a crowd in front of the bulletin board.
(b) Prussian soldiers were drilling.
(c) The school was attacked.
(d) M. Hamel's last lesson.

(xiii) In Ray Bradbury's story 'The Pedestrian', the police car was suspicious of Leonard Mead because _____. **[Recall]**

(a) He was carrying something illegal.
(b) He was a writer.
(c) He was outside at night.
(d) He tried to run from the police car.

(xiv) In Ama Ata Aidoo's short story, 'The Girl Who Can', upon learning about Adjoa's selection for the games, her Nana was _____. **[Recall]**

(a) Worried but surprised
(b) Pleased out of surprise
(c) Angry and worried
(d) Ignorant

(xv) Choose the option that lists the sequence of events from William Sleator's short story 'The Elevator' in the correct order. **[Understanding]**

1. Martin nervously entered the elevator, feeling uneasy while the door sealed them in.
2. The elevator stopped at ten, where the fat lady was waiting for him.
3. Martin decided to take the stairs instead of riding the elevator with the fat lady.
4. Martin ran down the dark stairs, fell, and broke his leg.

**Options:**

(a) 1, 2, 3, 4
(b) 3, 4, 2, 1
(c) 1, 3, 2, 4
(d) 2, 1, 3, 4

(xvi) Select the option that shows the correct relationship between statements (1) and (2) from Stephen Leacock's short story, 'With the Photographer'. **[Analysis]**

**Statement 1:** The photographer kept asking the narrator to adjust his position, making him feel more uncomfortable.

**Statement 2:** The narrator's photo came out looking stiff and unnatural.

(a) (1) is true and (2) is false.
(b) (2) is true and (1) is false.
(c) (1) is the cause for (2).
(d) (1) and (2) are independent of each other.

## Section-B (Answer one or more questions from this Section)

### DRAMA

### (Julius Caesar by William Shakespeare)

**Question 2.**

**Read the extract given below and answer the questions that follow:**

*Octavius: You may do your will;*
*But he's a tried and valiant soldier.*

*Antony: So is my horse, Octavius; and for that*
*I do appoint him store of provender:*
*It is a creature that I teach to fight,*
*To wind, to stop, to run directly on,*
*His corporal motion govern'd by my spirit.*

(i) Where are Antony and Octavius? What are they doing? Who is being discussed in the above extract? **[Recall]**

(ii) Where does Antony send the person being discussed and why? What is Antony's attitude towards that person? **[Recall & Understanding]**

(iii) Immediately before the extract, what is the comparison Antony makes about the person being discussed? **[Recall]**

(iv) Later in the scene, Antony says, "And now, Octavius, Listen great things." What 'great things' does he speak of? **[Recall]**

(v) State one characteristic of Octavius that can be observed from this scene. Justify your answer with an example. **[Evaluative & Analysis]**

**Question 3.**

**Read the extract given below and answer the questions that follow:**

*Antony: I speak not to disprove what Brutus spoke,*
*But here I am to speak what I do know.*
*You all did love him once, not without cause:*
*What cause withholds you then, to mourn for him?*
*O judgment! thou art fled to brutish beasts,*
*And men have lost their reason. Bear with me;*

(i) What is Antony's approach in the above lines? **[Understanding]**

(ii) "I speak not to disprove what Brutus spoke". Why does Antony say this? **[Understanding]**

(iii) What is Antony's appeal to the people? **[Recall]**

(iv) How does Antony rekindle the emotions of the blindfolded people? **[Recall]**

(v) Antony's speech is a clever play of words intended to hoodwink the assassins by safeguarding himself from their ire and yet have the desired effect of rallying a public outcry against the perpetrators of the crime. Do you agree? **[Evaluative and Analysis]**

## Section-C (Answer one or more questions from this Section)

### PROSE – SHORT STORIES

### (Treasure Chest – A Collection of ICSE Poems and Short Stories)

**Question 4.**

**Read the following extract from Ama Ata Aidoo's short story, 'The Girl Who Can' and answer the questions that follow:**

*"Nana would just laugh. 'Ah, maybe with legs like hers, she might as well go to school."*

*Running with our classmates on our small sports field and winning first place each time never seemed to me to be anything about which to tell anyone at home. This time it was different. I don't know how the teachers decided to let me run for the junior section of our school in the district games. But they did.*

*When I went home to tell my mother and Nana, they had not believed it at first. So Nana had taken it upon herself to go and 'ask into it properly'. She came home to tell my mother that it was really true. I was one of my school's runners.*

(i) About whose legs, Nana is talking about? Why was Nana not happy with the legs of the girl? Is there any orthodox thinking reflected in Nana's words? **[Recall & Analysis]**

(ii) Why did the central character think that running in the school's small sports field was nothing like talking at home? Why this time the running in the school is different than other times? **[Understanding]**

(iii) What did the narrator's mother and her Nana not believe at first, as mentioned in context? Why was it unbelievable to them? How did Nana finally accept the fact? **[Recall & Understanding]**

(iv) At the end of the story, Nana was very proud of her granddaughter. What made her proud of her granddaughter? **[Understanding]**

(v) How has Nana shown her pride in the achievements of her granddaughter? What was the mother's reaction to the achievement of her daughter without having the so-called perfect legs? **[Recall & Understanding]**

**Question 5.**

**Read the extract from Alphonse Daudet's short story, 'The Last Lesson' and answer the questions that follow :**

*"Through the window, I saw my classmates, already in their places, and M.Hamel walking up and down with his terrible iron ruler under his arm. I had to open the door and go in before everybody. You can imagine how I blushed and how frightened I was.*

*But nothing happened, M.Hamel saw me and said very kindly:*

*"Go to your place quickly, little Franz. We were beginning without you."*

(i) Who is referred to as 'I'? Why was the narrator peeping through the window? Why on that day all were already in their places to attend the class? **[Recall]**

(ii) Who is M. Hamel in the story? With what was M. Hamel walking up and down in the classroom? Why was he walking up and down in the classroom? **[Recall & Understanding]**

(iii) Why was Franz frightened to go inside the classroom? Why did M. Hamel ask little Franz to take his seat quickly? **[Recall & Understanding]**

(iv) Why M. Hamel was in hurry to start the class even without Little Franz? **[Recall & Understanding]**

(v) Which class did M. Hamel teach, and why do you think was this class important to the narrator? **[Recall and Analysis]**

## Section-D (Answer one or more questions from this Section)

### POETRY

**(Treasure Chest – A Collection of ICSE Poems and Short Stories)**

**Question 6.**

**Read the following extract from H. W. Longfellow's poem, 'Haunted Houses' and answer the questions that follow:**

*All houses wherein men have lived and died*
*Are haunted houses. Through the open doors*
*The harmless phantoms on their errands glide,*
*With feet that make no sound upon the floors.*

(i) What does the poet say about houses where people have lived and died? **[Recall]**

(ii) What does the poet mean by 'harmless phantoms'? **[Understanding]**

(iii) How would you describe the mood in a house described by the poet? Provide an example from the extract. **[Analysis & Recall]**

(iv) How does the poet create a sense of quiet and calm in this extract? Identify the literary device used. **[Analysis & Application]**

(v) How does the poet perceive the presence of the phantoms in the house? Provide evidence from the extract and support your answer. **[Understanding & Recall]**

**Question 7.**

**Read the extract from Maya Angelou's poem, 'When Great Trees Fall' and answer the questions that follow:**

*When great trees fall,*
*rocks on distant hills shudder,*
*lions hunker down*
*in tall grasses,*
*and even elephants*
*hunker after safety.*

(i) **What natural phenomena are described when great trees fall?** **[Recall]**

(ii) **What is the significance of the reactions of lions and elephants to the falling of great trees?** **[Understanding]**

(iii) **How can the imagery of 'great trees falling' be applied to the impact of losing influential individuals in society?** **[Analysis]**

(iv) **Analyse how the poet uses the imagery of nature to convey the magnitude of loss. Identify two examples from the extract.** **[Analysis & Application]**

(v) **Do you think the poet effectively conveys the impact of loss through the imagery used? Justify your answer with a reference to the extract.** **[Evaluative and Analysis]**

□□

# 1 Sample Paper

## English Literature [English-II]

### Answers

## Section-A

**Answer 1.**

(i) (a) Brutus felt that it would be unwise to make the citizens hear only his version of the assassination carried out

(ii) (b) He was feasting with Caesar

(iii) (a) corrupt

(iv) (b) Brutus

(v) (a) Fetching Caesar's will

(vi) (c) Brutus removed his dagger from Caesar's body

(vii) (b) 'The loud silence echoed in the library.'

(viii) (c) The stars weep in sorrow

(ix) (b) The fish searching for silence

(x) (b) Dramatic

(xi) (b) The living and the dead coexist, with the dead having a quiet presence among the living.

(xii) (c) that he was the only person outside

(xiii) (b) satisfied

(xiv) (b) Being stuck in the elevator

(xv) (a) 1, 3, 4, 2

(xvi) (a) (1) is true and (2) is false.

## Section-B

**Answer 2.**

(i) Cassius orders Pindarus to 'get higher on that hill' for strategic reasons. Cassius, who is engaged in a battle at Philippi, is struggling with poor eyesight. By sending Pindarus to a higher vantage point, Cassius aims to gain a clearer understanding of the situation in the battleground, particularly the situation surrounding his friend, Titinius.

(ii) The line "My sight was ever thick" presents a dramatic irony where Cassius admits to being short-sighted, unable to clearly see the battlefield where he had sent Titinius. The irony is that this literal short-sightedness mirrors his metaphorical short-sightedness, as he ultimately believes in Pindarus' misinterpreted report without waiting for the full picture. This misunderstanding leads to a tragic decision, highlighting Cassius' inability to perceive the true situation both visually and strategically.

(iii) After sending Pindarus up the hill, Cassius lamented to himself, overcome with despair and self-reproach. He berated himself for being a coward who had lived long enough to see his best friend taken before his eyes. Cassius was consumed by anxiety and a sense of hopelessness, convinced that Titinius had been captured or killed.

(iv) Pindarus reports that Titinius is encircled by horsemen who are riding quickly towards him. However, Titinius was moving on bravely. He then watched a few soldiers getting down from the horses and Titinius got down too. Pindarus misinterprets it as Titinius being taken captive. However, on the

contrary, he was welcomed by the victorious army of Brutus. This incorrect report leads Cassius to believe that the battle is lost and that his dear friend Titinius has been taken, driving him to a sense of despair and ultimately leading to his tragic decision to take his own life.

(v) Pindarus confirms the news when he hears shouts of joy. He misinterprets that this sound was the sound of the enemy army rejoicing in their victory by taking Titinius captive.

**Answer 3.**

(i) Overwhelmed by the tragic assassination of Julius Caesar, Antony's emotions range from profound grief to seething rage. He struggles to grapple with the treacherous act of the senators, seeing it as not just the death of an individual, but the demise of Rome's noblest leader. This soliloquy reflects his sorrow for the loss and forewarns the consequences Rome will face due to this grave betrayal.

(ii) Antony is overwhelmed with grief on seeing the body of Julius Caesar lying on the ground in a pool of blood. He is shaking with indignation because of the heinous act where such a great ruler had to face an extreme, brutal and a sad end by the people he trusted. He calls the conspirators "Butchers" as they had mercilessly stabbed him countless times and regrets being 'meek and gentle' with them.

(iii) Antony prophesies that Rome has invoked a curse because of Caesar's murder. He can foresee havoc, anarchy and bloodshed. Italy will now face a civil war. The intensity of the crime will increase by leaps and bounds. There will be destruction everywhere to the extent that it will choke compassion in people and even mothers will smile to see their babies cut to pieces with weapons of war.

(iv) Ate is the Greek goddess of revenge, discord and mischief. Zeus banished her from Olympus to hell. She provoked Gods and led men into rash acts of violence. So, in his vengeful mood, Antony says that Caesar's ghost will seek revenge with 'Ate' by his side.

(v) Antony anticipates that Caesar's assassination will plunge Rome into chaotic and violent turmoil, predicting widespread civil strife and moral decay. He foresees a future where brutal violence becomes commonplace, eroding compassion and humanity to the point where even the most horrific scenes, like mothers witnessing their children's deaths in war, become normalised and fail to elicit pity or grief.

## Section-C

**Answer 4.**

(i) Martin, a small boy of twelve years, is the central character of the short story 'The Elevator' by William Sleator. Martin lived in an apartment on the seventeenth floor of an old building. He lived with his father in that old building.

(ii) Martin's relationship with his father was strained and lacking in understanding or support. His father was critical of Martin, often expressing disappointment and impatience with him. He even did not acknowledge or validate Martin's fears.

Martin's father calls him a coward because he perceives Martin's fear of the elevator and the strange woman as irrational and childish. He is frustrated by what he sees as Martin's weakness and lack of bravery, failing to recognise the genuine anxiety and distress his son is experiencing.

(iii) Martin was out of breath in front of his father because he had climbed seventeen flights of stairs to their apartment. He chose to take the stairs instead of the elevator due to his fear and discomfort with the old, small, and unreliable elevator.

There is a valid reason for Martin to be out of breath. Climbing seventeen flights of stairs is physically demanding, especially for a thin, twelve-year-old boy who is already described as weak.

(iv) Martin's father called him skinny, weak, and bad at sports. He also implied that Martin was a coward, particularly when he questioned why Martin didn't take the elevator and assumed that he was afraid. This critical view is reflected in his attitude and comments, such as when he impatiently dismissed Martin's fear of the strange woman in the elevator and told him to "grow up." Thus, instead of encouraging him to fight his fears, he called him a coward. This made Martin more discouraged.

(v) Martin started taking the elevator after his father scolded him because he wanted to avoid further criticism and disappointment from his father. His father's scolding made him feel ashamed and pressured to conform to his father's expectations of bravery and maturity. To avoid being seen as a

coward and to live up to his father's standards, Martin forced himself to use the elevator despite his fear and discomfort.

**Answer 5.**

(i) The metallic voice was heard from a lone car. The metallic voice asked Leonard Mead, the only character in the story, to stand still.

(ii) The central character of the story 'The Pedestrian' by Ray Bradbury is Leonard Mead. Leonard Mead is a writer by profession in the story 'The Pedestrian'. He liked to take a solitary walk as a regular leisure activity.

(iii) The "iron voice" that asked the narrator the question is the automated police car. The automatic police car was taking the narrator to a psychiatric center named Psychiatric Center for Research on Regressive Tendencies because he was found walking outside, which was considered unusual and suspicious behaviour in the context of the story.

(iv) The narrator, Leonard Mead compared his shadow with the shadow of a hawk in midcountry. If the narrator, Leonard Mead, closed his eyes and stood still in the silent street, he could imagine himself upon the center of a plain, specifically a "wintry, windless Arizona desert with no house in a thousand miles, and only dry river beds, the streets, for company." This imagery emphasises the desolation and emptiness of the city streets in this futuristic world.

(v) At the end of the story, Leonard Mead, is arrested by an automated police car for taking a solitary walk at night. The car, representing a society that no longer values human interaction, takes him to the Psychiatric Center for Research on Regressive Tendencies. This suggests that his simple act of walking is seen as abnormal. The story ends with Leonard being taken away, highlighting his isolation and the oppressive, technology-dominated world he lives in. This story is categorised as a Science fiction because it has a futuristic setting with advanced technology and delves into human nature and the consequences of technological over-reliance.

## Section-D

**Answer 6.**

(i) Bhisma Lochan's singing causes immediate chaos. The bullock carts are overturned, and the horses line the roadside in distress. The animals resent the loud noise, reacting with confusion and panic, whining and staring helplessly with their feet in the air. This indicates the immediate and disruptive impact of his singing.

(ii) The animals react negatively to Bhisma Lochan's singing. They "resent the blare," "whine and stare with feet in air," and are "quite confounded." These words and phrases convey their confusion, distress, and helplessness.

(iii) As a bystander, I see bullock-carts overturned and horses standing by the roadside. I hear the loud, booming voice of Bhisma Lochan, which is harsh and overpowering. The animals look distressed, some with their feet in the air, clearly bewildered. I feel a mix of amusement at the absurdity of the scene and sympathy for the confused animals.

(iv) The poet uses vivid imagery such as "bullock-carts are overturned" and "horses line the roadside" to depict the physical chaos. The phrases "resent the blare," "whine and stare," and "feet in air" further illustrate the animals' emotional turmoil. This imagery creates a clear and exaggerated picture of the disruptive impact of Bhisma Lochan's singing.

(v) The poet's use of humour through exaggeration and absurdity effectively enhances the reader's experience by making the scene more engaging and entertaining. The ridiculousness of the animals' reactions to Bhisma Lochan's singing, such as "whine and stare with feet in air," adds a layer of amusement that makes the poem memorable and enjoyable. This humour also helps to underscore the theme of the unexpected power of music in a light-hearted way.

**Answer 7.**

(i) The "speck" is a tiny, moving dot that the poet notices on his white paper sheet. It was actually a small insect. Initially mistaking it for a dust particle, he realizes it is a living creature with its own inclinations and intelligence, prompting him to observe its behaviour rather than kill it with a drop of ink.

(ii) The poet notices the speck because it moves across the white sheet of paper, drawing his attention. It stands out against the stark white paper on which he is writing. Its movement across the sheet draws his attention, prompting him to idly raise his pen to stop it with a drop of ink before realising it is a living mite.

(iii) If I were the poet, I might initially be annoyed or curious about the moving speck. My first thought might be to remove or kill it to prevent it from disturbing my writing. However, I would also be intrigued by its movement and might observe it closely before taking any action.

(iv) The phrase "something strange about it made me think" suggests that the poet sees something unusual or noteworthy in the speck's movement or existence. This moment of contemplation shifts his perception from seeing the speck as a mere dust particle to recognising it as a living creature with its own behaviours and intentions. This change in perspective leads the poet to appreciate the speck's intelligence and struggle for survival, transforming a trivial encounter into a meaningful observation about life and consciousness.

(v) Yes, the poet's decision to pause and reflect on the speck was meaningful. The extract shows that he recognised the speck as a living creature with its own intentions and intelligence, not just a piece of dust. This reflection made him see the speck's struggle and hesitation, prompting a moment of empathy. By letting it be, the poet acknowledges the value of even the tiniest life. This pause reveals his appreciation for life and intelligence in all forms. ❑❑

# Specimen Question Paper

## History & Civics

Maximum Marks: 80
Time allowed: Two hours

### General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will not be allowed to write during first 15 minutes.*
*This time is to be spent in reading the question paper.*
*The time given at the head of this Paper is the time allowed for writing the answers.*
*Attempt **all** questions from **Part I** (Compulsory).*
*A total of **five** questions are to be attempted from Part II, **two** out of three questions from **Section A** and **three** out of five questions from **Section B**.*
*The intended marks for questions or parts of questions are given in brackets []*

***Instruction for the Supervising Examiner***

*Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.*

## Questions

### Part-I

(Attempt all questions from this Part)

**Question 1.**

**Choose the correct answers to the questions from the given options :**
**(Do not copy the question, write the correct answers only.)** [16]

(i) Identify the exclusive powers of the Rajya Sabha.

**P :** Can introduce a new All India Service
**Q :** Can impeach the President
**R :** Can never be dissolved as a whole
**S :** Can introduce a Money Bill

(a) P and Q (b) R and S (c) P and R (d) Q and S

[Recall]

(ii) Who made the amendment which resulted in the headline given below?

THE TIMES OF INDIA

In Historic Move Within 100 Days Of Modi-2, Govt Bifurcates State Into 2 UTs, Delangs Article 370 & Scraps JSA

KASHMIR IS NOW UNION'S TERRITORY

J&K To Lose Special Status, Centre To Directly Rule Ladakh

INDIA'S NORTH POLE SHIFTS TO CENTRE

Why now? PM, Shah felt political tide and timing favoured action

(a) The Supreme Court
(b) The President
(c) The Parliament
(d) The Prime Minister

[Recall]

(iii) Given below are details of few Indian citizens:

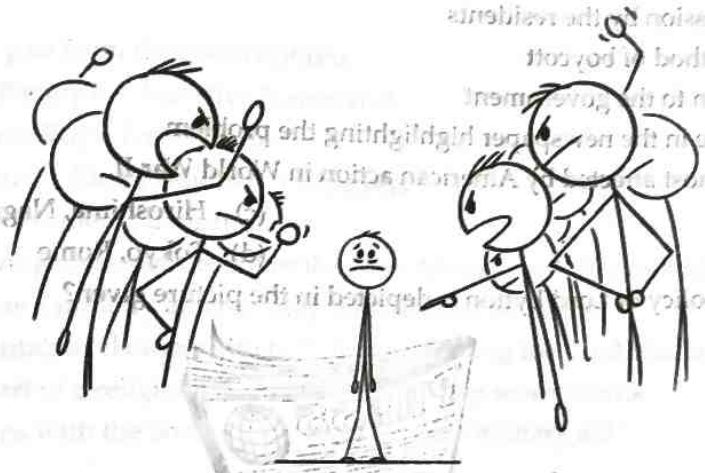
| Person | Age [In years] | Description |
|---|---|---|
| W | 34 | Is a Professor in a Government College |
| X | 35 | Has taken up citizenship of the United States of America |
| Y | 27 | Is a reputed sportsperson |
| Z | 36 | Is a scientist |

Select the person who fulfils the eligibility criteria to become the President of India.

(a) W (b) X (c) Y (d) Z

[Understanding]

(iv) Observe the given picture. In case of a similar unruly situation in the Lok Sabha, choose the action that may be taken by the Speaker.



(a) Adjourn the house for lack of quorum.

(b) Dissolve the Lok Sabha.

(c) Adjourn the house for lack of discipline.

(d) Disqualify the members under Anti-defection law.

[Application]

(v) Choose the correct option to replace the underlined word:

The Union ministers are collectively responsible to the Prime Minister.

(a) Lok Sabha (c) President

(b) Rajya Sabha (d) Speaker

[Application]

(vi) *Residents of Jodhpur, X and Y got married in the year 2014 and after 4 months of wedlock, petty family issues and arguments resulted in their separation for 6 years. The matter was placed before the Bench of Lok Adalat Family Court, Jodhpur wherein all efforts were made to reunite the family again. With constant efforts of counselling, parties agreed to live together and withdraw their Divorce Petition.*

Case Study, Lok Adalat, District – Jodhpur

Which advantage of the Lok Adalat is highlighted in the above case?

(a) Saves money (c) Works on the spirit of compromise

(b) Speedy justice (d) Reduces the burden on High Courts

[Application]

(vii) **Assertion (A):** The Indian National Congress was formed in 1885.

**Reason (R):** The main aim of the Indian National Congress at its inception was to demand complete independence for India.

(a) (A) is true and (R) is false.

(b) (A) is false and (R) is true.

(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

[Analysis]

(viii) Identify the option which shows the correct chronology of the following events:

1. The Dandi March
2. The Second Round Table Conference
3. The Simon Commission

(a) 3-1-2
(b) 1-3-2
(c) 3-2-1
(d) 2-1-3

**[Understanding]**

(ix) The area in which Anand stays has had no water supply for three days in spite of repeated complaints. The residents have a meeting and discuss a few methods to resolve this problem. Being a follower of the beliefs and methods of the Early Nationalists, which of the following methods is Anand **NOT LIKELY** to approve?

(a) Peaceful procession by the residents
(b) Follow the method of boycott
(c) Write a petition to the government
(d) Write an article in the newspaper highlighting the problem

**[Application]**

(x) Identify the cities most affected by American action in World War II.

(a) Rome, Berlin
(b) Tokyo, Berlin
(c) Hiroshima, Nagasaki
(d) Tokyo, Rome

**[Recall]**

(xi) Which repressive policy of Lord Lytton is depicted in the picture given?

(a) Organising the Grand Delhi
(b) The Arms Act
(c) Reduction of the maximum age of Civil Service Examination
(d) The Vernacular Press Act

**[Understanding & Recall]**

(xii) Identify the odd one out of the following Assertive Nationalists Leaders.

(a) Bipin Chandra Pal
(b) Dadabhai Naoroji
(c) Lala Lajpat Rai
(d) Bal Gangadhar Tilak

**[Analysis]**

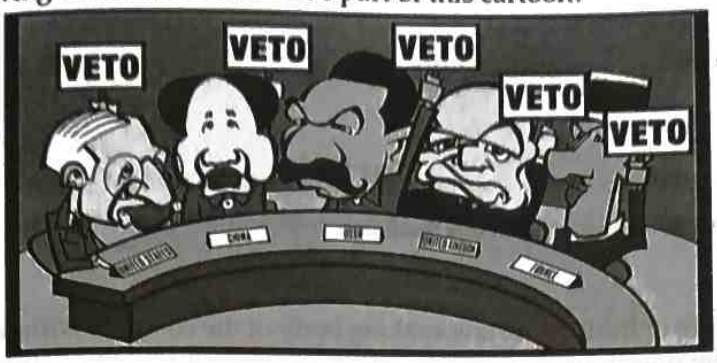
(xiii) Read the description and choose the correct option:

*This was a significant event in Indian history. Many underlying causes of the revolt included economic exploitation, social reforms, and political annexations by the British. Even in its failure it ignited nationalism in the people of India. Its immediate cause was_____.*

(a) introduction of the Doctrine of Lapse
(b) annexation of Indian states by the British
(c) use of greased cartridges in Enfield rifles
(d) establishment of English as the medium of instruction

**[Recall]**

(xiv) Which of the following countries will NOT be part of this cartoon?




(a) China (b) Japan (c) Russia (d) Britain

**[Application]**

(xv) Identify the correct pair from the given options.

(a) Surendranath Banerjee – Assertive Nationalist

(b) Raja Ram Mohan Roy – Delhi Durbar

(c) Dadabhai Naoroji – First President of Congress

(d) Jyotiba Phule – Women's Education

**[Understanding]**

(xvi) Which of the following scenarios describes the Non-Alignment Policy (NAM)?

(a) A country forms a military alliance only with the United States.

(b) A country maintains relations with both factions during the Cold War and does not take sides.

(c) A country is part of a religious movement advocating non-violence

(d) A country aligns with the Soviet Union and receives military aid.

**[Understanding]**

**Question 2.** **[2]**

(i) Read the extract given below and answer the question which follow:

*Congress member's adjournment motion disallowed. The notice, along with another moved demanding a discussion on China, was disallowed in the Lok Sabha.* The Times of India, Feb 10, 2023

Who can allow or disallow the above motion? What does this motion mean? **[Understanding]**

(ii) Which category of power is being exercised by the President in the following: **[2]**

(a) Approval of Bills

(b) Appointment of the Supreme Court judges

**[Recall]**

(iii) *The whole plan may not be perfect but like all plans, its success will depend on the spirit of goodwill with which it is carried out.* **[2]**

*—Lord Mountbatten*

Give two reasons for the acceptance of the above plan by the Congress. **[Understanding]**

(iv) Imagine you were an artisan in the year 1856. Mention any two ways in which the economic policies of the British would have affected you. **[Understanding]**

(v) Look at the picture given and answer. **[2]**

Identify the leader seen in the picture above. Mention any one of his contributions. **[Recall]**

(vi) Mention any two objectives of the League of Nations. [2] [Recall]

(vii) Mention any two ideologies of the dictators. [2] [Recall]

## Part-II

### Section-A (Attempt any two question from this Section.)

**Question 3.**

The Union Legislature of India is the law-making body of the country. With reference to the Parliament, answer the following questions:

(i) Mention any three key differences in power between the Lok Sabha and the Rajya Sabha that make the Lok Sabha more influential. [3] [Analysis]

(ii) *Rajya Sabha adjourned sine die, overall productivity at 79 percent.* —Deccan Herald, 21 December 2023

Who can adjourn the above session? Explain the composition of this house. [3] [Recall]

(iii) Mention any four legislative powers of the Parliament. [4] [Recall]

**Question 4.**

The President is the nominal head of the executive and the first citizen of the country.

With reference to this, answer the following questions:

(i) The President is the nominal head of the country and cannot act independently. Mention any three legislative powers of the President which justify the nominal position. [3] [Understanding]

(ii) Mention any three points to enumerate the financial powers vested in the President of India. [3] [Recall]

(iii) Describe the constitutional procedure to remove the President. [4] [Recall]

**Question 5.**

The Supreme Court of India is the highest court of the Republic of India. With reference to the Supreme Court, answer the following questions:

(i) Who appoints the judges of the Supreme Court?
What is the composition of the Supreme Court? [3] [Recall]

(ii) Under Article 129, the Supreme Court of India is called a Court of Record. Justify this statement with any three points. [3] [Analysis]

(iii) Explain the following terms: [4] [Recall]
(a) Revisory Jurisdiction
(b) Original Jurisdiction

### Section-B (Attempt any three questions from this Section.)

**Question 6.**

The Indian Rebellion of 1857 was a major uprising against the rule of the British East India Company.

With reference to this, answer the following questions:

(i) The British used many policies of expansion. Mention any three such policies. [3]

(ii) Analyse the impact of the failure of the Revolt of 1857 on the Mughals and the Peshwas. [3] [Recall]

(iii) The Indian army was reorganised after 1858, to prevent the reoccurrence of another uprising. Justify this statement by stating any four changes made in the army after the Revolt. [4] [Analysis]

**Question7.**

Nationalism refers to the feeling of oneness that emerges when people consider themselves as one nation. With reference to the growth of nationalism, answer the following:

(i) Name the first President of the Congress. Mention any two objectives of the Congress. [3] [Recall]

(ii) Whether it is fiction, non-fiction, or periodical, all kinds of literature contributed at large in the national consciousness of India in pre-independence times. Mention any three points to analyse the role of the press in the growth of nationalism. [3] [Analysis]

(iii) Explain any two policies of Lord Lytton that showcased his attitude of racial superiority, eventually leading to the growth of nationalism. [4] [Recall]

**Question 8.**

Read the excerpt given below and answer the questions that follow:

The March, which took place in India, was led by Mohandas Gandhi to protest British rule in India. During the march, thousands of Indians followed Gandhi from his religious retreat near Ahmedabad to the Arabian Sea coast, a distance of some 240 miles. The march resulted in the arrest of nearly 60,000 people, including Gandhi himself."

— The Marion (Ohio) Star [Edited]

(i) Name the March being discussed above. Which movement did this March lead to? In which year was that movement launched? [3] [Recall]

(ii) The movement which began with this March made a considerable impact on the social and political surroundings of the country. Analyse this statement by mentioning any three impacts. [3] [Analysis]

(iii) Mention any four clauses of the treaty which led to the suspension of this movement. [4] [Recall]

**Question 9.**

Look at the picture given below and answer the following questions:

The Evening Herald

ASSASSINATION MAY LEAD TO WAR

AUSTRIAN ARCH DUKE IS KILLED; BELIEVED THAT EMPEROR WILL DIE; GIGANTIC MURDER PLOT IS FEARED

Two Men Highly Considered for Provisional Presidency of Mexico

CUT THE WEEDS BEFORE BORED

EXTRA ROOMS IN CITY ARE BEING PLACED ON LIST

WAR ON KILLING USEFUL BIRDIES

CHURCHES PLAN BIRD PICNIC

(i) How did the assassination mentioned above become a cause for the First World War? [3] [Recall]

(ii) Mention any three points to analyse how Europe was reorganised because of the war triggered by this incident. [3] [Recall]

(iii) The Germans described the Treaty of Versailles as harsh and humiliating. Give any four reasons that justify this statement. [4] [Analysis]

**Question 10.**

The United Nations Organisation aims to maintain international peace. With reference to its organs and agencies, answer the following:

(i) What is the composition of the International Court of Justice? [3] [Recall]

(ii) Mention any three exclusive functions of the General Assembly. [3] [Recall]

(iii) *Kolkata's famous Durga Puja received the intangible heritage tag.* Which agency of the United Nations is authorised to give this tag? Mention any three other contributions of that agency in the preservation of culture. [4] [Application & Recall]

# Answers

## Part-I

**Answer 1.**

(i) (c) P and R

**Explanation :**

Rajya Sabha has exclusive powers to introduce a new All India Service (P) and it is a permanent body that cannot be dissolved (R), unlike the Lok Sabha.

(ii) (c) The Parliament

**Explanation :**

The amendment leading to the abrogation of Article 370 and the reorganisation of Jammu & Kashmir into Union Territories was passed by the Indian Parliament in August 2019.

(iii) (d) Z

**Explanation :**

To be President, a person must be an Indian citizen, at least 35 years old, and eligible for election to the Lok Sabha. Only Z meets all these criteria.

(iv) (c) Adjourn the house for lack of discipline.

**Explanation :**

In case of disorderly conduct or unruly scenes, the Speaker may adjourn the Lok Sabha to maintain discipline and decorum.

(v) (a) Lok Sabha

**Explanation :**

The Union Council of Ministers is collectively responsible to the Lok Sabha, not to the Prime Minister. This means they must retain the confidence of the Lok Sabha to remain in office.

(vi) (c) Works on the spirit of compromise

**Explanation :**

The case highlights how the Lok Adalat successfully reconciled the separated couple through mutual understanding and counselling, showcasing its emphasis on compromise and amicable settlement.

(vii) (a) (A) is true and (R) is false.

**Explanation :**

The Indian National Congress was formed in 1885, so Assertion (A) is true.

However, the main aim at its inception was not to demand complete independence but to seek greater participation in the governance of India and present Indian interests to the British government. Hence, Reason (R) is false.

(viii) (a) 3-1-2

**Explanation :**

1. The Simon Commission – (1928)
2. The Dandi March – (1930)
3. The Second Round Table Conference – (1931)

This is the correct chronological order of the events.

(ix) (b) Follow the method of boycott

**Explanation :**

Anand, like the Early Nationalists, believed in constitutional methods such as petitions, articles, and peaceful processions. He would not approve of boycott, a method popularised by Assertive Nationalists later.

(x) (c) Hiroshima, Nagasaki

**Explanation :**

The United States dropped atomic bombs on the Japanese cities of Hiroshima (6 August 1945) and Nagasaki (9 August 1945) during World War II. These bombings led to massive destruction and loss of life, eventually forcing Japan to surrender and ending the war.

(xi) (d) The Vernacular Press Act

**Explanation :**

The Vernacular Press Act (1878) curtailed the freedom of Indian-language newspapers, preventing criticism of British rule. It symbolised Lord Lytton's repressive policies and silenced native voices.

(xii) (b) Dadabhai Naoroji

**Explanation :**

Dadabhai Naoroji was an Early Nationalist (Moderate), not an Assertive Nationalist.

The others—Bipin Chandra Pal, Lala Lajpat Rai, and Bal Gangadhar Tilak—were part of the Assertive Nationalist group known as the Lal-Bal-Pal trio.

(xiii) (c) use of greased cartridges in Enfield rifles

**Explanation :**

The immediate cause of the Revolt of 1857 was the introduction of the greased cartridges in the newly issued Enfield rifles. These cartridges were rumoured to be coated with cow and pig fat, which hurt the religious sentiments of both Hindus and Muslims, sparking widespread rebellion across India.

(xiv) (b) Japan

**Explanation :**

The cartoon depicts the five permanent members of the United Nations Security Council (UNSC)—China, Russia, USA, Britain, and France—all of whom hold veto power.

Japan is not a permanent member of the UNSC and does not have veto power, hence it would not be part of this cartoon.

(xv) (d) Jyotiba Phule – Women's Education

**Explanation :**

(a) Surendranath Banerjee was an Early Nationalist (Moderate), not an Assertive one.

(b) Raja Ram Mohan Roy was a social reformer, not connected with the Delhi Durbar.

(c) Dadabhai Naoroji was the second President of the Congress (1886), not the first (W.C. Bonnerjee was the first in 1885).

(d) Jyotiba Phule is correctly associated with pioneering women's education and social reform.

(xvi) (b) A country maintains relations with both factions during the Cold War and does not take sides.

**Explanation :**

The Non-Alignment Policy (NAM) was adopted during the Cold War by countries that chose not to align with either the US-led Western bloc or the USSR-led Eastern bloc. It aimed at preserving sovereignty, avoiding involvement in power blocs, and promoting peaceful coexistence.

**Answer 2.**

(i) The Speaker of the Lok Sabha can allow or disallow an Adjournment Motion.
It means to give up on the business of the House and take up a matter of urgent importance.

(ii) (a) Approval of Bills – Legislative Power

(b) Appointment of the Supreme Court judges – Executive Power

(iii) As an artisan in 1856, the British economic policies would have affected me by:

1. Undermining local crafts due to the influx of British manufactured goods, leading to loss of livelihood.
2. Imposing heavy taxes on raw materials, increasing production costs and reducing profitability.

(iv) The Congress accepted the Mountbatten Plan due to the following reasons:

1. The large-scale communal riots that engulfed the whole country convinced all that the only solution to the communal problem lay in the Partition of India.
2. The League had joined the Interim Government to obstruct and not to cooperate. The experience of working with the League in the Interim Government had convinced the Congress that it is impossible to have a joint administration.
3. The Congress leaders felt that further delay in the transfer of power could find India in the midst of a civil war. **(Any two)**

(v) Bal Gangadhar Tilak.

**His contribution:**

1. He gave the famous slogan, "Swaraj is my birthright and I shall have it," which inspired Indians to fight for self-rule and laid the foundation for assertive nationalism in the Indian freedom movement.
2. In 1916, he established the Home Rule League at Pune to attain self-government within the British Empire through constitutional means. **(Any one)**

(vi) **Objectives of the League of Nations:**

1. To preserve peace and security in the world.
2. To settle international conflicts in a peaceful manner.
3. To promote just and honourable relations among the nations of the world.
4. To force its members not to resort to war. **(Any two)**

(vii) The two ideologies of the dictators were:

1. Dictators believed in absolute control over all aspects of life, including the government, media, education, and even private beliefs.
2. They promoted intense loyalty to the nation, often placing it above individual rights and promoting the idea of national superiority.

# Part-II

## Section-A

**Answer 3.**

(i) Three key differences that make the Lok Sabha more influential than the Rajya Sabha are:

1. A Motion of No-Confidence against the government can be introduced and passed only in the Lok Sabha.
2. The Council of Ministers is answerable only to the Lok Sabha and remains in office as long as it enjoys the confidence of the House.
3. Money Bills can be introduced only in the Lok Sabha. The Rajya Sabha cannot reject or amend them; it may only make recommendations, which the Lok Sabha may accept or ignore.
4. The Lok Sabha has exclusive authority to pass the Budget, thereby exercising control over government finances.
5. In the event of a deadlock between the two Houses, the will of the Lok Sabha prevails, owing to its greater numerical strength in a joint sitting.
6. The Lok Sabha alone can pass an Adjournment Motion to discuss urgent matters of public importance. **(Any three)**

(ii) The Chairman or the Vice President of India can adjourn the session of the Rajya Sabha.

**Composition of the Rajya Sabha:** Its maximum strength is 250 members, divided into two categories – nominated and elected.

1. **Nominated Members:** The President nominates 12 members who have special knowledge or practical experience in fields such as literature, science, art and social service.
2. **Elected Members:** The remaining 238 members are elected representatives from the States and two Union Territories, Delhi and Puducherry. Seats are allocated based on the population, resulting in unequal distribution among the States and Union Territories.

(iii) The four Legislative powers of the Union Parliament are given below:

1. The Parliament is a law-making body and it is considered as the centre of all democratic political process. It has exclusive powers to make laws on all subjects listed in Union List and Concurrent List.
2. The Parliament possesses residuary powers, meaning that it can make laws with respect to all those matters that are not mentioned in any of the three lists.
3. The Parliament can amend the Constitution by a two-thirds majority in both the Houses.
4. During a National Emergency, the union system of the government becomes a unitary one by granting Parliament the power to make laws on the 66 subjects of the State List. Also, all state money bills are referred to the Parliament for its approval.

**Answer 4.**

(i) The President performs the following legislative functions on the advice of the Prime Minister and his Cabinet:

1. The President addresses the first session of the Parliament.
2. He/She has the power to send messages to either House of Parliament.
3. He/She can dissolve the Lok Sabha and order fresh elections.
4. He/She gives assent to a bill to make it a law.
5. He/She can promulgate an ordinance, which has the same status as an Act of Parliament.
6. He/She has the power to summon and prorogue the Houses of Parliament.
7. He/She nominates 12 members to the Rajya Sabha. **(Any three)**

(ii) The following points enumerate the financial powers vested in the President of India:

(i) He/She instructs the Annual Budget to be laid before the Parliament in the beginning of every financial year.

(ii) He/She causes the annual financial statement to be laid before the Parliament.

(iii) No Money Bill can be introduced in the Parliament without his/her prior assent.

(v) He/She can create Contingency Fund from which he/she can advance to meet unforeseen expenses.

(vi) He/She can appoint the Finance Commission and implement its recommendations.

(iii) **The Constitutional Procedure to Remove the President of India:** The constitutional procedure for removing the President of India is called impeachment, as specified under Article 61 of the Indian Constitution. It prescribes that the President can be impeached by Parliament if he/she acts against the provisions of the Constitution or is found guilty of misusing his/her status and position or involved in corruption. Charges can be framed by either House of Parliament with a two-thirds majority. A 14-day notice, signed by at least one-fourth of the total members of the House, must be given before initiating proceedings. The other House investigates the charges. If the charges are sustained by a two-thirds majority of the total membership of the investigating House, the President is impeached and removed from office.

**Answer 5.**

(i) The President appoints the judges of the Supreme Court after consultation with the Cabinet as well as the judges of Supreme Court and of High Courts as he/she deems necessary.

**Composition of the Supreme Court:** The Supreme Court of India consists of a Chief Justice of India and not more than 33 other judges, until the Parliament by law prescribes a large number of judges.

(ii) Under Article 129, the Supreme Court of India is called a Court of Record. This statement can be justified with the following three points:

1. Its judgments and orders are preserved as a record, which can be produced in any court as precedents for future reference.
2. Its decisions are binding on all lower courts in India, thereby establishing legal precedents for future cases.
3. If a person commits contempt of court, the Supreme Court has the authority to punish him for contempt of itself.

(iii) (a) **Revisory Jurisdiction:** Under Article 137, the Supreme Court revises its own cases to remove any error that might have crept in because the judgements of the Supreme Court are like laws.

(b) **Original Jurisdiction:** Under Article 131, the Supreme Court has the authority to hear and decide cases in the first instance—cases which cannot be brought before any other court.

## Section-B

**Answer 6.**

(i) The British tried to expand their political power in India by using the following policies:

1. **By Outright Wars:** The British fought many wars to expand their territorial power in India and to safeguard their economic and political interests.
2. **By Subsidiary Alliance:** Some Indian States were brought under the British control without actually annexing them. This was done by following the Subsidiary Alliance, introduced by Lord Wellesley.
3. **By the Doctrine of Lapse:** Lord Dalhousie annexed many Indian states to the Company using the Doctrine of Lapse. Some of them were Jhansi, Sambalpur, Satara and Nagpur.
4. **On the Pretext of Alleged Misrule:** In 1856, Lord Dalhousie annexed Awadh to the Company's dominions on the pretext of alleged misrule. **(Any three)**

(ii) Impact of the Failure of the Revolt of 1857 on the Mughals and the Peshwas:

The Mughal rule had already come to an end with the British domination in India. The Mughal rulers had become a puppet in the hands of the British. With the death of Bahadur Shah Zafar, who was deported to Rangoon in Myanmar, the Mughal dynasty came to an end. Nana Saheb, the last Peshwa, took an active part in the Revolt and fled to Nepal after the failure of the Revolt. So the office of the Peshwa also came to an end.

Thus, ended two of the most formidable enemies of the British—the Mughals and the Marathas.

(iii) The following changes were made in the army after the Revolt:

1. The strength of European troops in India was increased, adopting the general principle that the number of Indian sepoys should not exceed twice that of the European troops.
2. European troops were stationed in key geographical and military positions.
3. To deter Indian soldiers from rising against British rule, sophisticated weapons and ammunition were never placed under the charge of Indians.
4. In an effort to discourage nationalism, measures such as the introduction of caste and community distinctions in most regiments were taken.
5. Newspapers, journals, and nationalist publications were prevented from reaching the soldiers to keep the Indian army isolated from the life of the rest of the population. **(Any four)**

**Answer 7.**

(i) W.C. Bonnerjee was the first President of the Congress.

**Objectives of the Congress:**

1. To promote friendly relations among nationalist political workers from different parts of the country.
2. To formulate popular demands and present them before the government.

(ii) The Press contributed to the growth of nationalism in the following ways:

1. It was through the Press that the message of patriotism and modern liberal ideas of liberty, freedom, equality, home rule and independence, spread among the people.
2. The Press carried on daily criticism of the unjust policies of the British Government in India and exposed the true nature of British rule in India.
3. It made possible the exchange of views among different social groups from different parts of the country.

(iii) Policies of Lord Lytton reflecting racial superiority and contributing to Indian nationalism:

1. **The Grand Delhi Durbar (1877):** Lord Lytton organised a Grand Delhi Durbar in 1877 to proclaim Queen Victoria as the Empress of India. Lakhs of rupees were spent on the event but nothing was done for Indians who were in the grip of a famine.
2. **Vernacular Press Act (1878):** Introduced by Lord Lytton in 1878, this Act prohibited vernacular papers to publish any material that might excite feelings of dissatisfaction against the British Government. This Act was not applicable to English newspapers. The editors who opposed the Act were sentenced to jail.
3. **The Arms Act (1878):** This Act made it a criminal offence for Indians to carry arms without licence. This Act was not applicable to the British, clearly demonstrating racial discrimination and superiority.
4. **Reduction in Maximum Age Limit for Indian Civil Service Exam:** Lord Lytton reduced the maximum age limit for appearing in the Indian Civil Service Examination from 21 to 19 years, thus, making it difficult for the Indians to compete for effectively for positions in the civil service.

**(Any two)**

**Answer 8.**

(i) The march being discussed above is the famous Dandi March which was started by Gandhiji from his Sabarmati Ashram to Dandi for breaking the Salt Laws.

This famous march led to the beginning of another mass movement in India known as the Civil-Disobedience Movement. It was launched in 1930.

(ii) **Impacts of the Civil Disobedience Movement:**

1. It shattered people's faith in the British government.
2. It revived the will to fight the elections.
3. It deepened the social roots for the freedom struggle.
4. It popularised new methods of propaganda like the Prabhat Pheris, pamphlets, etc. **(Any three)**

(iii) The movement was suspended after the signing of the Gandhi-Irwin Pact (1931). The four important clauses of the treaty were:

1. The government agreed to withdraw all ordinances and end prosecutions.
2. It also agreed to release all political prisoners, except those guilty of violence and permit the free collection or manufacturing of salt by persons near sea-shores.
3. The Congress agreed to suspend the Civil Disobedience Movement.
4. It also consented to participate in the second session of the Round Table Conference.

**Answer 9.**

(i) The assassination of Archduke Franz Ferdinand, the heir to the throne of Austria-Hungary, in June 1914 by a Serbian nationalist belonging to a secret society called the 'Union of Death' (also known as the Black Hand) triggered a chain of events. Austria-Hungary blamed Serbia and subsequently declared war. Due to existing military alliances, other nations were drawn into the conflict, ultimately leading to the outbreak of the First World War.

(ii) Europe saw significant territorial rearrangements as a result of the war triggered by this incident:

1. Three ruling dynasties (Russia, Germany and Austria-Hungary) were destroyed.
2. The rule of Ottomans came to an end in Turkey.
3. Austria and Hungary became separate independent States.
4. New States such as Romania, Czechoslovakia, Finland and Yugoslavia were established.
5. Monarchy collapsed and there was a rise of democracy.
6. It was an end of European supremacy. The USA emerged as the world superpower. **(Any three)**

(iii) The Germans described the Treaty of Versailles as harsh and humiliating due to the following reasons:

1. Germany and her allies were held guilty for aggression and hence Germany was forced to cede certain parts of her pre-war territories to Denmark, Belgium, Poland and Czechoslovakia.
2. Alsace-Lorraine was returned to France. Moreover, the Saar Valley, known for its coal mines, was ceded to France for 15 years.
3. Germany had also to lose all her colonial empire which was divided among the victors. Togoland and Cameroon were divided among France and England. German colonies in South-West Africa and East Africa were also taken away from her and shared by England, Belgium, Portugal and South Africa. While Japan got the Shantung and Kiauchau in China, New Zealand got the Samoa Island.
4. The area of the Rhine Valley was also demilitarised. The German army was also reduced to 100,000 and did not have any air force and submarines.
5. Germany had to accept the war-guilt and she was compelled to pay a heavy sum (of £6,500,000,000) as war indemnity to the Allies. **(Any four)**

**Answer 10.**

(i) **Composition of the International Court of Justice:** The International Court of Justice consists of 15 Judges for nine-year term. The Judges are elected both by the General Assembly and the Security Council. Each Judge should be from a different country. If two people from one country are nominated, the elder one is selected. They elect their President and Vice-President for a three-year term. The decisions of the Court are made by majority of the judges present.

(ii) **Exclusive Functions of the General Assembly:**

1. To consider and make recommendations on the principles of cooperation, in the maintenance of international peace and security.
2. To make recommendations for the peaceful settlement of disputes.
3. To receive and consider reports from the Security Council and other organs of the United Nations.
4. To elect the non-permanent members of the Security Council, the ECOSOC, the Trusteeship Council and to elect the judges of the International Court of Justice.
5. To appoint Secretary-General on the recommendation of the Security Council. **(Any three)**

(iii) UNESCO (United Nations Educational, Scientific and Cultural Organisation) is authorised to give the Intangible Cultural Heritage tag.

Its other contributions in the preservation of culture are as follows:

1. It provides technical advice and assistance, equipment, and funds to preserve monuments and other works of art.
2. It has prepared a World Heritage List to identify the monuments and sites which are to be protected.
3. It aims to protect the world inheritance of books, works of arts and rare manuscripts.
4. It encourages artistic creations in literature and fine arts.
5. It pays attention towards the cultural development through the medium of films. **(Any three)**

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# 1 Sample Paper

## History & Civics

## Questions

### Part-I

(Attempt all questions from this Part)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answers only.)**

(i) An ordinance is a temporary law made by the President of India (on the advice of the Cabinet of ministers) when Parliament is in recess. An ordinance becomes a permanent Act on being approved by Parliament within six weeks of commencement of the Parliament.

**-Bar and Bench, December 17, 2020**

What information about an ordinance can we obtain from the above passage?

(a) Only the Cabinet can prepare an ordinance.

(b) The ordinance must be approved within six weeks.

(c) If the Parliament does not approve it within six weeks it becomes inoperative.

(d) It is issued when the Parliament is not functioning. **[Application]**

(ii) Given below are details of a few Indian citizens.

| Candidate | Age | Other details |
|---|---|---|
| W | 30 | Qualified for Election as a member of the House of People |
| X | 35 | Qualified for Election as a member of the Council of States |
| Y | 25 | Qualified for Election as a member of the House of People |
| Z | 34 | Serving as a member of the Rajya Sabha |

Select the person who fulfils the eligibility criteria to become the Vice-President of India:

(a) W (c) Y

(b) X (d) Z **[Understanding]**

(iii) With reference to the below headline, who suspends the members of both houses?

PARLIAMENT WINTER SESSION — The Indian EXPRESS

**45 MPs suspended from Rajya Sabha, 33 from Lok Sabha — highest ever in Parliament history**

(a) The Presiding Officers of the respective houses

(b) The President

(c) The Parliament

(d) The Parliamentary Affairs Minister **[Application]**

(iv) The first hour of every working day in the Lok Sabha is reserved for questions, unless otherwise decided by the Speaker.
Which Parliamentary procedure is highlighted in the above case?
(a) Question Hour
(b) Zero Hour
(c) Quorum
(d) Interpellation **[Application]**

(v) Identify the officials who are involved in choosing a judge for the High Court?
P: Chief Justice of the Supreme Court
Q: Leader of the Opposition
R: Chief Justice of the High Court
S: Speaker of the Lok Sabha
(a) P and Q
(b) R and S
(C) P and R
(d) Q and S **[Recall]**

(vi) Which Article of the Indian Constitution deals with the Financial Emergency?
(a) Article 352
(b) Article 356
(c) Article 360
(d) Article 266 **[Recall]**

(vii) **Assertion (A):** Lal-Bal-Pal were the abbreviations used for three famous Assertive Nationalists.
**Reason (R):** The concept of Purna Swaraj was first given by Bal Gangadhar Tilak.
(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A). **[Analysis]**

(viii) Country Z has decided to show its support to India during World War II. The name of its famous leader is Adolf Hitler. Identify this country.
(a) Japan
(b) Germany
(c) America
(d) Russia **[Understanding]**

(ix) Identify the option which shows the correct chronology of the following events:
1. Treaty of Versailles
2. League of Nations
3. Sarajevo Crisis
(a) 3-1-2
(b) 1-3-2
(c) 3-2-1
(d) 2-1-3 **[Understanding]**

(x)

The above image represents which of the following?
(a) Members of the Indian National Army
(b) Members of the Royal Indian Navy
(c) Members of the Air Force
(d) Members of the NCC **[Application]**

(xi) In 1856, the British East India Company justified the annexation of Awadh, a princely state in northern India, on what grounds?
(a) Acquire more land for British colonies
(b) Stop the rebellion against the British
(c) Punish the Nawab of Awadh for opposing British rule
(d) Due to alleged misgovernance by the Nawab of Awadh **[Understanding]**

(xii) _____ was the Bengali weekly started by Raja Rammohan Roy.
(a) Sambad Kaumudi
(b) Rast Goftar
(c) Shome Prakash
(d) Young India **[Recall]**

(xiii) Identify the correct pair from the given options.

(a) Rabindranath Tagore – Father of Revolutionary Thought in India
(b) Bal Gangadhar Tilak – Early Nationalist
(c) Bipin Chandra Pal – Amar Sonar Bangla
(d) Lala Lajpat Rai – Punjab Kesari [Understanding]

(xiv) Fascism served as a model of dictatorial regime to the Nazi movement in _____.
(a) France (b) Germany (c) Britain (d) Italy [Recall]

(xv) The UN flag was adopted on _____.
(a) 22 October, 1943 (c) 20 October, 1947
(b) 23 October, 1945 (d) 25 October, 1945 [Recall]

(xvi) Which of the following policies of a dictator ruling over Country X is MOST aligned with the ideologies of Mussolini during his time in power? [Understanding]
(a) Prioritising military expansion
(b) Promoting environmental sustainability
(c) Creating a healthcare program for all citizens equally
(d) Offering financial aid to support the education of students from poor backgrounds

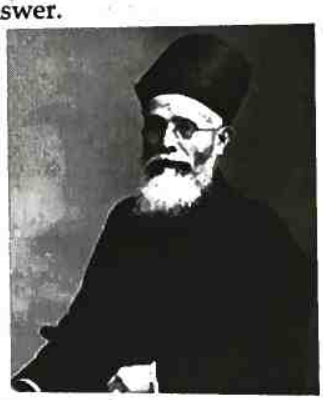
**Question 2.**

(i) A person Y seeks remedy in the Lok Adalat for an ongoing case from 25 years under the Legal Services Authorities Act.
What is the Legal Services Authorities Act and what is the provision of Lok Adalat in it? [Understanding]

(ii) Imagine you are appointed as the Speaker of the Lok Sabha. What are some of the disciplinary functions that will be assigned to you? [Understanding]

(iii) What were the provisions under Arms Act? [Recall]

(iv) Look at the picture given and answer.



Identify the leader seen in the picture above. Name the two books that he authored explaining the 'Drain of India's Wealth'. [Recall]

(v) Name the two Presidents under whom the first two session of the Indian National Congress were held. [Recall]

(vi) State any two beliefs of the Assertive Nationalists? [Recall]

(vii) What were the two declarations made before signing of the United Nations Charter? [Analysis]

## Part-II

## Section-A (Attempt any two questions from this Section)

**Question 3.**

The Parliament is the body of people's representatives who have Supreme power in a democracy. With reference to the Union Legislature, answer the following:

(i) How are the members of the Rajya Sabha elected? [Understanding]

(ii) Why is it called a Permanent House? [Analysis]

(iii) State any two Financial and any two Legislative powers of the Indian Parliament. [Recall]

**Question 4.**
The President and the Vice-President are part of the Union Executive. In this context, answer the following questions:
(i) State any three qualifications required for a candidate to be elected as the Vice-President of India. **[Recall]**
(ii) State the three functions of the Vice-President. **[Recall]**
(iii) Describe the procedure of impeachment of the President. **[Recall]**

**Question 5.**
With reference to Indian Judiciary, explain the following:
(i) Name the three types of courts at the district level. Mention the different categories of cases that fall under the jurisdiction of each. **[Recall]**
(ii) Explain any four conditions of service of a Judge of a High Court. **[Recall]**
(iii) Appellate Jurisdiction of the High Court in:
(a) Civil Cases
(b) Criminal Cases **[Recall]**

## Section-B (Attempt any three questions from this Section)

**Question 6.**
By 1857, conditions were ripe for a mass uprising in the form of the Great Revolt of 1857. In this context, explain the following :
(i) Any three Economic causes for the revolt of 1857. **[Analysis]**
(ii) Any three Military causes. **[Analysis]**
(iii) Any four Political causes of the revolt. **[Analysis]**

**Question 7.**
With reference to the picture given below, answer the following questions:

(i) (a) Identify the Memorial built for those who were killed in this incident.
(b) Where did this incident take place ?
(c) Name the movement launched by Gandhi in 1920 as a consequence. **[Recall]**
(ii) Explain briefly the reason for the suspension of this particular movement by Gandhi in 1922. **[Analysis]**
(iii) State any four impacts of the movement. **[Analysis]**

**Question 8.**
Read the excerpt given below and answer the questions that follow:
The Mountbatten Plan, officially known as the "Indian Independence Act 1947," was a proposal put forth by Lord Mountbatten, the last Viceroy of India, to partition British India and grant independence to India and Pakistan. The plan played a significant role in the process of decolonisation and the creation of two separate nations. Key features of the Mountbatten Plan:
**Partition of British India:** The plan proposed the partition of British India into two separate countries—India and Pakistan. The regions with a Muslim majority in the northwestern and northeastern parts of British India were to become the new state of Pakistan, while the rest would be India.
**Boundary Demarcation:** The plan provided for the demarcation of boundaries between India and Pakistan based on religious demographics. The exact boundaries were determined by a boundary commission led by Sir Cyril Radcliffe, a British lawyer, who was tasked with drawing the line dividing the two nations.
**Transfer of Power:** The Mountbatten Plan aimed to transfer power from British rule to the newly formed dominions of India and Pakistan on August 15, 1947. Lord Mountbatten, as the last Viceroy, oversaw the transition and became the first Governor-General of India, serving until June 1948.

**Princely States:** The plan allowed princely states, which were nominally independent territories within British India, to choose whether to accede to India or Pakistan. The princely states had the option of remaining independent or joining either of the two dominions. Most princely states joined either India or Pakistan based on geographic contiguity and religious demographics.

The implementation of the Mountbatten Plan led to the partition of British India and the subsequent independence of India and Pakistan. However, the partition also resulted in widespread violence, mass migrations, and communal tensions, leading to the loss of countless lives and displacement of millions of people.

(i) Discuss the major recommendations of the Mountbatten Plan. **[Understanding]**

(ii) Why the Congress agreed to accept the plan? **[Analysis]**

(iii) Write four main provisions of the Indian Independence Act of 1947? **[Recall]**

**Question 9.**

With reference to the Rise of Dictatorships and the Second World War, answer the following :

(i) Explain three causes for the rise of Fascism. **[Analysis]**

(ii) Explain any three consequences of World War II. **[Analysis]**

(iii) Name the two rival blocs that fought against each other during World War II and state its signatory countries. **[Recall]**

**Question 10.**

With reference to the United Nations and its Specialised Agencies, answer the following :

(i) Mention any three functions of the International Court of Justice. **[Recall]**

(ii) State the composition of the General Assembly. **[Understanding]**

(iii) State any two functions of the UNICEF and any two functions of the WHO. **[Recall]**

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# 2 Sample Paper

## History & Civics

## Questions

### Part-I

(Attempt all questions from this Part)

**Question 1.**

**Choose the correct answers to the questions from the given options.**
**(Do not copy the question, write the correct answers only.)**

(i) Lok Sabha Speaker Om Birla on Wednesday said judiciary is expected to follow the principle of separation of powers as defined in the Constitution. He also said there is need to improve the productivity of the legislature and its image in the eyes of people.

**-The Times of India, January 11, 2023**

To which organ of democracy does the Lok Sabha Speaker belong?

(a) Judiciary
(b) Executive
(c) Legislature
(d) Media **[Application]**

(ii) Given below are details of a few Indian citizens.

| Candidate | Age | Other details |
|---|---|---|
| W | 30 | Judge of a High Court for 3 years |
| X | 35 | An advocate of a High Court for 8 years |
| Y | 40 | A distinguished jurist |
| Z | 38 | Mentally unsound |

Select the person who fulfils the eligibility criteria to become a Judge of the Supreme Court:

(a) W
(b) X
(c) Y
(d) Z **[Understanding]**

(iii) With reference to the below headline, who appoints the Chief Election Commissioner?

Rajya Sabha clears bill on panel to select CEC

What the new bill proposes

THE PLAN AHEAD

(a) The Supreme Court
(b) The Vice-President
(c) The Parliament
(d) The President **[Application]**

(iv) The opposition believes that the ruling government does not have a majority in the Lok Sabha and wants to bring it down. Therefore, the Leader of the Opposition moves a motion against the government with the support of 50 members.

Which Parliamentary motion is highlighted in the above case?

(a) Adjournment Motion
(b) No-Confidence Motion
(c) Motion of Thanks
(d) Censure Motion **[Application]**

(v) Which individuals serving in the following offices can be removed through impeachment only?

P: President

Q: Member of Lok Sabha

R: Judges of the Supreme Court

S: Member of Rajya Sabha

(a) P and Q
(b) R and S
(c) P and R
(d) Q and S

[Recall]

(vi) The President of India is elected through:

(a) Single transferable vote
(b) Proportional representation
(c) Both (a) and (b)
(d) Neither (a) nor (b)

[Recall]

(vii) **Assertion (A):** The British decided to leave the political prisoners under the Gandhi-Irwin Pact.

**Reason (R):** The Civil Disobedience Movement ended completely after this Pact.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

[Analysis]

(viii) Country X has declared a state of emergency as declared under Article 352 of its Constitution. What will be its consequences?

(a) The Central government will become all-powerful and can legislate over the State List as well.
(b) The State governments will be disbanded permanently.
(c) The High Courts and the Supreme Court will become ineffective.
(d) Every Fundamental Right will get suspended.

[Understanding]

(ix) Identify the option which shows the correct chronology of the following events:

1. Chauri Chaura Incident
2. Khilafat Movement
3. Gandhi-Irwin Pact

(a) 3-1-2
(b) 1-3-2
(c) 3-2-1
(d) 2-1-3

[Understanding]

(x)

Which of the following ideologies was made famous by the man shown in the above picture?

(a) Fascism
(b) Nazism
(c) Liberalism
(d) Communism

[Application]

(xi) The Young India was started by _____.

(a) Lala Lajpat Rai
(b) Madan Mohan Malaviya
(c) C.R. Das
(d) Mahatma Gandhi

[Recall]

(xii) What was the duration of the First World War?

(a) 1914-1918
(b) 1915-1918
(c) 1918-1920
(d) None of these

[Recall]

(xiii) Identify the correct pair from the given options.

(a) Sessions Court – Criminal Cases
(b) Revenue Court – Civil Cases
(c) Court of District Judge – People's Court
(d) Lok Adalat – Revenue Disputes

[Understanding]

(xiv) Mussolini formed the Fascist Party in:
(a) March, 1920
(b) March, 1919
(c) March, 1921
(d) March, 1922 **[Recall]**

(xv) The headquarters of the United Nations is located in_____.
(a) New York
(b) Kuala Lumpur
(c) Geneva
(d) Paris **[Recall]**

(xvi) The current focus of UNICEF is on:
(a) Child survival
(b) Child development
(c) Basic education
(d) All of these **[Recall]**

**Question 2.**

(i) In a General Election, no party got clear majority in the Lok Sabha, despite that the President appointed the leader of the single largest party as the Prime Minister.
What are some of the discretionary powers of the President? **[Understanding]**

(ii) Imagine you are the Speaker of the Lok Sabha and you have disqualified a member on the ground of defection. What are the provisions under which you can take such a decision? **[Understanding]**

(iii) What were the provisions of the Vernacular Press Act? **[Recall]**

(iv) State two factors responsible for the growth of Nationalism in India. **[Analysis]**

(v) Look at the picture given and answer.

Identify the leader seen in the picture above. Mention any one of his contributions. **[Recall]**

(vi) Name the signatory countries of the Triple Alliance (1882). State the rival bloc that was formed. **[Recall]**

(vii) Mention the official languages of United Nations. **[Recall]**

## Part-II

### Section-A (Attempt any two questions from this Section)

**Question 3.**

With reference to the Union Legislature, answer the following questions :

(i) Explain any three Legislative powers of the Union Parliament. **[Recall]**

(ii) State any three Exclusive powers of the Lok Sabha that is not enjoyed by the other House. **[Understanding]**

(iii) The Speaker plays a key role in maintaining order and ensuring the smooth functioning of the Lok Sabha. Mention any four functions of the Speaker to support this statement. **[Understanding]**

**Question 4.**

The President is the nominal head of the executive, the first citizen of the country, as well as the Commander-in-Chief of the Indian Armed Forces. With reference to this, answer the following questions:

(i) Mention any three qualifications required for a person to be nominated to the post of the President. **[Recall]**

(ii) Explain any three Discretionary Powers of the President. **[Understanding]**

(iii) Mention any four Executive Powers of the President. **[Recall]**

**Question 5.**

With reference to the Supreme Court as the Apex Court in our Indian Judiciary, explain the following :

(i) Any three ways by which the Constitution ensures the Independence of the Judiciary. **[Analysis]**

(ii) Power of Judicial Review. **[Recall]**

(iii) Supreme Court as a Court of Record. **[Recall]**

## Section-B (Attempt any three questions from this Section)

**Question 6.**

The Second half of the 19th century witnessed the growth of a strong feeling of Nationalism. With reference to the statement, answer the following :

(i) Write any three repressive Colonial policies of the British. **[Recall]**

(ii) State any three ways in which the Press played an important role in developing nationalism amongst Indians. **[Analysis]**

(iii) Explain briefly any three differences in the methods adopted between the Early Nationalists and the Radicals (Assertive Nationalists) in the National Movement. **[Analysis]**

**Question 7.**

By organising the Indian National Army, Subhash Chandra Bose inculcated patriotism among the Indians and inspired them to fight against the British. With reference to the above statement, answer the following questions :

(i) How was the Indian National Army formed ? **[Understanding]**

(ii) What are the achievements of the Indian National Army ? **[Recall]**

(iii) Describe the contributions of Subhash Chandra Bose to the national movement. **[Understanding]**

**Question 8.**

**Read the excerpt given below and answer the questions that folow:**

The Simon Commission and the Nehru Report were both significant events in the history of the Indian independence movement during the 1920s.

**Simon Commission:** The Simon Commission was a British parliamentary commission formed in 1927 to review and propose constitutional reforms for British India. The commission, led by Sir John Simon, was composed entirely of British members, which drew widespread criticism and opposition in India because it did not include any Indian representatives. Key points regarding the Simon Commission: The absence of Indian members in the commission was seen as a disregard for the Indian demand for self-governance and provoked protests across the country. The Indian National Congress, under the leadership of Motilal Nehru, boycotted the commission and called for protests. This period saw the rise of the "Simon Go Back" movement, with demonstrators expressing their discontent with the commission and its recommendations. The Simon Commission submitted its report in 1930, proposing limited reforms, but it failed to satisfy the Indian nationalists demand for self-rule. The recommendations were met with strong opposition in India, as they fell short of the aspirations for complete independence.

**Nehru Report:** The Nehru Report was a significant document prepared by a committee headed by Motilal Nehru, father of Jawaharlal Nehru, in response to the Simon Commission. The report outlined the demands of the Indian National Congress for constitutional reforms and self-governance.

(i) Mention three main recommendations of the Simon Commission. **[Recall]**

(ii) State any three recommendations of the Nehru Report. **[Recall]**

(iii) Which movement was started to show resistance to the British after the Simon Commission Report and other draconian decisions of the British. What were some of its features? **[Application]**

**Question 9.**

Look at the picture given and answer the following questions:

(i) Identify the leader in the above picture. Mention any two of his ideologies. **[Recall]**

(ii) Mention any three causes for his rise to power. **[Recall]**

(iii) What was the immediate cause of the Second World War? Mention any three reasons given by this leader to justify his action **[Analysis]**

**Question 10.**

With reference to the United Nations and its agencies, answer the following:

(i) What factors made it imperative to form a worldwide organisation, the United Nations Organisation in 1945? **[Analysis]**

(ii) What are the main principles of the UNO? **[Recall]**

(iii) Discuss the role of the UNO in maintaining the international peace and security. **[Understanding]**

□□

# 3 Sample Paper

## History & Civics

## Questions

### Part-I

(Attempt all questions from this Part)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answers only.)**

(i) On a day when the Prime Minister delivered a nearly 90-minute speech during the Motion of Thanks to the President's Address, the Lok Sabha had to be adjourned on Wednesday, February 8, by the Speaker on account of a lack of quorum.

– The Wire, February 8, 2023

What is the number of members required for the quorum of the Lok Sabha to constitute a meeting?

(a) One-tenth of the total number of members

(b) Two-thirds of the members of the House

(c) At least 50 members

(d) 530 members

[Application]

(ii) Given below are details of a few Indian citizens.

| Candidate | Age | Other details |
|---|---|---|
| W | 35 | Recently declared bankrupt. |
| X | 25 | A successful industrialist. |
| Y | 30 | Belongs to a socially and educationally backward class. |
| Z | 31 | Convicted of a criminal offence and sentenced to imprisonment for two years. |

Select the person who fulfils the eligibility criteria to become a member of the Rajya Sabha, the upper house of the Indian Parliament.

(a) W

(b) X

(c) Y

(d) Z

[Application]

(iii) With reference to the below headline, who elects the members of the Rajya Sabha?

(a) The members of the Lok Sabha

(b) The members of the Vidhan Sabha

(c) The members of the Vidhan Parishad

(d) The Citizens of India

[Application]

(iv) The Supreme Court on Monday upheld the Union Government's August 5, 2019 decision to abrogate Article 370, which bestowed special status to the erstwhile state of Jammu & Kashmir. The court also directed that restoration of statehood "shall take place at the earliest and as soon as possible" and elections to J&K Assembly be held before September 30, 2024.

Which power of the Supreme Court is highlighted in the above case?

(a) Revisory Jurisdiction
(b) Advisory Jurisdiction
(c) Appellate Jurisdiction
(d) Judicial Review **[Application]**

(v) Identify the bodies for which the age criterion for elections is 21 years.

P: Lok Sabha
Q: Panchayats
R: Rajya Sabha
S: Municipalities

(a) P and Q
(b) R and S
(C) P and R
(d) Q and S **[Recall]**

(vi) The _____ enjoys advisory jurisdiction on the matters referred to the court for the legal advice by the President.

(a) Supreme Court
(b) High Court
(c) Subordinate Court
(d) All of these **[Understanding]**

(vii) **Assertion (A):** Gandhi's Civil Disobedience was based on engaging in dialogue and negotiation with the British.

**Reason (R):** Gandhi believed that violence and aggression are counterproductive to achieve any goal.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A). **[Analysis]**

(viii) The central government of a country named X has decided to enforce a law similar to the Vernacular Press Act, which was enacted by the British in India in 1878 to control and regulate the vernacular press.

Based on this information, who among the following is most likely to benefit from the enforcement of the law in X?

(a) Its citizens
(b) The media industry
(c) The opposition party
(d) The ruling political party **[Understanding]**

(ix) What was the reason for the withdrawal of Civil Disobedience Movement?

(a) Chauri-Chaura incident
(b) Poona Pact
(c) Simon Commission
(d) Gandhi-Irwin Pact **[Analysis]**

(x)

Chauri Chaura Incident

Which of the following was the immediate impact of the following incident?

(a) Suspension of the Non-Cooperation Movement
(b) Suspension of the Civil Disobedience Movement
(c) Suspension of the Quit India Movement
(d) Suspension of the Swadeshi Movement [Application]

(xi) Identify the option which shows the correct chronology of the following events:
1. Servants of India Society
2. Indian Association
3. London India Society

(a) 3-1-2 (c) 3-2-1
(b) 1-3-2 (d) 2-1-3 [Understanding]

(xii) Identify the odd one out of the following objectives:
(a) To promote among Muslims of India, support for the British government
(b) To remove any misconceptions regarding the intention of the government
(c) To protect and advance the political rights and interests of the Muslims
(d) To abolish the zamindari system [Analysis]

(xiii) Italy, Germany and _____ were the main power in the Triple Alliance.
(a) Spain (c) Berlin
(b) Austria-Hungry (d) Tokyo [Recall]

(xiv) The League of Nations was established in _____ after the First World War.
(a) 1918 (c) 1920
(b) 1919 (d) 1921 [Recall]

(xv) Identify the correct pair from the given options.
(a) The General Assembly – The principal judicial organ of the UN
(b) The Secretariat – The chief administrative office of the UN
(c) The Security Council – The main deliberative organ of the UN
(d) The International Court of Justice – The executive body of the UN [Understanding]

(xvi) Which country is not the permanent member of United Nations Security Council?
(a) France (c) Germany
(b) Russia (d) China [Understanding]

**Question 2.**

Read the given news carefully:

**Headline:** A person was detained by the police and was not presented in court. The family of the individual approached the High Court, which issued a writ.

(i) Which writ will be issued by the High Court, and what are its features? [Understanding]

(ii) Imagine you were part of the German military in the year 1919, mention any two terms of the Treaty *of Versailles* which would impact you. [Understanding]

(iii) What was the General Service Enlistment Act? [Application]

(iv) Look at the picture given and answer.

Identify the person seen in the picture above. Mention any one of his contributions. [Recall]

(v) Write two points about the East India Association. [Recall]

(vi) Mention any two contributions of Bipin Chandra Pal in promoting Nationalism. [Recall]

(vii) Name the two International Organisations that were formed, as a consequence of World War I and World War II. **[Recall]**

# Part-II

## Section-A (Attempt any two questions from this Section)

**Question 3.**

The Union Legislature of India is not only the law-making body, but the centre of all democratic political process. With reference to the Parliament, answer the following questions:

(i) Mention any three financial powers of the Union Parliament. **[Recall]**

(ii) Mention any three circumstances under which the Lok Sabha can make laws on a subject in the State list. **[Analysis]**

**Question 4.**

The Union Executive which consists of the President, the Prime Minister and the Council of Ministers is a powerful body in a Parliamentary Democracy. In this context, answer the following questions :

(i) State the position of the Prime Minister and state any two of his powers in relation to the President. **[Understanding]**

(ii) Mention the three categories of Ministers in order of their rank and status. **[Understanding]**

(iii) Explain the election procedure of the President. **[Recall]**

**Question 5.**

The Supreme Court of India is the supreme judicial authority and the highest court of the Republic of India. It is the final court of appeal for all civil and criminal cases. With reference to the Supreme Court, answer the following questions:

(i) Who appoints the judges of the Supreme Court?
Mention any two qualifications required for a person to be appointed as a judge of the Supreme Court. **[Recall]**

(ii) Explain the term Original Jurisdiction of the Supreme Court with any two examples. **[Recall]**

(iii) Name any four writs issued by the Supreme Court. **[Recall]**

## Section-B (Attempt any three questions from this Section)

**Question 6.**

Nationalism refers to the feeling of oneness that emerges when people consider themselves as one nation. With reference to the growth of nationalism, answer the following:

(i) Name the founder of the Indian National Congress. Mention any two of its objectives. **[Recall]**

(ii) Two contributions of Dadabhai Naoroji. **[Recall]**

(iii) "The Vernacular Press Act was the main factor which infused the sense of national pride amongst the people of India." Discuss. **[Analysis]**

**Question 7.**

Study the picture given below and answer the following questions :

(i) Identify the leader given in the picture. When did he pass the Indian Civil Service examination and at what post was he appointed ? **[Recall]**

(ii) Mention two Acts against which he protested. [Understanding]

(iii) What were his most notable contributions to India's freedom struggle ? [Analysis]

**Question 8.**

Read the excerpt given below and answer the questions that follow:

The Non-Cooperation Movement was a significant mass civil disobedience campaign launched by Mahatma Gandhi and the Indian National Congress (INC) in the early 1920s as part of the broader Indian independence movement against British colonial rule. Key features of the Non-Cooperation Movement: The movement was a response to the Jallianwala Bagh massacre of 1919, where British forces opened fire on a peaceful gathering in Amritsar, resulting in the deaths of hundreds of Indians. The incident fuelled widespread anger and discontent among the Indian population. The primary goal of the Non-Cooperation Movement was to exert pressure on the British government by boycotting British institutions, products, and laws, and promoting swadeshi (indigenous) goods and self-reliance. It aimed to achieve Swaraj (self-governance) and complete independence from British rule. The movement advocated non-violent civil disobedience, urging Indians to refuse cooperation with British authorities, resign from government posts, boycott foreign goods, institutions, and courts, and engage in peaceful protests, strikes, and demonstrations. The Non-Cooperation Movement saw the participation of a large number of Indians across different regions and social groups. Students, lawyers, peasants, workers, and women actively joined the movement, highlighting its broad-based support. The movement gained significant momentum, and its impact was felt throughout British India. It led to the resignation of Indian members from various legislative councils, the establishment of indigenous educational institutions, and an upsurge in nationalist sentiment. However, following the Chauri Chaura incident in 1922, where violence broke out during a protest and 22 policemen were killed, Mahatma Gandhi called off the movement, emphasising the need for non-violence.

The Non-Cooperation Movement was a turning point in the Indian independence struggle as it marked a shift from moderate methods to mass-based non-violent resistance. Although it was temporarily suspended, it laid the groundwork for subsequent movements and contributed to the growth of the Indian nationalist movement, shaping the path toward independence from British rule.

(i) Discuss the philosophy and programme of the Non-Cooperation Movement. [Understanding]

(ii) Discuss the reasons for the withdrawal of the Non-Cooperation Movement. [Analysis]

(iii) Discuss the four significances of the Non-Cooperation Movement. [Understanding]

**Question 9.**

The 1914 and 1939 Wars that engulfed almost the entire world, were known as the World Wars due to its unprecedented impact and damage. In this context, answer the following :

(i) Explain the immediate cause of the First World War. [Recall]

(ii) Explain the consequences of the Second World War with reference to the Cold War. [Recall]

(iii) Mention any four terms of the Treaty of Versailles which affected Germany after World War I. [Understanding]

**Question 10.**

With the reference of NAM , UNICEF and UNESCO, answer the following questions:

(i) What were the five objectives of NAM? [Analysis]

(ii) What are the major achievements of the UNICEF? [Analysis]

(iii) Mention the four functions of UNESCO in the field of education. [Recall]

□□

# 4 Sample Paper

## History & Civics [Unsolved]

## Questions

### Part-I

(Attempt all questions from this Part)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answers only.)**

(i) The Lok Sabha is expected to debate Congress MP Gaurav Gogoi's no-confidence motion against Prime Minister (PM) Narendra Modi's government between August 8 and 10, with the PM expected to reply on the last date. **- The Hindustan Times, August 3, 2023**

What happens if a Vote of No-Confidence passes against the Prime Minister?

(a) Only the Cabinet has to resign.

(b) Only the Prime Minister has to resign.

(c) The whole Council of Ministers has to resign.

(d) The Lok Sabha has to be dissolved.

(ii) Given below are details of a few Indian citizens.

| Candidate | Age | Other details |
|---|---|---|
| W | 30 | Held judicial office for 5 years |
| X | 35 | Has been serving as an advocate in a High Court for 12 years |
| Y | 25 | Held judicial office for 8 years |
| Z | 32 | Not a citizen of India |

Select the person who fulfils the eligibility criteria to become a judge in the High Court.

(a) W (c) Y

(b) X (d) Z **[Understanding]**

(iii) Who made the amendment which resulted in the below headline?

(a) The Prime Minister (c) The Parliament

(b) The President (d) The Supreme Court **[Application]**

(iv) In the 1996 general elections, no single party or pre-poll alliance secured a clear majority in the Lok Sabha. The Bharatiya Janata Party (BJP) emerged as the single largest party, but without a clear majority. The BJP, led by Atal Bihari Vajpayee, was invited by President Shankar Dayal Sharma to form the government as it was the single largest party, even though it did not have an outright majority.

Which power of the President is highlighted in the above case?

(a) Legislative Power (c) Discretionary Power

(b) Emergency Power (d) Executive Power **[Application]**

(v) Identify the officials who form the collegium for the election of the Vice-President of India.
P: Members of the State Legislative Assemblies
Q: Members of the Lok Sabha
R: Members of the State Legislative Councils
S: Members of the Rajya Sabha
(a) P and Q
(b) R and S
(c) P and R
(d) Q and S [Recall]

(vi) Who represents India in the international conferences?
(a) The Foreign Minister
(b) The Prime Minister
(c) The President
(d) The Foreign Secretary [Recall]

(vii) **Assertion (A):** Forward Bloc had the objective of abolishing the Zamindari System.
**Reason (R):** Subhash Chandra Bose wanted to establish a social state.
(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A). [Analysis]

(viii) The Government of nation Y has decided to provide separate electorates to its two major religious communities. What will be its consequences?
(a) People of religion A can only vote for the representative of their religion.
(b) People of religion A can vote for any representative of any religion.
(c) Representatives of religion A will contest with representatives of religion B.
(d) Any individual can vote for any candidate. [Understanding]

(ix) The Arms Act was passed in _____.
(a) 1876
(b) 1875
(c) 1878
(d) 1880 [Recall]

(x)

Daily
HEIR TO AUSTRIAN THRONE MURDERED

Which of the following is an immediate impact of the above incident?
(a) It led to the supremacy of America.
(b) It led to the First World War.
(c) Austria and Hungary became two independent nations.
(d) Democracy replaced monarchy in many countries. [Application]

(xi) Name the Persian paper started by Raja Rammohan Roy.
(a) Rast Goftar
(b) Punjab Kesari
(c) Mirat-ul-Akhbar
(d) Mahratta [Recall]

(xii) The famous Dandi March resulted in the beginning of:
(a) The Non-Cooperation Movement
(b) The Champaran Satyagraha
(c) The Kheda Satyagraha
(d) The Civil Disobedience Movement [Recall]

(xiii) Identify the option which shows the correct chronology of the following events:
1. Bandung Conference
2. Panchsheel Agreement
3. Belgrade Summit
(a) 3-1-2
(b) 1-3-2
(c) 3-2-1
(d) 2-1-3 [Understanding]

(xiv) Germany defeated France and took away the provinces of Alsace and _____.
(a) Serbia
(b) Lorraine
(c) Balkan
(d) Berlin [Recall]

(xv) Identify the correct pair from the given options.
(a) Bal Gangadhar Tilak – Father of Assertive Nationalism
(b) Gopal Krishna Gokhale – Grand Old Man of India
(c) Surendranath Banerjee – Political mentor of Mahatma Gandhi
(d) Dadabhai Naoroji – Swadeshi Movement **[Understanding]**

(xvi) The United Nations Organisation was established after the war on 24 October, 1945 at _____.
(a) Tokyo (c) Spain
(b) San Francisco (d) Russia **[Recall]**

**Question 2.**
Read the given news carefully.
**Headline:** Mysuru Lok Adalat settles 53-year-old civil case involving Kannada poets' kin. This case went on for a total of 53 years in various courts and involved 10 advocates and 40 witnesses.
**Source:** news18.com published on March 14, 2022

(i) State any two advantages of Lok Adalats that can be deduced from the above news headline. **[Understanding]**
(ii) Imagine you are contesting an election for Rajya Sabha. What are the eligibility criteria that you need to get fulfilled? **[Understanding]**
(iii) Mention two administrative changes that the British Government brought about regarding the East India Company's rule in India. **[Analysis]**
(iv) Mention any two methods of the Assertive Nationalists. **[Recall]**
(v) Give two reasons as to why Lord Curzon wanted the division of Bengal. **[Analysis]**
(vi) Look at the picture given and answer.

Identify the leader seen in the picture above. Mention any one of his contributions. **[Recall]**
(vii) Give two functions of the Security Council. **[Recall]**

# Part-II

## Section-A (Attempt any two questions from this Section)

**Question 3.**
With reference to the Union Parliament, answer the following questions :
(i) How many members may be nominated to the Rajya Sabha ? Give one reason as to why they may be nominated to the Lok Sabha. **[Analysis]**
(ii) Mention any three qualifications required for a member to be elected to the Lok Sabha. **[Recall]**
(iii) What is meant by the term 'Session'? Name the three Sessions of the Union Parliament. **[Recall]**

**Question 4.**
The Council of Ministers headed by the Prime Minister, is the most Powerful Institution in the Indian Polity. In this context, answer the following :
(i) State briefly the position of the Prime Minister in the Parliamentary system of Government. State any two powers the Prime Minister has as a leader of the Nation. **[Understanding]**
(ii) Distinguish between the Council of Ministers and the Cabinet. **[Analysis]**
(iii) Write any four functions of the 'Cabinet'. **[Recall]**

**Question 5.**
India has a single integrated judicial system that is Independent and Supreme. With reference to the Judiciary, answer the following :
(i) What are Advisory Functions of the Supreme Court? **[Recall]**

(ii) The Supreme Court as a guardian of the Fundamental Rights. Explain. [Analysis]

(iii) (a) Who appoints the Judges of the High Court ?

(b) State any two qualifications required for a person to be appointed as a High Court judge. [Recall]

## Section-B (Attempt any three questions from this Section)

**Question 6.**

The Indian Rebellion of 1857 was a major uprising against the rule of the British East India Company, which functioned as a sovereign power on behalf of the British Crown. With reference to this, answer the following questions:

(i) Mention any three administrative changes made in India as a consequence of the Revolt. [Recall]

(ii) Briefly explain the immediate cause of the Great Revolt. [Recall]

(iii) Mention any four changes made in the army after the Revolt. [Analysis]

**Question 7.**

With reference to the Mass Phase of the National Movement answer the following :

(i) Write short notes on the circumstances leading to the Civil Disobedience Movement. [Recall]

(ii) Discuss why Congress demand for complete independence in 1929 led to the launch of the Civil Disobedience Movement. [Analysis]

(iii) The advent of Mahatma Gandhi into the Indian National Congress in 1919 brought a dramatic change in the National Movement. In this context, explain four ideological tenets of Mahatma Gandhi. [Understanding]

**Question 8.**

Read the excerpt given below and answer the questions that follow:

Fascism and Nazism are two distinct but related political ideologies that emerged in the early 20th century.

**Fascism:** Fascism is a far-right authoritarian political ideology characterised by dictatorial power, strong nationalism, and the suppression of political opposition. Fascist movements emphasise the importance of the nation or race over individual rights and liberties. Some key features of fascism include:

**Authoritarianism:** Fascist regimes are centralised and led by a single leader or dictator who exercises total control over the government and often suppresses dissent.

**Nationalism:** Fascism promotes an extreme form of nationalism, emphasising the superiority of the nation or race and often invoking symbols, rituals, and narratives of national greatness.

**Anti-democracy:** Fascists reject liberal democracy and view it as weak and corrupt. They often advocate for the dismantling of democratic institutions and the establishment of a one-party state.

**Totalitarianism:** Fascist regimes aim to exert control over all aspects of society, including the economy, culture, education, and media. They employ censorship, propaganda, and surveillance to maintain power.

**Nazism:** Nazism, or National Socialism, is a specific form of Fascism that emerged in Germany in the early 20th century under the leadership of Adolf Hitler and the Nazi Party. While sharing many characteristics with Fascism, Nazism incorporated additional elements, particularly racist and anti-Semitic ideologies. Key aspects of Nazism include:

**Aryan Supremacy:** Nazism promoted the concept of an Aryan master race and deemed other races, particularly Jews, as inferior. Anti-Semitism was a central tenet of Nazi ideology, culminating in the Holocaust and the systematic genocide of millions of Jews.

**Lebensraum:** Nazism sought to acquire "living space" (Lebensraum) through territorial expansion, particularly in Eastern Europe. This expansionist policy aimed to provide resources and land for the German people.

(i) State any three principles of Fascism. [Recall]

(ii) Explain any three causes for the rise of Fascism. [Analysis]

(iii) Explain any four features of Nazism. [Recall]

**Question 9.**

With reference to 'The League of Nations', answer the following :

(i) Explain briefly the causes of World War-I with reference to Nationalism and Imperialism. [Analysis]

(ii) Describe the reasons of the failure of the League of Nations. [Analysis]

(iii) State any four causes that led to the Second World War. [Analysis]

**Question 10.**

The United Nations Organisation aims to maintain international peace. With reference to its organs and agencies, answer the following:

(i) What is the composition of the International Court of Justice? [Understanding]

(ii) Mention any three functions of the Security Council. [Recall]

(iii) Give the full form of UNICEF. Mention any three of its functions. [Recall]

❑❑

# 5 Sample Paper

## History & Civics [Unsolved]

## Questions

### Part-I

(Attempt all questions from this Part)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answers only.)**

(i) A day after the Union Cabinet cleared the ordinance to amend the POCSO act, President Ram Nath Kovind today signed the executive order allowing courts to pronounce the death penalty to those convicted of raping children up to 12 years of age. -The Times of India, April 22, 2018

What information about an ordinance can we obtain from the above passage?

(a) The ordinance must be approved within six weeks.

(b) Only the Cabinet can prepare an ordinance.

(c) It is issued when the Parliament is not functioning.

(d) If the Parliament does not approve it within six weeks it becomes inoperative. [Application]

(ii) Given below are details of a few Indian citizens.

| Candidate | Age | Other details |
|---|---|---|
| W | 35 | Qualified to be elected as a member of the Lok Sabha |
| X | 40 | Qualified to be elected as a member of the Rajya Sabha |
| Y | 32 | Qualified enough to practice in the High Court |
| Z | 35 | Does not qualify to contest election for the Lok Sabha seat |

Select the person who fulfils the eligibility criteria to become the President of India

(a) W (c) Y

(b) X (d) Z [Understanding]

(iii) Who made the amendment which resulted in the below headline?

INDIAN EXPRESS explained. POLITICS

9 STATE ASSEMBLIES DISSOLVED

President signs proclamations after late Cabinet talks

(a) The Prime Minister (c) The Parliament

(b) The President (d) The Vice-President [Application]

(iv) In 2019, an applicant named P approached the Lok Adalat with grievances related to disputes with her husband. She had also filed a complaint against her husband with the DCW. The Secretary of DLSA East referred her case for counselling before the counsellor deputed at DLSA East. With constant efforts of counselling parties, the matter was amicably and successfully settled. The wife reported that

her husband's behaviour had improved, and he had undertaken to properly look after and maintain her and their children.

Which advantage of the Lok Adalat is highlighted in the above case?

(a) Reduces the burden on High Courts
(b) Works on the spirit of compromise
(c) Speedy justice
(d) Saves money **[Application]**

vi) Identify the officials who form the Electoral College for the Presidential elections in India.

P : Elected members of Parliament
Q : Nominated members of Parliament
R : Elected members of State Legislative Assemblies
S : Nominated members of State Legislative Councils

(a) P and Q
(b) R and S
(c) P and R
(d) Q and S **[Recall]**

vii) The Additional Judges are appointed for a period of:

(a) 2 years
(b) 1 year
(c) 3 years
(d) 4 years **[Recall]**

viii) **Assertion (A):** The Non-Cooperation Movement was combined with the Khilafat Movement.
**Reason (R):** The Non-Cooperation Movement was suspended after the Jallianwala Bagh Massacre.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A). **[Analysis]**

ix) The Central Government of country Y has passed a law similar to the Rowlatt Act. This law will severely affect which section of the people?

(a) Businessmen
(b) Political activists
(c) Industrial workers
(d) Government officers **[Understanding]**

x) _____ was one of the leaders of the Khilafat Movement.

(a) Mohammad Ali
(b) Indira Gandhi
(c) Badshah Khan
(d) Jawaharlal Nehru **[Recall]**

What was the consequence of the above-depicted bombing in two Japanese cities?

(a) End of World War I
(b) End of World War II
(c) End of the Cold War
(d) End of the Gulf War **[Application]**

xi) This Act mentioned that all recruits to the Bengal Army had to serve everywhere, within or outside India.

(a) General Service Enlistment Act
(b) Religious Disabilities Act
(c) Rowlatt Act
(d) Subsidiary Alliance **[Recall]**

xii) Identify the option which shows the correct chronology of the following events:

1. The Battle of Buxar
2. The Doctrine of Lapse
3. The Subsidiary Alliance

(a) 3-1-2 (c) 3-2-1
(b) 1-3-2 (d) 2-1-3 [Understanding]

(xiii) When did Hitler and Mussolini sign a pact ?
(a) 1937 (b) 1939 (c) 1938 (d) 1933 [Recall]

(xiv) The non-permanent members of the Security Council have a term of _____ years.
(a) 2 (b) 3 (c) 5 (d) 10 [Recall]

(xv) Identify the correct pair from the given options.
(a) WHO – To look after children's welfare, especially in developing countries
(b) UNICEF –Responsible for promoting higher standards of living
(c) ECOSOC – The attainment of physical, mental and social well-being of the people
(d) UNESCO – To contribute to peace and security in the world [Understanding]

(xvi) The WHO aims to bring about improvement in standards of :
(a) Nutrition (c) Sanitation
(b) housing (d) All of these [Understanding]

**Question 2.**

(i) A news was published which said that in a particular case the Supreme Court reversed its own decision from its previous stand.
What kind of jurisdiction is this under which the Supreme Court can change its own decision? [Understanding]

(ii) Imagine you are contesting the election for the President. What are the conditions you need to fulfil? [Understanding]

(iii) Mention any two social reforms advocated by the British which affected the religious traditions of the Indians. [Recall]

(iv) Look at the picture given and answer.

Identify the person seen in the picture above. Mention any one of his contributions. [Recall]

(v) State two reasons that led to the criticism of the Moderates. [Analysis]

(vi) Mention any two contributions of Subhash Chandra Bose. [Recall]

(vii) State two functions of the International Court of Justice? [Recall]

## Part-II

### Section-A (Attempt any two questions from this Section)

**Question 3.**

The Powers and Functions of the Indian Parliament are wide ranging. In this context, answer the following

(i) Explain three ways by which the Legislature exercises control over the Executive. [Application]

(ii) Mention any three special powers of the Rajya Sabha that is usually not enjoyed by the other House. [Understanding]

(iii) Mention any three Legislative powers of the Indian Parliament. [Recall]

**Question 4.**

The makers of our Constitution adopted the Parliamentary and the Cabinet form of Government. With reference to this, answer the following questions :

(i) How is the Cabinet formed ? **[Understanding]**

(ii) Mention the reason, when can General or National Emergency be declared and three consequences of emergency declared under Article 352 of the Constitution? **[Analysis]**

(iii) (a) Who is the Constitutional Head of the Union Government ? **[Recall]**

(b) What is meant by the Collective and Individual Responsibility of the members of the Cabinet? **[Recall]**

**Question 5.**

The Supreme Court is the apex court in the entire judicial setup of India. In this context, answer the following questions:

(i) Who appoints the judges of the Supreme Court? What is the composition of the Supreme Court? **[Recall]**

(ii) Mention the three kinds of cases which come under the Appellate Jurisdiction of the Supreme Court. **[Analysis]**

(iii) Explain the impeachment procedure for the removal of Judges. **[Recall]**

## Section-B (Attempt any three questions from this Section)

**Question 6.**

With reference to the rise of 'National Consciousness' in India, explain the following :

(i) What was the influence of Western education on the minds of the educated Indians in the 19th Century? **[Application]**

(ii) Mention any three contributions of Raja Rammohan Roy. **[Recall]**

(iii) Name the Indian language newspapers and literary books published in the early phase of Nationalist Movement and discuss in brief about the role played by them in the growth of Indian Nationalism. **[Analysis]**

**Question 7.**

Study the picture given below and answer the following questions :

(i) Name the person in the picture given above. What did he propose and why ? **[Recall]**

(ii) Which event was the person shown in the picture associated with ? What justification did he give for the incident ? **[Analysis]**

(iii) What was the reaction of the British Government to the Swadeshi and Boycott Movement ? **[Recall]**

**Question 8.**

Read the excerpt given below and answer the questions that follow:

The movement had generated worldwide publicity, and British were looking for a way to end it. Gandhiji was released from custody in January 1931, and the two men began negotiating the terms of the pact. For many conservatives in England, the meetings and talks seemed unacceptable. They thought it was inappropriate for the Viceroy, who was the representative of the British Monarch, to receive their arch-enemy. Gandhiji was authorised by the then President of the Congress, Sardar Vallabhbhai Patel, to negotiate with the Viceroy. He advised the nation to wait, watch, pray and hope for a better prospect for India. He was full of admiration for the people, their heroic struggle and hard suffering.

*Source*: The Hindu

(i) Who was the Viceroy who negotiated with Gandhiji? Name any two causes of the movement being discussed above. **[Recall]**

(ii) Mention any three impacts of this movement. [Analysis]

(iii) As a consequence of this meeting, a pact was signed. Mention any four conditions that the Congress and the British Government agreed to according to this pact. [Recall]

**Question 9.**

With reference to the Second World War and the Non-Aligned Movement, answer the following :

(i) Explain briefly three reasons for the Dissatisfaction with the Treaty of Versailles. [Analysis]

(ii) State any three consequences of the Second World War. [Understanding]

(iii) Mention any four chief architects of the Non-Aligned Movement. [Recall]

**Question 10.**

The necessity to maintain International peace led to the establishment of the United Nations Organisation. With reference to the statement, answer the following :

(i) Write any three functions of UNESCO that preserves our 'Cultural Heritage'. [Understanding]

(ii) Mention any three functions of the Security Council. [Recall]

(iii) Write any four functions of the General Assembly. [Recall]

□□

# 1 Sample Paper

## History & Civics

## Answers

### Part-I

**Answer 1.**

(i) (d) It is issued when the Parliament is not functioning.

(ii) (b) X

(iii) (a) The Presiding Officers of the respective houses

(iv) (a) Question Hour

(v) (c) P and R

(vi) (c) Article 360

(vii) (a) (A) is true and (R) is false.

(viii) (b) Germany

(ix) (a) 3-1-2

(x) (a) Members of the Indian National Army

(xi) (d) Due to alleged misgovernance by the Nawab of Awadh

(xii) (a) Sambad Kaumudi

(xiii) (d) Lala Lajpat Rai – Punjab Kesari

(xiv) (b) Germany

(xv) (c) 20 October, 1947

(xvi) (a) Prioritising military expansion

**Answer 2.**

(i) 1. The Legal Services Authorities Act, 1987 provides that every State and District authority shall organise Lok Adalats from time to time.

2. The judges explain legal points in a cordial atmosphere so that the outcome is arrived at without bitterness. All such decisions given by the Lok Adalats shall be deemed to be decrees of a Civil Court and shall be binding on the parties to the dispute.

(ii) **The disciplinary functions of the Speaker in the Lok Sabha are as follows :**

1. He/She is responsible for maintaining order in the House.
2. He/She decides whether there is a case for a matter relating to a breach of privileges or contempt of the House.
3. He/She is to be the ex-officio Chairman of some of the Committees of the House.

(iii) 1. The Arms Act of 1878 declared that no Indian would keep any arm without obtaining a license for its possession.

2. On the other hand, Europeans were allowed to keep not only one but several arms without any license.

(iv) The leader in the picture is Dadabhai Naoroji.

The two books authored by him explaining the 'Drain of India's Wealth' are:

1. Poverty and Un-British Rule in India
2. The Poverty of India

(v) Womesh Chandra Bonnerjee and Dadabhai Naoroji were the two Presidents under whom the first two sessions of the Indian National Congress were held.

(vi) Two popular beliefs of the Assertive Nationalists:

1. The Assertive Nationalists stood for complete Swaraj to be achieved by more self-reliant methods. They also wanted to have a mass base for their movement.
2. They had a different outlook that advocated active resistance to British imperialism. They condemned the British rule in India and held it responsible for the country's downfall.

(vii) 1. **London Declaration, June 1941:** The establishment of an international organisation, in place of regional pacts, was proposed for the first time.

2. **The Atlantic Charter, August 1941:** Recognised the principle of sovereign equality of all the states, big or small.
3. **The Washington Declaration, January 1942 :**
   - Pledged to continue fight against Axis Powers.
   - The term United Nations was used for the first time.
   - Subscribed to the principles of the Atlantic Charter. **(Any two)**

# Part-II

## Section-A

**Answer 3.**

(i) The representatives of each State in the Rajya Sabha are elected by the elected members of the Legislative Assembly in accordance with the system of proportional representation by means of a 'single transferable vote'.

(ii) Rajya Sabha is called a Permanent House because if the Lok Sabha is dissolved before or after the declaration of a National Emergency, the Rajya Sabha becomes the sole de facto and de jure Parliament, *i.e.*, it takes over the functions of the Parliament. Thus, it cannot be dissolved.

(iii) **Financial powers of the Parliament:**

1. The Parliament passes the Union Budget containing estimates of receipts and expenditure of the Government for a financial year.
2. The salaries and allowances of MPs, Ministers and Judges of the Supreme Court and the High Court are determined by the Parliament.

**Legislative powers of the Parliament :**

1. The Parliament has exclusive powers to make laws with respect to matters mentioned in the Union List. The Parliament and the State Legislatures both have the right to make laws on the subjects mentioned in the Concurrent List but in the case of a conflict, the law made by the Parliament shall prevail.
2. The Parliament possesses residuary powers, meaning that it can make laws with respect to all those matters that are not mentioned in any of the three lists.

**Answer 4.**

(i) **Three qualifications needed for a candidate to be elected as the Vice-President of India are :**

1. Must be a citizen of India.
2. Must have completed 35 years of age.
3. Must be eligible to be a member of the Rajya Sabha.

(ii) **Three functions of the Vice-President are as follows :**

1. He/She is the ex-officio Chairman of the Rajya Sabha.
2. He/She presides over the sessions of the Rajya Sabha.
3. In the time of crisis or any vacancy in the office of the President, the Vice-President shall act as the President until the election of a new President.

(iii) **The Procedure of Impeachment of the President:** Article 61 of the Constitution prescribes that the President can be impeached by Parliament if he/she acts against the provisions of the Constitution

or is found guilty of misusing his/her status and position or involved in corruption. Charges can be framed by either House of Parliament with a two-thirds majority. A 14-day notice, signed by at least one-fourth of the total members of the House, must be given before initiating proceedings. The other House investigates the charges. If the charges are sustained by a two-thirds majority of the total membership of the investigating House, the President is impeached.

**Answer 5.**

(i) **Administration of justice at the district level is entrusted to three types of courts :**

1. **Civil Courts :** The civil courts are those which deal with cases related to land, property, money transactions, etc.
2. **Criminal Courts :** The criminal courts deal with criminal cases such as murder, theft, etc.
3. **Revenue Courts :** The revenue courts deal with cases relating to the maintenance of land records and the assessment and collection of land revenue.

(ii) **The conditions of service of the Judges are as follows:**

1. Every Judge of a High Court shall hold office until he/she attains the age of 62 years. He/She may resign from his office at any time by submitting his/her resignation to the President.
2. After retirement, a Judge of the High Court can plead only in the Supreme Court. He/She can't do the legal practice in the same high court or lower courts or judicial tribunals.
3. The allowances and pension of a Judge of High Court cannot be varied to his/her disadvantage after this appointment.
4. He/She can be removed from office by the President on the ground of proven misbehaviour or incapacity.

(iii) **Appellate Jurisdiction of the High Court :** Appellate jurisdiction of the High Court means that the High Court has the power to accept appeals against the decisions of District Courts, in civil as well as criminal matters :

**Civil Cases:** Only those civil cases which are decided by the District Courts under the jurisdiction of the High Court concerned can be brought to the High Court by an appeal. Appeals can be brought to the High Court :

1. In matters concerning land revenue, and
2. In cases where a blatant injustice has been committed by any Tribunal. In such cases, the High Court may quash the order of the Tribunals.

**Criminal Cases : In criminal cases, appellate jurisdiction consists of appeals :**

1. Against the judgement of a Sessions Judge or an Additional Sessions Judge, where the sentence of imprisonment exceeds seven years.
2. Against the judgement of an Assistant Sessions Judge, the Chief Metropolitan Magistrate or other Judicial Magistrates, where the sentence of imprisonment exceeds four years.
3. Against the State, when the order of acquittal is passed by a Sessions Judge.

## Section-B

**Answer 6.**

(i) **Three economic causes for the revolt of 1857 were:**

1. **Exploitation of economic resources:** India was forced to export raw materials like cotton textiles and raw silk at cheaper rates that the British industries needed urgently. India was made to accept ready-made British goods which were duty-free or at nominal duty rates while Indian products were subjected to high import duties.
2. **Drain of wealth:** The British purchased raw materials for their industries in England from the surplus revenues of Bengalis and profits from duty-free inland trade. The drain of wealth also included the salaries, income and savings of Englishmen, British expenditure in India on the purchase of military groups, office establishment, interest on debts, necessary expenditure on the army, etc.
3. **Growing unemployment:** The traditional rulers had given financial support to scholars, preachers and men of fine arts. The arrival of the British led to the decline of such rulers and gradually the patronage came to an end. And all those who had depended on the patronage were impoverished.

(ii) **Three military causes were :**

1. **Ill treatment of Indian soldiers and lower salaries :** The Indian soldiers were poorly paid, they were ill fed and badly housed. British military authorities forbade the sepoys from wearing caste or sectarian marks.
2. **General Service Enlistment Act :** According to the General Service Enlistment Act, Indian soldiers could be sent overseas on duty but it was a taboo for a Brahmin to cross the sea. So, the British did not take into account the sentiments of the Indian soldiers.
3. **Less chances of promotions :** All higher posts were reserved for the British. The Indian soldiers couldn't go above the post of Subedar. Thus, the future of Indian soldiers was bleak.
4. **Faulty distribution of troops :** Places of strategic importance like Delhi and Allahabad had no British armies and were wholly held by the Indian soldiers.
5. **Performance of the British troops :** The British army suffered major setback in the first Afghan War and the Crimean War broke the myth that the Britishers were invincible. It further was revealed to the Indian soldiers that the British army could be defeated by a determined Indian army.

**(Any three)**

(iii) **Political causes of the revolt of 1857 were :**

1. **British policy of expansion :** The British tried to expand their political power in India by four ways that were by out right wars, the system of Subsidiary Alliance, by adopting the Doctrine of Lapse and on the pretext of alleged misrule.
2. **Disrespect shown to Bahadur Shah :** In 1856, Lord Canning announced that after the death of Bahadur Shah his successors would not be allowed to use the imperial titles with their names and would not be known as the real princes.
3. **Treatment given to Nana Saheb :** Nana Saheb was the adopted son of Bajirao II, the last Peshwa. The British refused to grant Nana Saheb the pension they were paying to Bajirao II. This was widely resented in Maratha state.
4. **Absentee sovereignty of the British :** Since India was being ruled by the British government from England at a distance of thousand miles this was resented by the Indians. The Indians felt that they were being ruled from England and India's wealth was being drained to England and not utilised for their welfare.

**Answer 7.**

(i) (a) Jallianwala Bagh Memorial.

(b) Jallianwala Bagh in Amritsar, Punjab.

(c) Non-Cooperation Movement.

(ii) The tragedy at Chauri-Chaura, a village in Gorakhpur district in Uttar Pradesh, occurred on February 5, 1922. A procession of about 3,000 peasants marched to the nearby police station to protest against the police officer who had beaten up some volunteers picketing a liquor shop. The police fired at the peasants. The infuriated demonstrators set the police station on fire, killing 22 policemen who were inside the police station. There were also a few violent incidents in other parts of the country. Gandhiji, a firm believer in 'Ahimsa' was greatly shocked at these incidents and he withdrew the Non-Cooperation Movement on February 12, 1922.

(iii) 1. **The National Movement became a Mass Movement :** The Indian national movement, for the first time in history, acquired a real mass base with the participation of different sections of Indian society such as peasants, workers, students, teachers and women.

2. **Instilled confidence among the people :** The movement undermined the power and prestige of the British Government. It generated a desire for freedom and inspired people to challenge the colonial rule.

3. **The Congress became an organised fighting force :** The weapons of Satyagraha and Non-Cooperation changed the character of the Congress overnight. It transformed the Indian National Congress from a deliberative assembly into an organised fighting force, pledged to revolution.

4. **Fostered Hindu-Muslim Unity :** It fostered Hindu-Muslim unity which could be seen by the merger of the Khilafat issue with this movement.

**Answer 8.**

(i) **The major recommendations of the Mountbatten Plan were:**

1. **The Constituent Assembly:** The existing Constituent Assembly would continue to work, but the Constitution framed by it would not apply to Pakistan. A separate Constituent Assembly would be constituted for those parts of India which decided in favour of partition.
2. **The Princely States:** Treaties with the Princely States would end and they were free to join either of the two dominions or remain independent.
3. **A Boundary Commission:** A Boundary Commission would be formed to demarcate the boundaries of the two dominions.
4. **Division of Country:** The country would be divided into two dominions, i.e., India and Pakistan.
5. **Transfer of Power:** The Plan ended a declaration that the transfer of power would take place not in June 1948 but much earlier than that.

**(Any three)**

(ii) All India Congress Committee accepted the Mountbatten Plan because according to Maulana Azad, the Congress had no other alternative. The reason for finally accepting the Mountbatten Plan may be summarised as follows:

1. The large scale communal riots that engulfed the whole country and convinced that the only solution to the communal problem is in Partition of India.
2. The League joined the Interim Government to obstruct or not to cooperate. The experience of working with the League had convinced the Congress that it could not have a joint administration with the League.
3. The only alternative to Partition was a federation with a weak centre. A smaller India with strong Central authority was better than a big state with a weak centre.
4. Any further contribution of the British rule in India would mean a great calamity for India. The leaders felt that delay in the transfer of power could find India in the midst of a civil war.

**(Any three)**

(iii) **The main provisions of the Indian Independence Act were:**

1. **Partition:** The Act provided for the Partition of India into two independent dominions i.e., India and Pakistan. Pakistan was to comprise East Bengal, West Punjab, Sindh, Baluchistan, North-West Frontier Province and the district of Sylhet in Assam. India was to comprise all the remaining territories included in British India.
2. **Constituent Assembly:** There were two separate Constituent Assemblies for the two dominions. Each would serve as the particular dominion's Central Legislature.
3. **Princely States:** The Princely States became independent and all the powers exercised by the British authority were terminated.
4. **Abolition of the office of the Secretary of State:** The office of the Secretary of State of India was abolished.
5. **Governor-General:** Each dominion would have a Governor-General as a Constitutional head and would work according to the wishes of the ministers.
6. **Division of Assets and Army:** Provision was also made for safeguarding the interests of the existing officers appointed by the Secretary of State, who would not make any such appointments in future.

**(Any four)**

**Answer 9.**

(i) **Causes for the rise of Fascism:**

1. **Dissatisfaction with the Treaty of Versailles:** Italy joined the War on the side of the Allies. Among Italians the feeling was that they had won the war but lost the peace. Italy had much to contribute to the success of the Allies in the War. But she could have no valuable addition to her territory. When it came to dividing the spoils of War, her allies deserted her.
2. **Economic Factors:** Economic condition in Italy after the War was very bad. War debts and budget deficits caused lots of difficulty. Everyone in the country felt the pinch of post-war inflation. There was widespread unemployment in the country which led to agrarian riots and strikes.
3. **Political Instability and Inefficient and Corrupt Democratic Governments:** The post war democratic governments in Italy were weak; they could not respond properly to the needs and

aspirations of the people. The governments under Nitti and Giolitti in Italy were unable to control industrial and agrarian disorders. Popular discontent took the form of strikes and riots.

(ii) **Consequences of the Second World War :**

1. Axis Powers made remarkable success initially but were defeated by the Allied Powers.
2. Formation of the UN to bring peace and avoid another world war.
3. After the Second World War, USA and USSR emerged as two great powers representing contrasting ideologies. They divided the world into two power blocs which led to the Cold War.

(iii) **The two rival blocs that fought against each other during the World War II were :**

1. Allied Powers
2. Axis Powers

**Signatory Countries :**

1. **Allied Powers :** The Allied Powers included countries of Britain, France, (except during the German occupation, 1940-44), the Soviet Union, China and the United States of America.
2. **Axis Powers :** Axis Powers included Germany, Italy and Japan. These countries came together as a result of the resentment due to the unjust treatment meted out to them after the World War I.

**Answer 10.**

(i) **Three functions of the International Court of Justice are as follows :**

1. To settle disputes between member states.
2. To give advisory opinions on legal matters referred to it by authorised UN organs and specialised agencies, when the court is authorised by the General Assembly.
3. The ICJ is a judicial institution that decides cases on the basis of international law as it exists on the date of the decision. It cannot formally create law as it is not a legislative organ.

(ii) The General Assembly shall consist of all the members of the United Nations. Each member state shall have not more than five representatives in the General Assembly. Each state has only one vote. It is a kind of Parliament. At the starting of each session the Assembly elects a new President and 21 Vice-Presidents. The Presidency of the Assembly rotates each year among five groups of States–Asia, Africa, Eastern Europe, Latin America and Caribbean, and Western Europe and other States.

(iii) **Two functions of the UNICEF are as follows :**

1. To render assistance in providing protective food like milk, meat, fish and fat to the children throughout the world. It also takes care of interests of women and pregnant mothers.
2. To provide funds for training of health and sanitation workers, nutritionists and crèche workers.

**Two functions of the WHO are as follows :**

1. It helps the countries to build-up infrastructure in health.
2. It promotes research for developing new technologies in health, nutrition, maternal and child care, etc.

□□

# 2 Sample Paper

## History & Civics

## Answers

### Part-I

Answer 1.
(i) (c) Legislature
(ii) (c) Y
(iii) (d) The President
(iv) (b) No-Confidence Motion
(v) (c) P and R
(vi) (c) both (a) and (b)
(vii) (a) (A) is true and (R) is false.
(viii) (a) The Central government will become all-powerful and can legislate over the State List as well.
(ix) (d) 2-1-3
(x) (a) Fascism
(xi) (d) Mahatma Gandhi
(xii) (a) 1914-1918
(xiii) (a) Sessions Court – Criminal Cases
(xiv) (b) March, 1919
(xv) (a) New York
(xvi) (d) All of these

nswer 2.
(i) **Discretionary Powers:**
1. When no party gains majority in the Lok Sabha, the President, using his/her discretionary power, appoints the Prime Minister.
2. After the vote of no-confidence is passed against the prevailing government, the President may dissolve the Parliament or ask the leader of another party to prove its majority on the floor of the House.

(ii) **The conditions for anti-defection law are as follows:**
1. If a member voluntarily relinquishes his membership from the party on whose ticket he got elected.
2. An independent member of a Parliament or State Legislature will be disqualified if he/she joins another party after his/her election.
3. There would be no disqualification, where a member claims that he/she belongs to a group representing a faction arising from a split and the group consists of not less than 1/3rd of the members of the political party. **(Any two)**

(iii) 1. The Vernacular Press Act forbade the vernacular papers from publishing articles against the British Government.
2. This Act was not applicable to English newspapers. In 1882, this Act was repealed by Lord Ripon.

(iv) **Factors responsible for the growth of Nationalism in India:**
1. **Impact of the British Rule:** The British rule brought the whole country under one government and this gave Indians a new sense of political unity. The British established a strong Central

Government and they introduced a uniform system of law and administration in the country. They set up industries and trade which brought about an economic unification.

2. **Discovering India's Past:** The researches of the Europeans scholars, such as Sir William Jones, Charles Wilkins, Max Muller, etc., into the glorious past of India roused the feelings of self- respect, self-confidence, patriotism and nationalism among the Indians. They helped in restoring the rich heritage of ancient literature.

(v) The leader in the picture is Lala Lajpat Rai.

**His Contribution:**

1. He was part of the Lal-Bal-Pal trio (Lala Lajpat Rai, Bal Gangadhar Tilak and Bipin Chandra Pal) that promoted Swaraj, boycott and Swadeshi.
2. He led a peaceful protest against the Simon Commission in Lahore, where he was lathi-charged by the police, leading to his death. **(Any one)**

(vi) The signatory countries of the Triple Alliance included Germany, Austria – Hungry and Italy. The rival bloc formed was Triple Entente (Britain, France and Russia).

(vii) There are six official languages of the UN:

1. Arabic
2. Chinese
3. English
4. French
5. Russian
6. Spanish

# Part-II

## Section-A

**Answer 3.**

(i) **The three Legislative powers of the Union Parliament are given below :**

1. The Parliament is a law-making body and it is considered as the centre of all democratic political process. It has exclusive powers to make laws on all subjects listed in Union List and Concurrent List.
2. The Parliament has power of financial control through budget discussion. For Example : Fiscal Policy.
3. During a National Emergency, the union system of the government becomes a unitary one by granting Parliament the power to make laws on the 66 subjects of the State List. Also, all state money bills are referred to the Parliament for its approval.

(ii) **Exclusive powers of the Lok Sabha :**

1. Motion of No-Confidence against the government can only be introduced and passed in the Lok Sabha.
2. Money bills can only be introduced in the Lok Sabha.
3. In case of deadlock between the two Houses over non-financial ordinary bill, the Lok Sabha normally prevails as a strength which includes more than twice as many members as the Rajya Sabha.

(iii) **The Speaker is the presiding officer of the Lok Sabha and has following functions :**

1. He/She regulates proceedings of the House and certifies whether a bill is a money bill or not.
2. He/She maintains discipline in the House and puts issues to vote and announces results.
3. He/She presides over the joint session of the Parliament, interprets the rules and procedure of the House. His/Her decision in parliamentary matters is final.
4. He/She decides the admissibility of all questions and resolutions. He/She communicates the decision of the House to the concerned authorities.
5. He/She regulates the admission of visitors and press correspondents to the galleries of the House.

**Answer 4.**

(i) The following qualifications are required for a person to be nominated to the post of the President:

1. He/She must be a citizen of India.
2. He/She must have completed 35 years of age.
3. He/She must be qualified for election as a member of the Lok Sabha.
4. He/She must not hold any office of profit under the Union Government or any State Government. **(Any three)**

(ii) **Discretionary powers of the President are :**

1. The President appoints incumbent Prime Minister in case of sudden death, where the ruling legislative party is unable to meet immediately to elect a leader.
2. When the ruling party would lose majority support in Lok Sabha or when a vote of no-confidence may have been passed against, it requires a President to dissolve the Lok Sabha. Then it is at discretion of the President to whether dissolve the House or ask another party to prove majority on the floor of the House.
3. The President can dismiss ministers in case the Council of Ministers loses the confidence of the House but refuses to resign.

(iii) **Four Executive Powers of the President are:**

1. Being the Head of the Union administration, executive orders are issued in the name of the President.
2. The President makes appointments to run the government administration.
3. For example, appointment of the Prime Minister and Council of Ministers, appointment of Chief Justice and other judges of the Supreme Court, appointment of the Governors of the State, appointment of the Attorney General of India.
4. The administration of the union territories and the border areas is the responsibility of the President.

**Answer 5.**

(i) The Independence of the Judges of the Supreme Court is ensured by the Constitution in following ways:

(i) **Security of Service:** The Judges of the Supreme Court cannot be removed from office until they complete 65 years of age or they have been removed by the Parliament.

(ii) **Emoluments not Subject to Reduction:** Emoluments of judges cannot be reduced during their tenure until there is a Financial Emergency in the country.

(iii) **No discussion in Legislature on the conduct of a Judge:** This discussion is held only when the House wants to remove the judge, otherwise the discussion about the conduct of any judge cannot be held in any Legislature.

(iv) **Freedom to Announce Decisions and Decrees:** The judges have freedom to decide cases without any danger to their person, property or fame.

(ii) **Power of Judicial Review:**

1. The Supreme Court is an interpreter of the Constitution and its decision is final. It holds a power to review law passed by the union or state legislature.
2. The Supreme Court can strike down a law that goes against Fundamental Rights; this implicitly gives Supreme Court the power of judicial review.
3. The Supreme Court (or High Courts) can examine the constitutionality of any law. If the court arrives at the conclusion that a law is inconsistent with the provisions of the Constitution, such a law is declared as unconstitutional and inapplicable.

(iii) **Supreme Court as a Court of Record:**

1. A court of record is a court whose acts and proceedings are enrolled for perpetual memory and testimony. The judgements are in nature of the precedents *i.e.*, the High Court and other courts are bound to give same decisions in similar cases.
2. Article 129 provides that the Supreme Court shall be a court of record and shall have all the powers of such a court including the power to punish for contempt of itself.
3. Article 215 contains similar provision in respect of the High Court. Both the Supreme Court as well as the High Courts are courts of record having powers to punish for contempt including the power to punish for contempt of itself.

## Section-B

**Answer 6.**

(i) **Repressive Colonial Policies:**

1. Lord Lytton organised a Grand Delhi Durbar in 1877 to proclaim Queen Victoria as the Empress of India. Lakhs of rupees were spent on the event but nothing was done for Indians who were in the grip of a famine.

2. The Vernacular Press Act (1878) introduced by Lord Lytton forbade vernacular papers to publish any material that might excite feelings of dissatisfaction against the British Government. This Act was not applicable to English newspapers. The editors who opposed the Act were sentenced to jail.
3. The maximum age limit for the Indian Civil Service Examination was reduced from 21 to 19 years, thus, making it difficult for the Indians to compete for it.

(ii) **Role of Press in developing nationalism amongst Indians:**

1. It was through the Press that the message of patriotism and modern liberal ideas of liberty, freedom, equality, home rule and independence, spread among the people.
2. The Press carried on daily criticism of the unjust policies of the British Government in India and exposed the true nature of British rule in India.
3. It made possible the exchange of views among different social groups from different parts of the country.

(iii)

| Early Nationalists | Radicals (Assertive Nationalists) |
|---|---|
| 1. The Early Nationalists wanted to achieve self government and they strove for autonomy within the Empire and not for absolute independence. | The Radicals aimed for nothing less than Swaraj as it existed in the United Kingdom. |
| 2. They believed in constitutional methods and worked within the framework of the law. | They were assertive in their approach. |
| 3. They held good positions under the British government. | They denounced British rule and defied it. |
| 4. They had faith in the British sense of justice and fair play. | They rejected British rule and held it responsible for the prevailing poverty of the Indian people. |

**Answer 7.**

(i) The Indian National Army was formed by Mohan Singh, an Indian officer in the British Indian army. He encouraged civilian Indians to join the anti-British organisations. Japan handed over Indian prisoners of war to Mohan Singh, who were inducted into the Indian National Army. The Indian National Army decided to attack British army in India on the invitation of the Indian National Congress and the people of India.

(ii)
1. The Indian National Army was successful in capturing the frontiers of India.
2. It gave tough fight to the British forces and liberated some parts of India.
3. It raised the tricolour flag for the first time on the liberated Indian soil on March 19, 1944.

(iii)
1. Subhash Chandra Bose joined the Indian National Congress and took part in the Non-Cooperation Movement along with Mahatma Gandhi.
2. He started a party called the Forward Bloc with the aim of liberating India with the support of workers and youth.
3. Subhash Chandra Bose became the Supreme Commander of the Indian National Army.
4. He set up the provisional government of free India in Singapore.
5. He captured Andaman and Nicobar Islands and gave tough fight to the British forces.

**Answer 8.**

(i) **The main recommendations of the Simon Commission were:**

1. Dyarchy should be abolished and there should be complete autonomy in the provinces including the department of law and order.
2. The Governor-General should be given over-riding power in certain matters like internal security.
3. There should be a federal government at the Centre, consisting of British India and the Princely States.
4. Provincial Legislative Councils should be enlarged.

(ii) **The recommendations of the Nehru Report were:**

1. Attainment of dominion status to India at an early date.

2. Safeguarding the interests of religious minorities and giving them full protection.
3. Executive to be made responsible to the Legislature.
4. India to be a federation, built on the basis of linguistic provinces and provision of provincial autonomy.

(iii) Gandhiji now decided to launch a 'Civil Disobedience Movement' and informed the British about his decision.

Gandhiji started this Movement from Sabarmati Ashram on 12th of March, 1930. 78 people followed him, and many more joined on the way to Dandi.

1. Gandhiji broke the Salt Law on the 6th of April, 1930, by making or actually picking up salt from the seashore. He advised people to break the unjust laws of the British.
2. He started the Civil Disobedience Movement by breaking the Salt Law as salt was used by everyone, *i.e.*, rich, poor, rural or urban.
3. Soon, people started breaking other British laws. Some refused to pay tax while others broke different British laws. People organised mass movements in various ways. Women joined in large numbers. People were urged not to buy foreign goods.

**Answer 9.**

(i) Adolf Hitler.

**His ideologies were:**

1. To have faith in the totalitarian rule.
2. To believe in aggressive nationalism and imperialism.
3. To regard war as an instrument for furthering national interests. **(Any two)**

(ii) **Causes for his rise to power:**

1. **Humiliating Treaty of Versailles:** The terms of this treaty were hugely resented by the Germans who eagerly looked for an opportunity to avenge the same. Their sentiments were exploited by Hitler.
2. **Growing Fear of Communism:** After the Bolshevik Revolution in Russia, the Communist influence in Germany increased considerably. Therefore, Hitler tried to persuade the people in Germany that Nazism alone could check the growing influence of Communism.
3. **Anti-Semitic Propaganda:** The anti-Semitic propaganda carried on by the Nazi Party also contributed to Hitler's popularity. The Nazis described the Jews as traitors. Due to this anti-Semitic propaganda, many Germans rallied behind the Nazi Party.
4. **Charismatic Personality of Hitler:** Hitler had a charismatic personality. He had all the qualities required for a popular leader. He knew the art of moulding public opinion in his favour according to the circumstances. **(Any three)**

(iii) **The German Invasion of Poland (Immediate cause):** On 1st September 1939, the German Armies marched into Poland. On 3rd September, Britain and France declared war on Germany. Thus, the German invasion of Poland marked the beginning of the Second World War.

**The following reasons were given by Hitler to justify his action:**

1. By the Treaty of Versailles, Germany was divided into two parts in order to give a land route to Poland up to the sea and the Port of Danzig was also given to Poland. Germany wanted to regain her lost territories.
2. The city of Danzig was inhabited mainly by the Germans. By occupying the Danzig Corridor, he could connect East Prussia with Germany.
3. He also accused Poland for committing atrocities against Germans living there.

**Answer 10.**

(i) **Factors responsible for the formation of the United Nations Organisation:**

1. **International peace:** This is one of the most important purposes of establishing UNO. It should take effective measures for the removal of threats of the peace.
2. **Friendly relations:** Its second most important purpose is to develop friendly relations among nations, based on respect for the principle of equal rights and self-determination of people.
3. **International cooperation:** Its third most important purpose is to promote international cooperation in solving international problems on economic, social, cultural or humanitarian charter.

4. **Social equality:** To promote international cooperation, respect for human rights and fundamental freedom for all without distinction as to race, sex, language or religion.

(ii) **The main principles of the UNO are :**

1. To respect the sovereign equality of all its members.
2. All members should fulfill, in good faith, the obligations assumed by them.
3. They would refrain from the threat or use of force against any state.
4. They should give United Nations every assistance in any action it takes.

(iii) The United Nations Organisation undertook the three dimensional task of peace-keeping, peace-making and peace-building in a world which had just been a victim of a devastating world war.

1. Thus, the primary function of the UNO is to maintain international peace and security. This includes collective effective measures for prevention and removal of threats to peace, and suppression of acts of aggression or other breaches of peace.
2. To bring about through peaceful means, adhering to principles of justice and international law adjustment and settlement of international disputes. Thus, the cause of action for the UNO arises when there is threat to peace, or actual aggression causing breach of peace.
3. The means for settling disputes are recommended to be peaceful but where suppression of aggression is required the Security Council is authorised to use military operations. For instance in Korea, Palestine, Congo and in the Gulf War, the UN military forces played a decisive role.

□□

# Specimen Question Paper

## Geography

*Maximum Marks: 80*
*Time allowed: Two hours*

### General Instructions

*Answers to this Paper must be written on the answer sheet provided separately.*
*You will not be allowed to write during the first 15 minutes.*
*This time is to be spent in reading the question paper.*
***The time given at the head of this Paper is the time allowed for writing the answers.***
***Part I is compulsory. All questions from Part I are to be attempted.***
*A total of **five questions** are to be attempted from **Part II.***
*The intended marks for questions or parts of questions are given in brackets [ ].*

*To be supplied with this Paper: Survey of India Map Sheet No. **G43S10** and 20 cm of twine.*

*Note:*

(i) *In all **Map Work**, make wise use of arrows to avoid overcrowding of the map.*
(ii) *The extract of **Survey of India Map Sheet No. G43S10** must not be taken out of the examination hall. It must be handed over to the Supervising Examiner on completion of the paper.*
(iii) *The Map given at the end of this question paper must be detached, and after marking, must be fastened to your answer booklet.*
(iv) ***All sub-sections of the questions attempted must be answered in the correct serial order.***
(v) *All working including rough work should be done on the same answer sheet which is used to answer the rest of the paper.*

***Instruction for the Supervising Examiner***

*Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.*

## Questions

### Part-I (30 Marks) (Attempt all questions from this Part.)

**Question 1.**

**Study the extract of the Survey of India Map Sheet No. G43S10 and answer the following questions:**

(i) (a) Identify the conventional symbol found at the six figure reference of 666364. **[2]**
(b) Identify the drainage pattern in the Grid Square 6334. **[Application & Understanding]**

(ii) (a) Calculate the shortest distance in km. from Malgaon to Mohabbatgarh. **[2]**
(b) In which direction will Sneha be driving if she is going from Mohabbatgarh to Sanwara along the metalled road? **[Application]**

(iii) (a) Write whether the conventional symbol marked as a blue dot in the Pamera settlement is man-made or natural. **[2]**
(b) A resident of Malgaon settlement (Grid Square 6131) has to report a crime at the nearest police station. Which settlement will he be visiting? **[Analysis]**

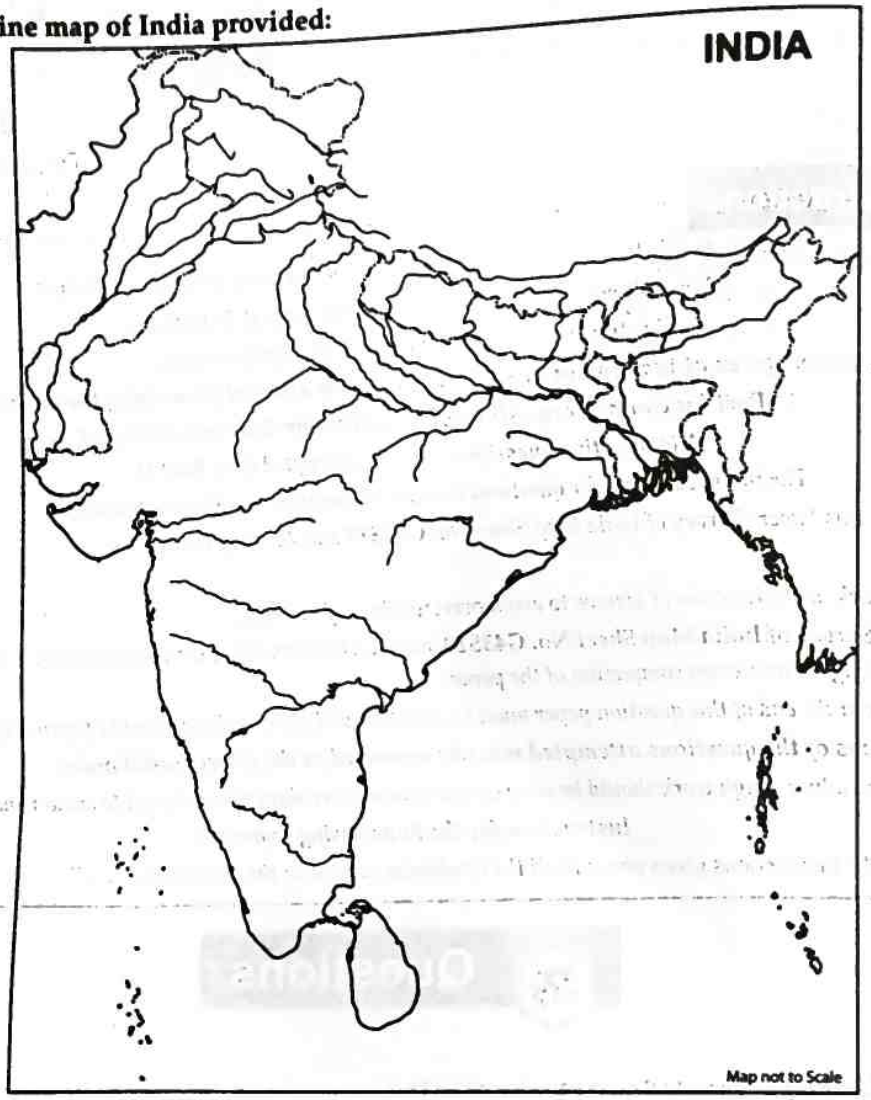
(iv) (a) How do the local people benefit from the causeways seen in this region? **[2]**
(b) Explain why Fire lines are significant from the point of view of environment. **[Application & Recall]**

(v) (a) Rajiv is travelling from Gulabganj for a visit to the Reserved Forest near Tarepara Nadi (Grid square 6728). Which two means of transport he would come across during his journey? [2]

(b) Differentiate between the types of huts in Grid Square 6935 and the ones found in Grid Square7033. [Understanding]

**Question 2.**

**On the outline map of India provided:** [Recall]




(i) Shade and label an area of black soil in Gujarat. [1]

(ii) Mark using a dot and name a major river port of India. [1]

(iii) Shade and label the Deccan plateau of India. [1]

(iv) Mark and label the Palk Strait. [1]

(v) Mark with arrows and name the wind which brings rainfall to the Konkan coast. [1]

(vi) Shade and label a sparsely populated area in western India. [1]

(vii) Mark and label the hills that are popularly called Blue Mountain. [1]

(viii) Mark and name the river known as the 'Sorrow of Bengal'. [1]

(ix) Mark and label the Indian Standard Meridian. [1]

(x) Mark and label the Coromandel coast. [1]

**Question 3.**

**Choose the correct answers to the questions from the given options.** [10]

**(Do not copy the question, write the correct answers only.)**

(i) The Himalayas have a significant impact on the climate of India as they:

(a) block the N.E. monsoon winds.
(b) cause rainfall in the Gangetic plains.
(c) create a rain shadow area in the Deccan plateau.
(d) cause cyclonic disturbance in the Bay of Bengal. **[Application]**

(ii) Ex-situ soil found in India is _____.
(a) Alluvial soil
(b) Black soil
(c) Laterite soil
(d) Red soil **[Recall]**

(iii) Find the option most similar to:
Teak: Tropical Deciduous Forest
(a) Mahogany: Furniture
(b) Stilted roots: Mangrove Vegetation
(c) Ebony: Tropical Rainforest
(d) Spines: Tropical Desert Vegetation. **[Recall]**

(iv) Which of the following may be used for the recharging of underground water?
(a) Planting of shelter belt
(b) Plugging of gullies and ravines
(c) Percolation pit
(d) Tube-well irrigation **[Understanding]**

(v) Arrange the following in descending order according to their carbon content:
(a) Anthracite, Bituminous, Peat, Lignite
(b) Bituminous, Lignite, Anthracite, Peat
(c) Anthracite, Bituminous, Lignite, Peat
(d) Anthracite, Lignite, Peat, Bituminous **[Understanding]**

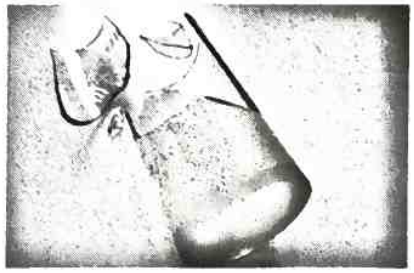
(vi) **Assertion (A):** Agriculture in India is heavily **dependent** on monsoon rains.
**Reason (R):** Most Indian farmers practice rainfed agriculture and lack access to irrigation facilities.
(a) (A) is true but (R) is false.
(b) (A) is false but (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A). **[Analysis]**

(vii) Which crop is associated with Retting?
(a) Sugarcane
(b) Jute
(c) Rice
(d) Cotton **[Recall]**

(viii) Which steel plant amongst the following does NOT belong to public sector?
(a) Bhilai
(b) Tata Steel
(c) Vishakhapatnam
(d) Rourkela **[Recall]**

(ix) If you need to transport perishable goods over a short distance, which mode of transport will you use and why?
(a) Air transport because it is the fastest.
(b) Road transport as it is economical.
(c) Rail transport as it is ecofriendly.
(d) Water transport as it can handle large amount of goods. **[Application]**

(x) Which of the following methods of disposal is best applicable for the waste depicted in the picture below:



(a) Burning waste in an open area
(b) Recycling waste
(c) Dumping
(d) Composting **[Application]**

## Part-II (50 Marks) (Attempt any five questions from this Part.)

**Question 4.**

(i) *"The climate in different parts of India is largely impacted by the relief features".*
Explain the above statement with the help of two suitable examples. [2]
[Analysis & Application]

(ii) What is the source of winter rainfall in each of the following areas?
(a) Punjab [2]
(b) Tamil Nadu
[Recall]

(iii) Give a reason for each of the following:
(a) Kerala gets rainfall from the summer monsoons much before Uttar Pradesh. [3]
(b) Vishakhapatnam records a low annual range of temperature.
(c) Winds are mostly offshore during the cold season.
[Analysis]

(iv) Study the climatic data of station X and answer the following questions:
[3]

| Month | Jan | Feb | Mar | Apr | May | Jun | July | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp (°C) | 25.0 | 25.5 | 26.3 | 27.1 | 30.0 | 36.2 | 36.0 | 35.9 | 30.3 | 28.4 | 27.0 | 24.6 |
| Rainfall (cm) | 24.5 | 23.1 | 15.0 | 2.4 | 0.1 | 11.0 | 9.3 | 7.2 | 4.0 | 9.4 | 14.5 | 20.4 |

(a) Calculate the average temperature of station X for the summer season only. [Application]
(b) Which is the driest month? [Understanding]
(c) Name the wind that brings maximum rainfall to this station. [Analysis]

**Question 5.**

(i) Nathu, a farmer in Bihar, does not get good yields as the soil he tills is coarse and has fair proportion of kankars. Motilal on the other hand has his field closer to the river and gets better yields. [2]
(a) Identify the two types of soil being discussed in the above passage.
(b) Give a possible reason why Motilal benefits from having his field along the river banks.
[Recall & Application]

(ii) With reference to soil erosion in India, answer the following questions. [2]
(a) How does population pressure affect soil erosion?
(b) Mention any two innovative agricultural techniques that can help to prevent soil erosion.
[Application]

(iii) With reference to Red Soil, answer the following: [3]
(a) How is it formed? [Understanding]
(b) Why is it good for Dry Farming? [Application]
(c) Name any two areas where it is found. [Recall]

(iv) Give a reason for the following statements: [3]
(a) Black Soil has self-ploughing property.
(b) Laterite Soil is not suitable for cultivation.
(c) Alluvial soil has varying texture. [Analysis]

**Question 6.**

(i) Mahesh went for an excursion with his friend and came across a marshy area with trees that had stilt like roots. [2]
(a) Which natural vegetation belt did he come across? [Application]
(b) Name an area in India where this kind of vegetation is found. [Recall]

(ii) (a) How does Social Forestry help to conserve forests? [2]
[Evaluate]
(b) Why are long and deep roots a typical characteristic of desert vegetation? [Evaluate]

(iii) Give three reasons why forest conservation is the need of the hour. [3]
[Analysis]

(iv) (a) Name a forest conservation method that involves the local community. [3]

(b) Which primitive system of agriculture had led to large scale destruction of forest in the past? [Recall]

(c) Name the process which involves planting two saplings for each tree that is felled. [Recall]

**Question 7.**

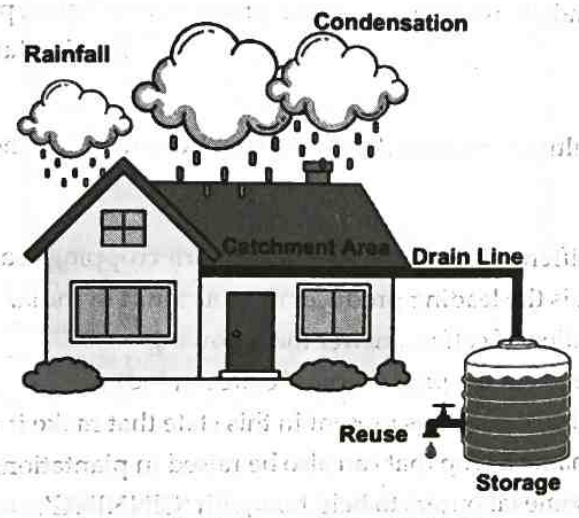
(i) The need for irrigation in India is to a large extent, influenced by the rainfall pattern of the country. Explain. [2] [Analysis]

(ii) Why is canal irrigation a more suitable method of irrigation in the northern plains of India? [2] [Analysis]

(iii) (a) Name a state in India where tube wells are commonly used. [3]

(b) Give two geographical conditions that favour tube well irrigation in this state. [Analysis]

(iv) Study the picture given below and answer the questions that follow: [3] [Understanding & Recall]




(a) Name the water conservation method shown in the picture.

(b) Mention any *two* similar water harvesting practices followed in India.

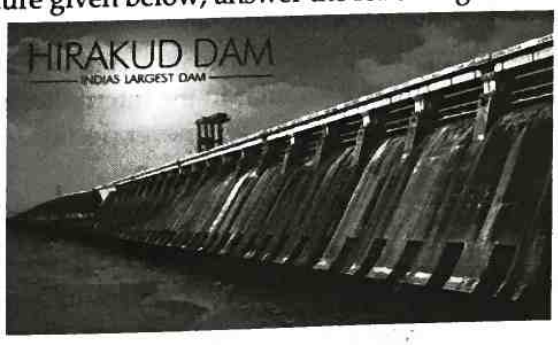
**Question 8.**

(i) There is ample potential of setting up biogas plants in India. The National Bioenergy Programme has been recommended by the concerned Ministry, for implementation in two phases. The spread of biogas technology is a boon for Indian farmers with its direct and guaranteed benefits. (https://biogas.mnre.gov.in) [2]

(a) Why do you think generation of biogas can be achieved in every household of rural India?

(b) Mention two ways in which generation of this form of energy proves to be a boon for Indian farmers. [Analysis and Evaluate]

(ii) With reference to the picture given below, answer the following: [2]




(a) On which river is it based?

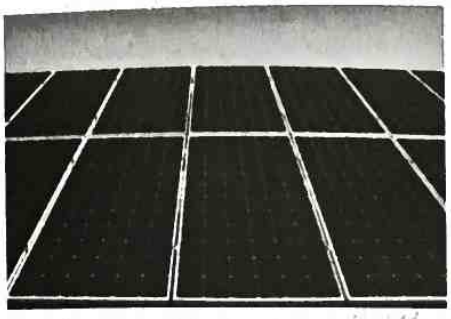
(b) Name an Indian state benefitted by the project. [Recall & Application]

(iii) (a) Why is copper an important household mineral?

(b) Name two Indian states where copper is found.

(c) How is distribution of mineral deposits responsible for the concentration of industries in the Chota Nagpur Plateau? **[Application & Recall]**

(iv)



(a) Identify the type of energy being harnessed in the above picture.

(b) Mention why this form of energy is preferred over fossil fuels.

(c) Why does India stand at an advantage in the production of this type of energy.

**[Understanding, Evaluate & Application]**

**Question 9.**

(i) Mention any two agricultural reforms done by the government for the betterment of the agricultural sector. [2] **[Understanding]**

(ii) (a) State one point of difference between Rabi and Kharif cropping seasons. [2] **[Analysis & Recall]**

(b) Name the state that is the leading producer of groundnut in India. [3] **[Understanding]**

(iii) With reference to cultivation of coffee, answer the following:

(a) Name a state that leads in the production of coffee in India. **[Recall]**

(b) Give two geographical conditions present in this state that make it the leading producer. **[Evaluate]**

(c) Other than coffee, name a crop that can also be raised in plantations. [3] **[Application]**

(iv) Rohan, a farmer, hired some labourers to help him with 'GINNING'.

(a) Name the crop grown by Rohan. **[Recall]**

(b) Mention any two climatic conditions suitable for this crop.

**Question 10.**

(i) Mention any two points of difference between Small scale and Large scale industry. [2] **[Analysis]**

(ii) Explain any two ways in which cotton textile industry is important for the Indian economy. [2] **[Understanding]**

(iii) With reference to the petrochemical industry, answer the following:

(a) State a reason for the growing popularity of this industry in recent times. [3] **[Application]**

(b) Why is it located close to oil refineries? **[Evaluate]**

(c) Name any two petrochemical products. **[Recall]**

(iv) Give one reason to explain each of the following: [3]

(a) Sugar production is gradually gaining importance in peninsular India.

(b) Indian silk products are becoming less popular in the international market.

(c) The importance of the iron and steel industry will never decline. **[Analysis]**

**Question 11.**

(i) Mention any *two* disadvantages of using waterways. [2] **[Understanding]**

(ii) Explain why the Golden Quadrilateral has contributed towards improvement of the Indian economy? [2] **[Understanding]**

(iii) (a) *"Roadways have an edge over railways in India."* Give reasons to support your answer. [3]

(b) Air transport is fast but not suitable for all regions and purposes in India. Give arguments in favour of the statement.

(c) Which is the Inland Waterway that connects Prayagraj to Haldia? **[Understanding & Recall]**

(iv) Give a reason for each of the following: **[3]**

(a) At present times, airports are being established even in smaller towns of India.

(b) Railways are well developed in the northern states of India.

(c) Helicopter services are crucial during emergencies. **[Analysis]**

**Question 12.**

(i) What is the impact of waste generation on the following? **[2]**

(a) Surface water (b) Landscape **[Understanding]**

(ii) Study the picture given below and answer the questions that follow: **[2]**

**[Analysis]**

(a) Name the method of waste disposal seen in the picture.

(b) Why is this method considered a harmful method of waste disposal?

(iii) *Fire broke out at the Kochi city waste treatment plant. Thick clouds of toxic smoke engulfed the city. The waste at the plant also contained plastic and biomedical wastes, both of which on combustion are extremely harmful for the general health of people.* **[3]**

— Economic Times, 10.03.2023

(a) Which method of waste management would have helped in reducing health hazards in the above case? **[Analysis]**

(b) Mention any one measure you can adopt in schools to reduce waste. **[Application]**

(c) State one way in which domestic waste can be made useful. **[Understanding]**

(iv) (a) What is composting? **[3]**

(b) Enumerate two advantages of composting as a method of waste disposal. **[Recall & Application]**

# Answers

## Part-I

**Answer 1.**

(i) (a) Post office

(b) Dendritic pattern

(ii) (a) The shortest distance between Malgaon and Mohbbatgarh = 6.5 cm

Given scale is 2 cm = 1 km

Therefore, 6.5 cm = 3.25 km

(b) North-east

(iii) (a) Man-made

(b) He will be visiting Pamera.

(iv) (a) Causeways are raised roads that help people to cross minor seasonal streams during the monsoon, when these streams contain water.

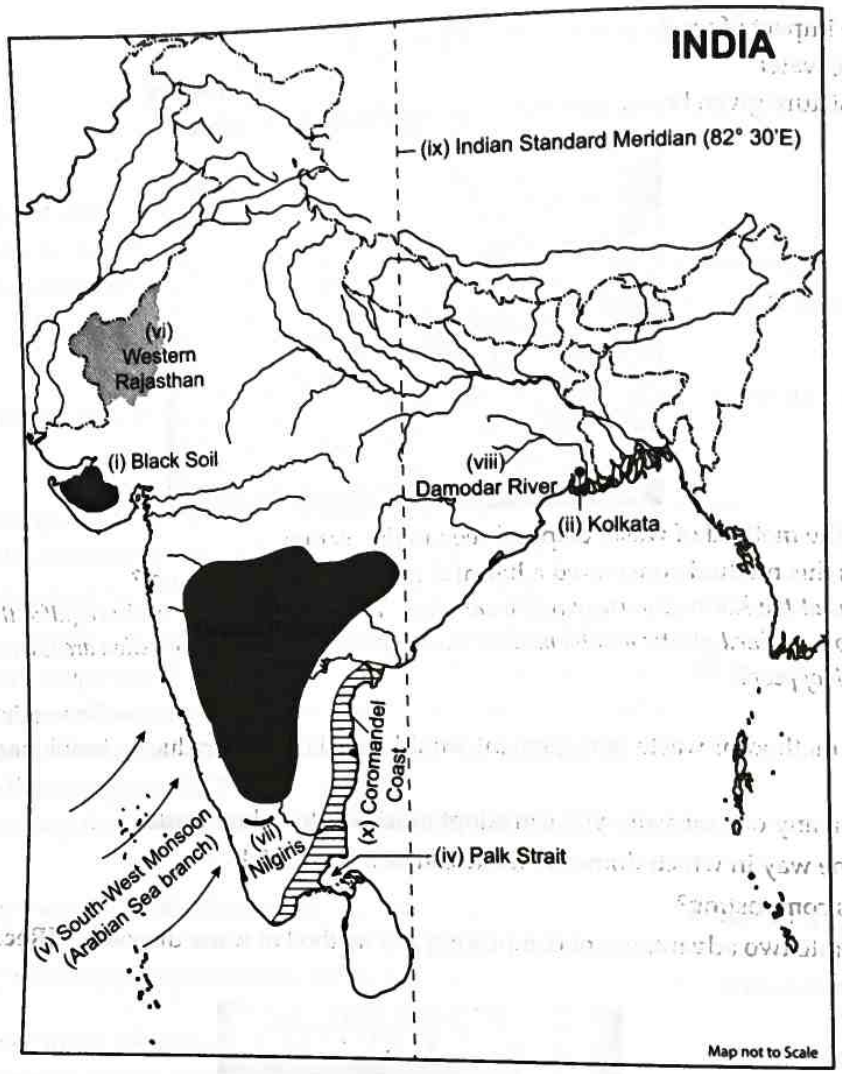
(b) Fire lines prevent forest fires from spreading and help to protect forest reserves.

(v) (a) Metalled road and unmetalled road

(b) **Grid Square 6935:** Permanent huts

**Grid Square 7033:** Temporary huts

**Answer 2.**




**Answer 3.**

(i) (b) cause rainfall in the Gangetic plains

**Explanation :**

The Himalayas act as a climatic barrier and play a vital role in influencing India's climate. They force the moisture-laden South-West Monsoon winds to rise, resulting in orographic rainfall in the Gangetic plains and along the foothills. Additionally, they prevent the Siberian cold winds from entering India, keeping northern India warmer in winter.

(ii) (a) Alluvial soil

**Explanation :**

- In-situ soils are formed at the place of origin, by the weathering of rocks. Examples include Black soil and Red soil.

- Ex-situ soils are those that are formed elsewhere and transported to the place of deposition by agents like rivers, wind, or glaciers. An example is Alluvial soil, which is deposited by rivers.

(iii) (c) Ebony: Tropical Rainforest

**Explanation :**

Just as Teak is a characteristic tree of Tropical Deciduous Forests, Ebony is a typical tree found in Tropical Rainforests. This pair correctly represents the tree–forest type relationship.

(iv) (c) Percolation pit

**Explanation :**

Percolation pits are small, dug-out structures that allow rainwater to seep into the ground, thereby recharging groundwater. They are an important method of rainwater harvesting and groundwater conservation.

(v) (c) Anthracite, Bituminous, Lignite, Peat

**Explanation :**

Coal types arranged in descending order of carbon content:

1. **Anthracite** – Highest carbon content (approximately 85-95%), hard and clean-burning.
2. **Bituminous** – High carbon (about 60-80%), widely used for industrial purposes.
3. **Lignite** – Lower carbon (around 40-60%), more moisture content.
4. **Peat** – Lowest carbon, partially decayed plant matter.

(vi) (c) Both (A) and (R) are true and (R) is the correct explanation of (A).

**Explanation :**

The Reason (R) correctly explains the Assertion (A) because the dependency on monsoon rainfall is primarily due to the lack of widespread irrigation facilities across the country.

(vii) (b) Jute

**Explanation :**

Retting is the process of soaking jute stalks in water to allow microbial activity to loosen the outer bark, making it easier to extract the jute fibre. This step is essential in jute processing.

(viii) (b) Tata Steel

**Explanation :**

Tata Steel is a private sector steel plant owned by the Tata Group. The other three— Bhilai, Rourkela, and Vishakhapatnam—are public sector steel plants established with foreign collaboration after independence.

(ix) (b) Road transport as it is economical.

**Explanation :**

Perishable goods such as fruits, vegetables, and dairy products require quick delivery to prevent spoilage. For short distances, road transport is most suitable because:

- It is economical for small consignments.
- It offers flexibility in routing and timing.
- It provides door-to-door service, which reduces handling and transit time.

(x) (b) Recycling waste

**Explanation :**

The picture shows broken glass, which is a non-biodegradable material.

The best method of disposal for glass is recycling, as it can be melted and reused to make new glass products. Recycling glass is eco-friendly and helps conserve natural resources and reduce environmental pollution.

## Part-II

**Answer 4.**

(i) 1. The Arabian Sea branch of the South-West Monsoon strikes the western side of the Western Ghats, which receives very heavy rainfall as it lies on the windward side. In contrast, the Deccan Plateau, lying on the leeward side, receives comparatively less rainfall.

2. The Arabian Sea branch of the South-West Monsoon runs parallel to the Aravalli Range due to its north-south alignment. As a result, it does not intercept the monsoon winds, and the Thar Desert on the western side receives very little rainfall.

3. The moisture-laden Bay of Bengal branch of the South-West Monsoon winds is trapped in the funnel-shaped depression formed by the Garo, Khasi, and Jaintia Hills. Consequently, Mawsynram, located on the windward side, receives the highest average rainfall in the world (about 1200 cm), while Shillong, on the leeward side, receives only around 400 cm of rainfall. **(Any two)**

(ii) (a) **Punjab:** Western disturbances originating in the Mediterranean region/Temperate cyclones.

(b) **Tamil Nadu:** North-East Winter Monsoon/Retreating Monsoon.

(iii) (a) Kerala gets rainfall from the summer monsoons much before Uttar Pradesh because Kerala lies in the southwest of the country where the South-West Monsoon wind strikes first. The wind then advances to the north and reaches Uttar Pradesh.

(b) Vishakhapatnam records a low annual range of temperature because it has a coastal location and experiences the moderating influence of the sea.

(c) Land loses heat quickly, and high pressure develops over it during the cold season. The surrounding seas remain warm and have low pressure during this time. Thus, winds blow from land to sea and are offshore.

(iv) (a) Average temperature of station X for the summer season (March to May):

$$\text{Average Temperature} = \frac{\text{Sum of Monthly Temperatures}}{\text{Number of Months}}$$

$$= \frac{26.3+27.1+30.0}{3} = \frac{83.4}{3} = 27.8°C$$

(b) May is the driest month with only 0.1 cm of rainfall.

(c) North-East Monsoon Winds

**Answer 5.**

(i) (a) These are Bhangar and Khadar, respectively.

(b) Motilal benefits from having his field along the river banks because the Khadar soil gets replenished every year and is, hence, more fertile.

(ii) (a) Population pressure leads to deforestation, overgrazing, and intensive farming, which reduce vegetation cover and disturb the soil, making it more prone to erosion by wind and water.

(b) Two innovative agricultural techniques that can help to prevent soil erosion:

1. Contour ploughing
2. Terrace farming

(iii) (a) Red soil is formed through the weathering of ancient crystalline igneous rocks like granite and gneiss. It is characterised by its reddish colour, which is due to the presence of iron oxide.

(b) Red soil is good for dry farming because it has good drainage properties and can retain moisture during the dry season.

(c) Red soil is found in areas such as the Deccan Plateau (Central India), parts of South India (Tamil Nadu, Karnataka), and the north-eastern states like Assam.

(iv) (a) Black soil has self-ploughing properties due to its high clay content. It can shrink and swell with changes in moisture content, leading to the formation of cracks and fissures that act as natural ploughing agents

(b) Laterite soil is not suitable for cultivation because it is highly leached and lacks essential nutrients required for plant growth. It is typically low in fertility and has a hard, compacted structure, making it difficult for roots to penetrate.

(c) Alluvial soil has a varying texture because numerous rivers in Northern India bring large amounts of sediments and deposit them to form fertile plains. In the upper course, the sediments are coarse and porous, while in the lower course and deltas, they become finer and more compact.

**Answer 6.**

(i) (a) Mahesh came across a mangrove forest, also known as tidal or littoral forest.

(b) This kind of vegetation is found in saline swamps of Sunderbans in West Bengal.

(ii) (a) Social Forestry involves planting trees on community lands, roadsides, and wastelands, which reduces pressure on natural forests by providing fuel, fodder, and timber locally—thus helping conserve existing forests.

(b) Long and deep roots are a typical characteristic of desert vegetation due to the arid and water-deficient conditions in deserts. The deep roots help plants to access groundwater sources, which may be located at greater depths.

(iii) Forest conservation is the need of the hour because:

1. Forests provide oxygen and purify the air by absorbing carbon dioxide, thus reducing the rate of global warming.
2. They allow water to percolate into the ground, recharging groundwater and helping in flood control.
3. Forests are a natural habitat for numerous plant and animal species. The roots of trees bind the soil particles, preventing soil erosion, and transpiration from trees helps in inducing rainfall.

(iv) (a) A forest conservation method that involves the local community is called Community-Based Forest Management (CBFM) or Community Forestry.

(b) The primitive system of agriculture that had led to large-scale destruction of forests in the past is known as Slash and Burn Agriculture or Shifting Cultivation.

(c) The process that involves planting two saplings for each tree that is felled is called Reforestation or Afforestation.

**Answer 7.**

(i) The need for irrigation in India is to a large extent, influenced by the rainfall pattern of the country because:

1. Monsoon rainfall in India is uncertain and unevenly distributed. Some regions receive excessive rainfall while others receive very little. Therefore, irrigation becomes essential in areas that experience low or scanty rainfall to ensure regular agricultural productivity.
2. Different crops have different water requirements. Crops such as rice, sugarcane, wheat, and jute require large quantities of water for healthy growth. Hence, irrigation is necessary to meet the specific water needs of such crops, especially in regions where rainfall is insufficient.

(ii) Canal irrigation is more suitable in the northern plains of India because:

1. The plains have a gentle slope and flat terrain, which allows easy construction and flow of canal water.
2. The region has perennial rivers like the Ganga and its tributaries, ensuring a regular and sufficient water supply for canals.

(iii) (a) Punjab/Uttar Pradesh/Haryana.

(b) The geographical conditions that favour tube well irrigation in the mentioned state are as follows:

1. The state has high water table with perennial water supply, making it suitable for the installation of tube wells for groundwater extraction.
2. Cheap and regular hydroelectric power is available to draw water through tube wells.
3. Soft alluvial soil facilitates digging as deep as required.

**(Any two)**

(iv) (a) The water conservation method shown in the picture is Rainwater Harvesting.

(b) Two similar water harvesting practices followed in India are:

1. **Johads** – small earthen check dams designed to capture and store rainwater in Rajasthan.
2. **Percolation pits** – structures designed to allow rainwater to seep into the ground and replenish underground aquifers in Maharashtra.

**Answer 8.**

(i) (a) Every rural household generates organic kitchen waste and animal waste which can be converted into useful biogas.

(b) 1. Generation of biogas produces bio-fertiliser as a by-product.

2. It reduces the volume of waste.

3. It brings about improved hygiene in rural areas.

4. It is cheap as no raw materials need to be purchased.( Any one)

(ii) (a) Mahanadi River

(b) Odisha

(iii) (a) Copper is an important household mineral because it is a good conductor of electricity, making it essential for wiring and electrical appliances in homes.

(b) Madhya Pradesh and Rajasthan

(c) The Chhota Nagpur Plateau is rich in mineral deposits like coal, iron ore, bauxite, and manganese, which provide raw materials and energy for industries. This abundance has led to the concentration of mineral-based industries such as steel, cement, and thermal power plants in the region.

(iv) (a) Solar energy

(b) 1. It is a clean source of energy.

2. It reduces pressure on fossil fuels

3. It is cheaper in the long run (Any one)

(c) India has a tropical location and receives more or less strong rays of the sun for a large part of the year.

**Answer 9.**

(i) The following agricultural reforms are done by the government for the betterment of the agricultural sector:

1. Establishment of Indian Council of Agricultural Research (ICAR).
2. Setting up of Kisan Call Centres to address the queries and grievances of the farmers.
3. Establishment of agricultural universities, veterinary services and animal breeding centres. (Any two)

(ii) (a) **Rabi:** These are winter crops, sown in October-November and harvested in February-March

**Kharif:** These are summer crops, sown in June-July and harvested in September-October.

(b) Gujarat

(iii) (a) Karnataka

(b) Two geographical conditions that make this state suitable for coffee cultivation are:

1. Moderate rainfall of 150–250 cm and a cool climate (shade-loving crop).
2. Well-drained, rich loamy soil found on hill slopes (*e.g.*, Baba Budan Hills).

(c) Tea is another crop that can also be raised in plantations.

(iv) (a) I think it is cotton as ginning is the process in which cotton fibre is separated from the seed.

(b) Two climatic conditions suitable for this crop are:

1. It requires high temperature between 21°C to 30°C, 200 frost-free days and bright sunshine for its growth.
2. It needs moderate rainfall of 50 cm to 80 cm, well distributed throughout the year as stagnant water and excessive rain both are harmful to the plant.

**Answer 10.**

(i) Difference between and Small-scale and Large-scale industries:

| | Small-scale Industries | Large-scale Industries |
|---|---|---|
| 1. | These are small industries run by individuals in which a few workers are employed and goods produced are mostly for daily consumption. | These industries employ large number of workers in each unit and produce on a large scale with huge investment on raw material and machinery. |
| 2. | **For example:** Rice mill, flour mill, bakery, etc. | **For example:** Iron and steel, automobiles, etc. |

(ii) The cotton textile industry is important for the Indian economy because:

1. It generates employment for a large number of people.
2. It earns valuable foreign exchange for India.
3. It helps in the decentralisation of industries.
4. It meets the high domestic demand of a tropical country. **(Any two)**

(iii) (a) The growing popularity of the petrochemical industry is due to its ability to produce a wide range of useful products at a low cost and with high efficiency, making it essential for modern industries and daily life.

(b) It is located close to oil refineries to reduce transportation costs and logistical challenges associated with transporting the feedstock.

(c) Two petrochemical products are:

1. Synthetic fibre
2. PVC pipes

(iv) (a) Sugar production is gradually gaining importance in peninsular India because the sugar plantations are well planned and scientifically managed. Additionally, the mills are located near the sugarcane plantations.

(b) Indian silk products are becoming less popular in the international market primarily due to stiff competition from cheaper synthetic alternatives and silk products from countries like China and Japan, which dominate the market with lower prices and larger volumes.

(c) The importance of the iron and steel industry will never decline because it is a basic industry whose products, including machinery, are essential for all other industries such as railways, roadways, construction, automobiles, ships and infrastructure.

**Answer 11.**

(i) Disadvantages of using waterways:

1. It is a slow means of transport.
2. It can be affected by weather disturbances.
3. It may not be operational throughout the year.
4. It is operational only in areas with seas, oceans, and rivers. **(Any two)**

(ii) The Golden Quadrilateral has contributed towards the improvement of the Indian economy because:

1. It connects major industrial, agricultural, and cultural centres like Delhi, Mumbai, Chennai, and Kolkata, reducing travel time and transportation costs.
2. Faster movement of goods and raw materials has enhanced trade efficiency, encouraged investments, and promoted economic growth across regions.

(iii) (a) Roadways have an edge over railways in India because they provide door-to-door service, are cheaper for short distances, and are more flexible in terms of routes and connectivity, especially in hilly or remote areas.

(b) Air transport is fast but not suitable for all regions and purposes in India because it is expensive, requires developed infrastructure, and is not viable in remote or hilly areas lacking airports or weather stability.

(c) National Waterway No. 1

(iv) (a) Airports in smaller towns boost regional connectivity, promote tourism, and enhance e
development by improving access and reducing travel time.

(b) Railways are well developed in the northern states of India because their vast level la
population density and rich agricultural output provide the most favourable condi
development of railways.

(c) Helicopter services are crucial during emergencies because their vertical take-off and l
capabilities allow them to operate in challenging terrains and confined spaces, making
valuable assets in emergency scenarios.

**Answer 12.**

(i) The impact of waste generation on the following:

(a) **Surface water:** Improper disposal of waste can lead to contamination of surface water bodies
waste materials, including chemicals and pollutants, enter surface water sources like rivers
and streams, they can degrade water quality, harm aquatic life, and disrupt the ecological b
of the ecosystem.

(b) **Landscape:** Improper waste disposal practices, such as open dumping or littering, can nega
impact the landscape. Accumulation of waste in public spaces, along roadsides, or in unauthor
landfills can result in an unsightly and polluted environment.

(ii) (a) Dumping

(b) Dumping is considered a harmful method of waste disposal because it leads to land poll
contaminates soil and groundwater, emits foul gases, and poses health hazards to human
animals living nearby.

(iii) (a) Segregation of waste.

(b) 1. Sending waste for recycling.
2. Creating awareness among students of all ages.
3. Banning the use of plastics.
4. Using biodegradable products.
5. Passing down text books to junior classes.
6. Use old copies as rough books. (Any

(c) 1. Converting old clothes into useful items like doormats, covers, decorative items, etc.
2. Kitchen waste can be made into compost. (Any
3. Reusing glass bottles, unused pages of books, etc.

(iv) (a) Composting of waste is an aerobic method of decomposing solid organic waste.

(b) Two advantages of composting as a method of waste disposal:
1. Conversion of organic waste into valuable fertilisers.
2. Reduction of the quantity of waste to be disposed of by households.
3. Compost improves soil texture and fertility, aiding plant growth. (Any
4. It enhances the water-holding capacity of the soil.

# Questions

## Part-I (Attempt all questions from this Part)

**Question 1.**

Study the extract of the Survey of India Map sheet No. 45D/7 (Easting 41-47 Northing 93-02) and answer the following questions :

(i) (a) Name the two types of vegetation found in this region. What do they tell about the type of rainfall in the given region ?

(b) Mention two landforms found in grid square 4694. **[Apply & Understand]**

(ii) (a) Mention the difference in drainage pattern of grids 4694 and 4201.

(b) Which types of roads are present in this given region ? **[Analyse & Apply]**

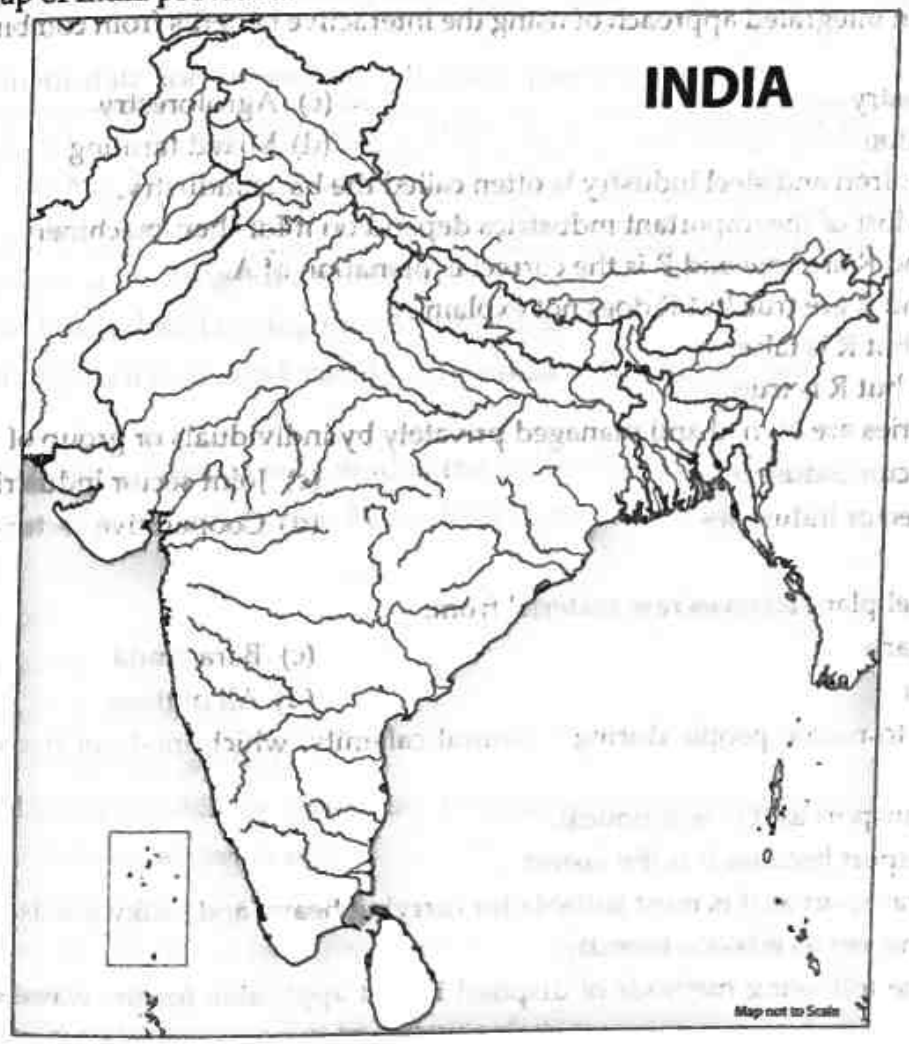
(iii) Why there is no human habitation in the south eastern part of the map ? **[Analyse]**

(iv) If we run across the region represented by the given toposheet from north to south at a speed of 5 km/hour, calculate the time taken by us. **[Analyse]**

(v) In grid square 4494, contour lines are far apart from each other, whereas in grid square 4694, they are close to each other. What do these differences in spacing represent ? **[Understand]**

**Question 2.**

On the outline map of India provided: **[Recall]**



(i) Mark and label Bengaluru.
(ii) Mark and label Allahabad.
(iii) Mark and label the Karakoram Pass.
(iv) Mark and label the river Godavari.
(v) Shade and label Gulf of Kutch.
(vi) Mark and label the Eastern Ghats.
(vii) Mark with arrows the direction of South-West monsoon over the Arabian Sea.
(viii) Mark and label the Vindhyas range.
(ix) Mark and label the river Indus.
(x) Mark and label the Mount K-2.

**Question 3.**

**Choose the correct option:**

(i) Which of the following is the CORRECT set of factors affecting the temperature of any place?
(a) Altitude + Distance from the Equator + Wind direction
(b) Location + Altitude + Distance from the sea
(c) Jet streams + Distance from the sea + Amount of rainfall
(d) Location + Mediterranean Sea + Nearness to the Equator **[Understand]**

(ii) Which is the busiest artificial port of India?
(a) Goa (c) Chennai
(b) Nhava Sheva (d) Vishakhapatnam **[Remember]**

(iii) What is the other name of Littoral forests?
(a) Rain forests (c) Tidal forests
(b) Monsoon forests (d) Scrub lands **[Remember]**

(iv) Which of the following may be used for generating nuclear energy?
(a) Biomass (c) Earth heat
(b) Tides (d) Thorium **[Remember]**

(v) _____ is an integrated approach of using the interactive benefits from combining trees and shrubs with crops.
(a) Social forestry (c) Agroforestry
(b) Afforestation (d) Mixed farming **[Remember]**

(vi) **Assertion (A):** Iron and steel industry is often called the basic industry.
**Reason (R):** Most of the important industries depend on it for their machinery.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R does not explain A.
(c) A is true but R is false.
(d) A is false but R is true. **[Analyse]**

(vii) These industries are owned and managed privately by individuals or group of individual.
(a) Public sector industries (c) Joint sector industries
(b) Private sector industries (d) Cooperative sector industries
**[Remember]**

(viii) Rourkela steel plant receives raw material from:
(a) Sundargarh (c) Barajamda
(b) Keonjhar (d) All of these **[Recall]**

(ix) If you have to rescue people during a natural calamity, which mode of transport will you use and why?
(a) Road transport as it is economical.
(b) Air transport because it is the fastest.
(c) Water transport as it is most suitable for carrying heavy and bulky goods.
(d) Rail transport as it is eco-friendly. **[Apply]**

(x) Which of the following methods of disposal is best applicable for the waste depicted in the picture below:

(a) Burning waste in open area
(b) Recycling waste
(c) Dumping
(d) Composting **[Apply]**

## Part-II (Attempt any five questions from this Part)

**Question 4.**

(i) During winter, the dry offshore North-East Monsoon winds blow from a high-pressure region to a low-pressure area centered at the head of the Bay of Bengal. Although these winds do not bring rain to the Ganga valley, they gather enough moisture after crossing the Bay of Bengal. When they strike the Coromandel Coast in eastern India, Tamil Nadu and the southern tip of Andhra Pradesh receive heavy rainfall.

(a) As a student of geography, what factors might you attribute to the occurrence of rainfall in Tamil Nadu during the winter season?

(b) In which valley do these winds not bring rains? **[Analyse & Apply]**

(ii) Give two reasons as to why the Thar is a desert. **[Analyse]**

(iii) A cricket match in Chennai from October 24 to 28 had to be abandoned because of bad weather. As a student of geography, provide an explanation for this happening. Ensure that your explanation provides the technical name of this season in India, the atmospheric pressure conditions over the Bay of Bengal during this part of the year and the typical rainfall regime experienced in the city of Chennai. **[Apply]**

(iv) Study the climatic data and answer the following questions:

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Temperature °C** | 23.8 | 25.0 | 27.7 | 28.3 | 30.2 | 30.3 | 30.4 | 30.3 | 30.0 | 30.3 | 25.5 | 24.2 |
| **Rainfall (cms)** | 0 | 0 | 1.1 | 1.5 | 2.1 | 45.3 | 46.5 | 45.4 | 43.4 | 20.1 | 3.0 | 1 |

(a) Calculate the annual range of temperature. **[Apply]**

(b) What is the total rainfall during the monsoon season? **[Apply]**

(c) On which coast is the station located? Give a reason for your answer. **[Analyse]**

**Question 5.**

(i) Name any two major groups of soil found in the Indian Plains and Plateaus. **[Recall]**

(ii) Mention any two similarities between Red soil and Laterite soil. **[Evaluate]**

(iii) Define the following : **[Remember]**

(a) Sheet erosion
(b) Soil conservation
(c) In situ soil

(iv) Give a reason for the following :

(a) Black soil does not get leached.
(b) Laterite soil is not suitable for agriculture but useful as a building material. **[Analyse]**
(c) Alluvial soil is the most fertile soil. **[Analyse]**

**Question 6.**

(i) Why do tropical rainforests appear green all round the year ? Name two trees belonging to this vegetation type. **[Analyse]**

(ii) Explain two reasons why forests must be conserved. **[Analyse]**

(iii) (a) State one characteristic feature of tropical deciduous forests. [Remember]

(b) State two reasons why tropical evergreen forests are difficult to exploit. [Evaluate]

(c) Explain why deciduous forests are found on the Western and eastern Slopes of the Western Ghats. [Evaluate]

(iv) Mention three methods for the conservation and development of forests in India. [Apply]

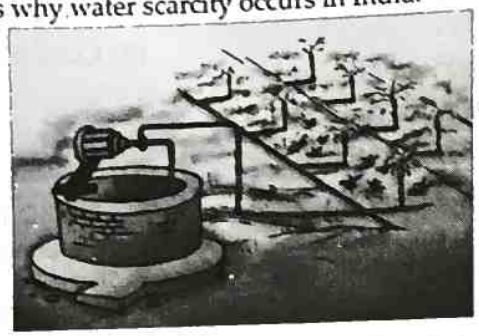
**Question 7.**

(i) Name any two types of irrigation prevailing in India. [Recall]

(ii) State two reasons why tank irrigation is popular in South India. [Analyse]

(iii) Give three main reasons why water scarcity occurs in India. [Analyse]

(iv)



Study the following picture and answer the questions given below:

(a) Which method of irrigation is shown in the above picture?

(b) Mention any two advantages of this method of irrigation. **[Understand, Evaluate & Apply]**

**Question 8.**

(i) Give any two economic uses of mineral resources. **[Remember]**

(ii) Name any two important iron-ore producing centres in India. **[Recall]**

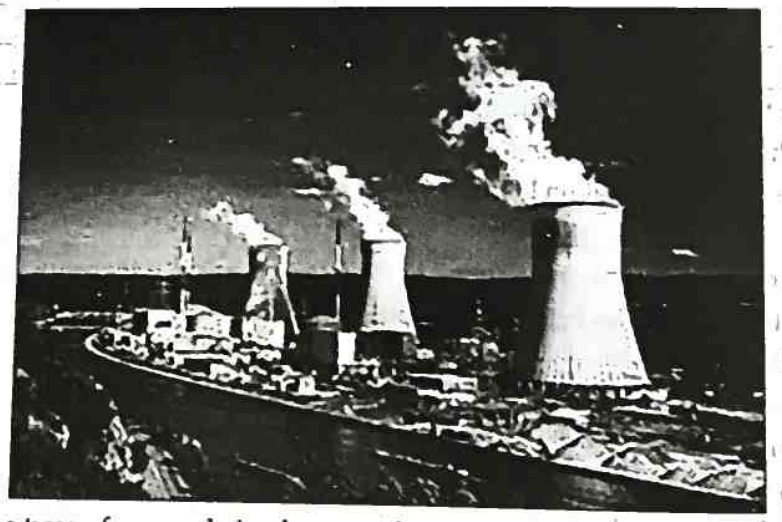
(iii) Give a reason for the following :

(a) Minerals should be preserved.

(b) Manganese is needed in iron and steel industry.

(c) India's location is advantageous for the generation of solar power. **[Analyse]**

(iv)



(a) Identify the type of energy being harnessed in the above picture.

(b) How is this form of energy obtained?

(c) What is the advantage of using this form of energy in place of conventional sources of energy?

**[Understand, Evaluate & Apply]**

**Question 9.**

(i) Why is tea considered a labour-intensive crop ? [Analyse]

(ii) Differentiate between geographical conditions for the cultivation of Rice and Wheat. [Analyse]

(iii) Explain the following :
(a) Withering (b) Broadcasting (c) Dibbling. **[Evaluate]**

(iv) (a) Why is agriculture called the backbone of India's economic system ? **[Analyse]**
(b) State two important characteristics of Indian agriculture. **[Apply]**
(c) What are Rabi and Kharif seasons ? Give examples. **[Remember]**

**Question 10.**
(i) Explain agro-based industry and mineral-based industry. **[Evaluate]**
(ii) Give two ways in which the Electronic Industry is important for India. **[Evaluate]**
(iii) With reference to the Iron and Steel Industry in India, give logical explanations for the following :
(a) The location of this industry is governed by its close proximity to raw material.
(b) This industry is not found in western India.
(c) Most of the 'iron and steel' plants are 'public sector undertakings'. **[Understand]**

(iv) (a) Name the country that had helped in the establishment of Bhilai steel plant. **[Recall]**
(b) Why is the iron and steel industry called a basic or key industry? **[Analyse]**
(c) Where is Tata Steel located? **[Recall]**

**Question 11.**
(i) Why has sea transport lost its popularity in recent times? What purpose does India's inland waterways serve ? **[Evaluate]**
(ii) What are the defects of roads in many of the Indian towns and cities ? What measures can be taken to improve the roads ? **[Evaluate]**
(iii) Mention four advantages and two disadvantages of railways. **[Understand]**
(iv) Mention three advantages of using waterways. **[Understand]**

**Question 12.**
(i) (a) What is understood by biodegradable waste ? **[Remember]**
(b) What is the benefit of Composting ? **[Remember]**
(ii) Why do we have landfills and are they really necessary ? **[Evaluate]**
(iii) The waste from residential areas, hotels and restaurants, office complex and commercial areas must be segregated at source into different categories of biodegradable and non-degradable waste. Biomedical waste and industrial waste must not be mixed with municipal solid waste consisting of biodegradable garbage. Waste must be segregated into vegetable/fruits; leaves and garden waste, glass and paper waste at source. The toxic or non-biodegradable, chemicals and e-waste must be treated separately.
(a) How does segregating waste at the source into different categories benefit waste management and environmental sustainability? **[Understand]**
(b) What specific categories should waste be segregated into at the source, and why is this practice essential for addressing environmental concerns? **[Analysis]**
(c) How can the practice of segregating waste at its source contribute to reducing the contamination of municipal solid waste? **[Understand]**
(iv) What are the three R's of waste management ? **[Remember]**

□□

# 2 Sample Paper

## Geography

### Questions

**Part-I** (Attempt all questions from this Part)

**Question 1.**

Study the extract of the Survey of India Map sheet No. 45D/10 (Eastings 69-75 Northings 32- 42) and answer the following questions :

(i) (a) How can you say that Abu is a tourist place ? Give two reasons.
(b) What is the direction of the general slope of the land ? How can you say this ? **[Apply & Analyse]**

(ii) (a) Which type of vegetation is found in the given region ? Give two examples.
(b) Figure out the six-figure grid reference of : (a) Sadka Devi ka Mandir, (b) Spot height (.437) **[Apply & Understand]**

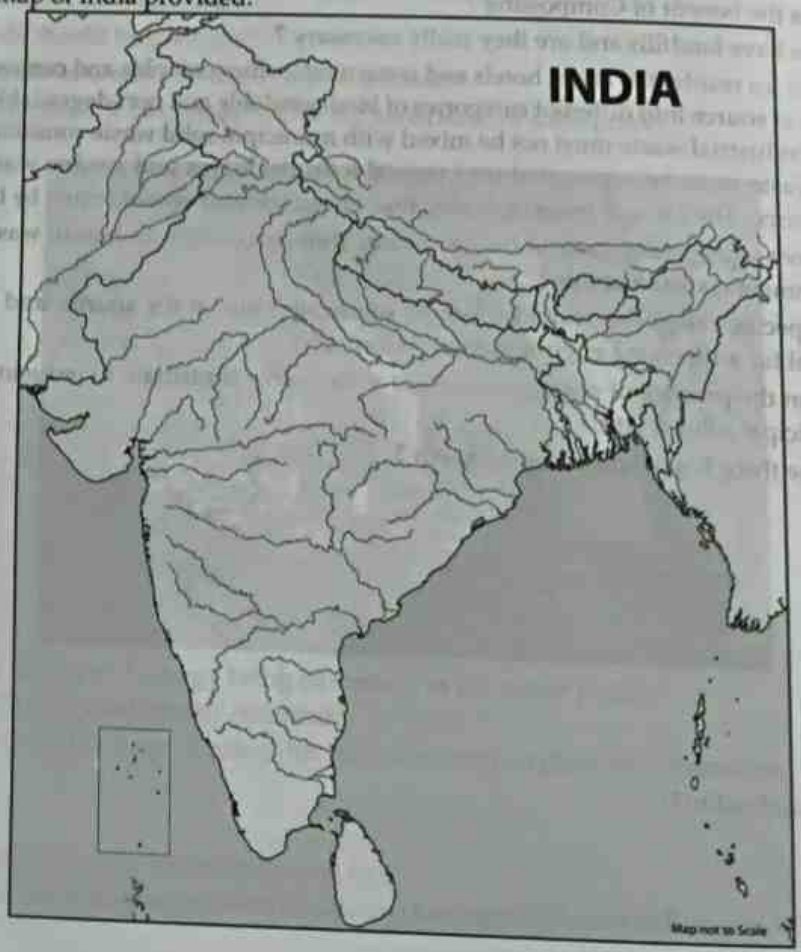
(iii) What does falls 7 m in grid 7033 represent ? Why are they formed ? **[Apply]**

(iv) Calculate the difference between the highest spot height and second highest spot height on the map. **[Apply]**

(v) List the two main occupations of the people living in this area and provide reasons for each occupation's prevalence. **[Apply & Analyse]**

**Question 2.**

On the outline map of India provided: **[Recall]**



(i) Mark and label Mumbai High.
(ii) Shade and label the river Ganga.
(iii) Shade and label the Nilgiri.
(iv) Mark and name the Bengaluru city.
(v) Shade and label the Great Indian Desert.
(vi) Mark and name Nathula Pass.
(vii) Mark with arrows the direction of South-West Monsoon over the Bay of Bengal.
(viii) Mark and label the river Tapi.
(ix) Mark and label the Chhota Nagpur Plateau.
(x) Mark and name the longitude from which India takes its standard time.

**Question 3.**

**Choose the correct option:**

(i) _____ is the other name for inclined plane method of lifting water from wells. **[Remember]**
(a) Tube well
(b) Persian wheel
(c) Mhote
(d) Bore-well

(ii) The rainfall due to western disturbances is beneficial for which of the following crops?
(a) Jute and cotton
(b) Coffee and tea
(c) Wheat and barley
(d) Jowar and bajra **[Remember]**

(iii) Which of the following is the CORRECT set of substances from which the soil is composed?
(a) Silica + Clay + Chalk
(b) Silica + Humus + Nitrogen
(c) Clay + Texture + Zinc
(d) Chalk + Potash + Silt **[Understand]**

(iv) The reason for Rajasthan being deficient in rainfall is _____.
(a) The monsoon fails to reach this area.
(b) It is too hot.
(c) There is no water available and thus the winds remain dry.
(d) The moisture laden winds from the Arabian sea blows parallel to the Aravallis and hence do not shed their moisture over Rajasthan. **[Analyse]**

(v) Magnetite ore of iron has:
(a) 70% of iron content
(b) Excellent magnetic properties
(c) Both (a) and (b)
(d) Neither (a) nor (b) **[Remember]**

(vi) **Assertion (A):** Railways serve as the principal mode of transport for both freight and passengers.
**Reason (R):** Railways are the cheapest mode of transport, which provide door-to-door service.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R does not explain A.
(c) A is true but R is false.
(d) A is false but R is true. **[Analyse]**

(vii) Which one of the following is NOT a characteristic feature of tropical evergreen forests?
(a) They are found in the areas of heavy rainfall.
(b) They do not shed their leaves at the same time.
(c) They produce various plant species of high economic value.
(d) They are also known as 'monsoon forests'. **[Understand]**

(viii) Which of the following cities is known as the "Silicon Valley of India'?
(a) Hyderabad
(b) Bengaluru
(c) Chennai
(d) None of these **[Recall]**

(ix) If you have to transport iron ore from mining area to a nearby port, which mode of transport will you use and why?
(a) Air transport because it is the fastest means of transport and saves time.
(b) Road transport as it provides a link between railway stations and ports.
(c) Rail transport as it connects the hinterland to the seaports.
(d) Water transport as it can handle large amount of goods. **[Apply]**

(x) Which of the following methods of disposal is best applicable for the waste depicted in the picture below:

(a) Burning waste in open area
(b) Recycling waste
(c) Dumping
(d) Composting **[Apply]**

## Part-II (Attempt any five questions from this Part)

**Question 4.**

(i) Diksha is on her tour of India. She realised that the north of the Tropic of Cancer experiences a continental type of climate. The southern peninsula, enclosed on three sides by the Arabian Sea, Indian Ocean, and Bay of Bengal, experiences a moderate climate, with coastal areas experiencing an equable climate.

(a) What geographical factors contribute to the difference in climate between the north of the Tropic of Cancer and the southern peninsula of India?

(b) Why do coastal areas tend to experience a moderate or equable temperature compared to inland regions? **[Analyse & Apply]**

(ii) (a) Name the winds which are responsible for the heavy rainfall in India. **[Recall]**

(b) What is 'October Heat'? **[Remember]**

(iii) Give a reason for the following :

(a) Patna gets a heavier rainfall than Varanasi.

(b) Mangaluru is not cold even in the month of December.

(c) Mumbai is warmer than Delhi in the month of December. **[Analyse]**

(iv) Study the table given below and answer the following questions :

| Station ↓ / Month → | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature °C | 15 | 18 | 24 | 29 | 37 | 41 | 31 | 30 | 29 | 27 | 16 | 18 |
| Rainfall (cms) | 2.6 | 1.6 | 1.3 | 0.8 | 1.5 | 7.6 | 19.5 | 18.1 | 12.0 | 1.7 | 0.4 | 1.1 |

(a) Find out the total rainfall in the summer season. **[Apply]**

(b) Calculate the average annual rainfall. **[Apply]**

(c) Which part of India do you think the place is located in ? **[Analyse]**

**Question 5.**

(i) State two reasons for the need to conserve soil. **[Apply]**

(ii) Write two differences between Alluvial soil and Red soil. **[Analyse]**

(iii) (a) Name a part of India where wind is the main agent of erosion. **[Recall]**

(b) What is gully erosion ? **[Remember]**

(c) What is sheet erosion ? **[Remember]**

(iv) What is soil erosion ? Mention any two agricultural techniques that can help to prevent soil erosion. **[Remember & Evaluate]**

**Question 6.**

(i) Mention two main characteristics of tropical rainforests. **[Remember]**

(ii) Define Social forestry and Agro-forestry. **[Recall]**

(iii) (a) Name the forests which are commercially most important in India. **[Recall]**

(b) Name two trees which grow in these forests. **[Recall]**

(c) What is the main characteristic of these forests ? **[Understand]**

(iv) State one use of the following : **[Apply]**

(a) Cedar (b) Spruce (c) Oak

**Question 7.**

(i) Mention two advantages that surface wells have over inundation canals. **[Evaluate]**

(ii) Mention two advantages of rainwater harvesting. **[Remember]**

(iii) (a) Name two states where perennial canals are widely used. **[Recall]**

(b) Why drip method of irrigation is best among all methods of irrigation. **[Analyse]**

(c) State one measure the government should adopt to handle the present water crisis. **[Apply]**

(iv) Where are tanks most widely used in peninsular India, and why ? **[Analyse]**

**Question 8.**

(i) Which grade of iron-ore is mostly mined in India and where ? **[Apply]**

(ii) Which variety of coal is used for domestic purposes, and why ? **[Apply]**

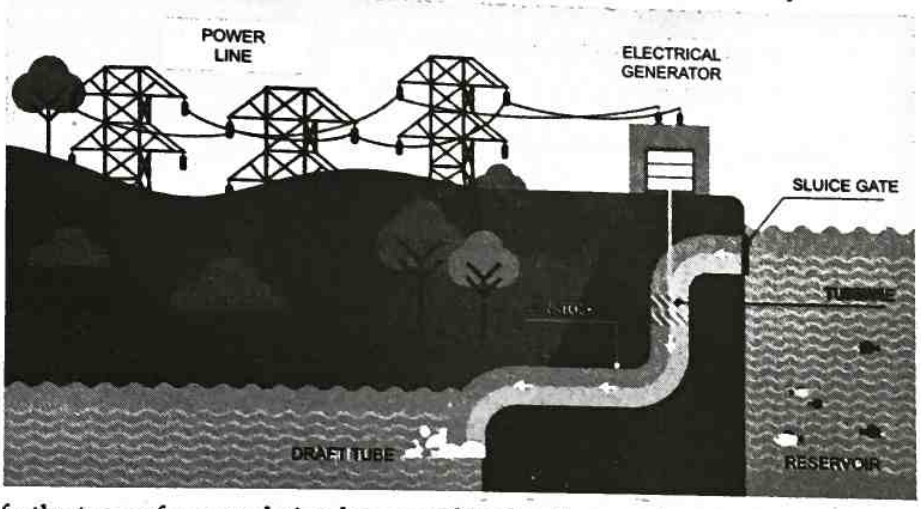
(iii) Give a geographical reason for each of the following:

(a) Oil refineries are located close to the oilfields or near the ports.

(b) Anthracite coal is the best quality coal.

(c) The economic development of a country is influenced by the availability of minerals. **[Analyse]**

(iv)




(a) Identify the type of energy being harnessed in the above picture.

(b) What is the advantage of using this form of energy in place of thermal power?

(c) Where is the largest power plant of this type of energy located in India?

**[Understand, Evaluate & Apply]**

**Question 9.**

(i) (a) Mention the climatic conditions found suitable for growing groundnut, **[Recall]**

(b) Which type of soil is required for growing sugarcane ? **[Apply]**

(ii) Mention the areas producing sugar in southern India. **[Remember]**

(iii) Mention three ways in which agro-based industries have affected the economy of India. **[Evaluate]**

(iv) What are the effects of Green Revolution in India? **[Understand]**

**Question 10.**

(i) State the different kinds of natural materials and petrochemical products. **[Understand]**

(ii) (a) Why petroleum is called mineral oil ? Write its two uses. **[Analyse]**

(b) Name any two industrial products for which limestone is used as a source of raw material.

**[Recall]**

(iii) State three problems faced by the sugar mills in Uttar Pradesh. [Understand]

(iv) State any two differences between heavy industries and light industries. [Analyse]

**Question 11.**

(i) Mention two advantages of using waterways. [Understand]

(ii) Why has the importance of inland waterways declined ? [Analyse]

(iii) "Roadways are an important means of transport in India." Give three reasons to justify the statement. [Evaluate]

(iv) Mention two advantages and one disadvantage of air transport. [Understand]

**Question 12.**

(i) Differentiate between Biodegradable and Non-biodegradable waste. [Analyse]

(ii) What does the recycling symbol with three arrows represent ? [Remember]

(iii) Proper collection of waste is a very important activity and responsibility of the Municipality. Collection of waste must be organised area wise by covered trucks, vans or rickshaws so as to prevent littering on the roads. Day-to-day collection is very important to prevent spread of diseases contaminating and polluting the environment.

(a) Which type of vehicle should be used by muncipalities for collection of waste. [Apply]

(b) Why is day-to-day waste collection crucial for preventing the spread of diseases and maintaining a clean environment? [Analyse]

(c) How does the proper collection of waste by the Municipality fulfill its responsibility and contribute to the overall health and cleanliness of the community? [Understand]

(iv) Explain briefly the following :

(a) Composting (b) Segregation (c) Landfills [Understand]

□□

# 3 Sample Paper

## Geography [Unsolved]

## Questions

### Part-I (Attempt all questions from this Part)

**Question 1.**

Study the extract of the Survey of India Map Sheet No. 45D/7 (Eastings 29-35, Northings 76-85) and answer the following questions :

(i) (a) Which is the most important settlement in the map extract, and why ?

(b) From where does Dantiwada get its supply of water ? Give a reason. **[Apply & Analyse]**

(ii) (a) What do '8r' in grid square 2978 and '18r' in grid square 2976 refer to ?

(b) What do the numbers 102, 103.....107 written along the metalled road, which crosses the region from west to east, refer to ? **[Apply & Understand]**

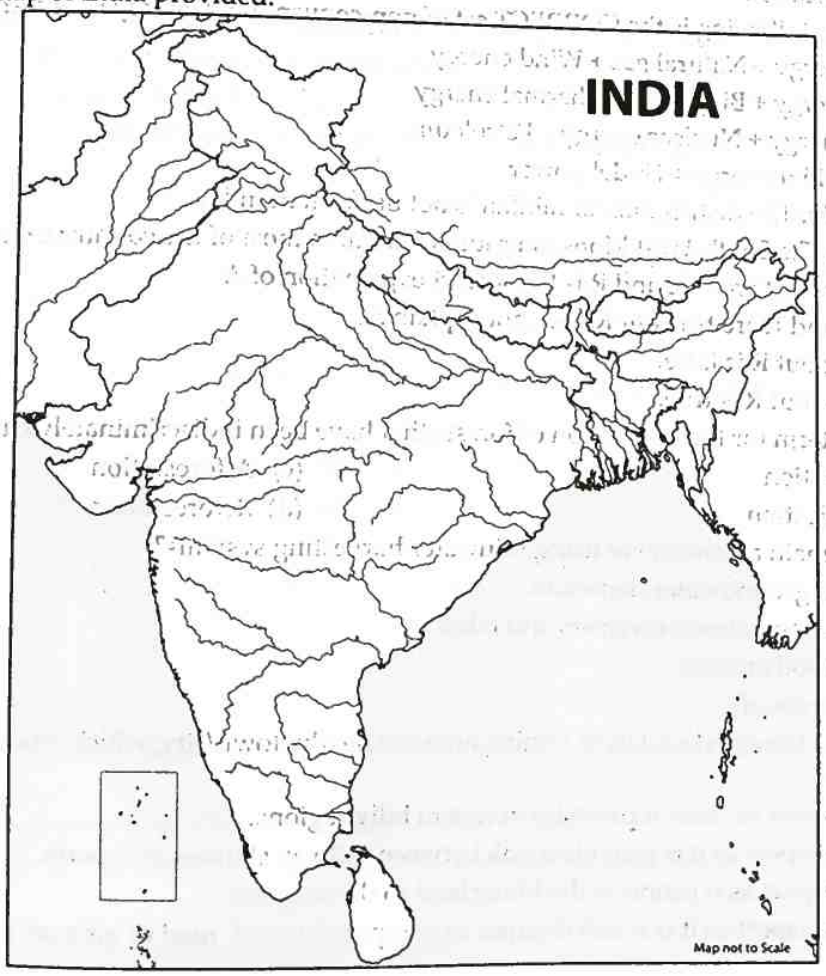
(iii) What type of climate is experienced by the given region ? Comment on the type of region in given toposheet. **[Apply]**

(iv) What is the compass direction of Jorapura and Ramsida from Vaghrol ? **[Analyse]**

(v) Give the four-figure grid reference of the perennial water source in the given toposheet. **[Apply]**

**Question 2.**

On the outline map of India provided: **[Recall]**



(i) Shade and label an alluvial soil area of India.
(ii) Mark with a dot and name the city which lies on the banks of river Jhelum.
(iii) Mark and name the highest peak of India.
(iv) Shade and label Gulf of Kutch.
(v) Mark with arrow and label N. E. Monsoon wind.
(vi) Shade and label a densely populated area in South India.
(vii) Mark and label Himalayas.
(viii) Mark and label Brahmaputra.
(ix) Mark and label Tropic of Cancer.
(x) Mark and label Malabar Coast.

**Question 3.**

**Choose the correct option:**

(i) Which of the following winds blow from the Mediterranean Sea to the north-western parts of India?
(a) Western disturbances
(b) Norwesters
(c) Loo
(d) Mango showers **[Remember]**

(ii) Bhangar and Khadar are the typical types of which of the following soils?
(a) Black soil
(b) Alluvial soil
(c) Laterite soil
(d) Red soil **[Remember]**

(iii) Cinchona trees are found in the areas of rainfall more than_____.
(a) 50 cm
(b) 100 cm
(c) 70 cm
(d) 150 cm **[Remember]**

(iv) What is the depletion of oxygen in a water body resulting from pollution called?
(a) Decay of water
(b) Eutrophication
(c) Biomagnification
(d) Greenhouse effect **[Remember]**

(v) Which of the following is the CORRECT set of non-conventional energy sources?
(a) Solar energy + Natural gas + Wind energy
(b) Tidal energy + Biogas + Geothermal energy
(c) Wind energy + Nuclear energy + Petroleum
(d) Coal + Tidal energy + Hydel power **[Understand]**

(vi) **Assertion (A):** The distribution of rainfall is not uniform in India.
**Reason (R):** The South-West Monsoon causes rainfall in most of the country except in Tamil Nadu.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R does not explain A.
(c) A is true but R is false.
(d) A is false but R is true. **[Analyse]**

(vii) What is the term for the restoration of forests that have been indiscriminately cut?
(a) Deforestation
(b) Eutrophication
(c) Afforestation
(d) Reforestation **[Remember]**

(viii) What is the main advantage of using rainwater harvesting systems?
(a) Increases groundwater depletion
(b) Reduces dependency on rivers and lakes
(c) Leads to soil erosion
(d) Reduces rainfall **[Remember]**

(ix) If you have to transport coal from mining area to a nearby town/city, which mode of transport will you use and why?
(a) Air transport because it provides access to hilly regions.
(b) Road transport as it is provide a link between railway stations and ports.
(c) Rail transport as it connects the hinterland to the seaports.
(d) Water transport as it is much cheaper as compared to rail, road or air transport. **[Apply]**

(v) Which of the following methods of disposal is best applicable for the waste depicted in the picture below:

(a) Burning waste in open area
(b) Recycling waste
(c) Dumping
(d) Composting **[Apply]**

## Part-II (Attempt any five questions from this Part)

**Question 4.**

(i) The southwest monsoon is late this year. The Indian Meteorological Department (IMD) on Tuesday, May 16, had predicted that the onset of southwest monsoon is delayed by four days. An agricultural economy, India is heavily reliant on the monsoon which brings 75 percent of its annual rainfall.

**– Indian Express**

(a) As a student of Geography, what according to you may be the reason for the delay of monsoon?
(b) What is the usual time for the onset of summer monsoon in Kerala? **[Analyse & Apply]**

(ii) What is the source of winter rainfall in the following areas?
(a) Delhi
(b) Andhra Pradesh **[Remember]**

(iii) Give a reason for each of the following:
(a) West Bengal gets rainfall from summer monsoons much before Uttar Pradesh.
(b) Mawsynram is the rainiest place in the world.
(c) Himalayas act as a climate divide. **[Analyse]**

(iv) Study the climatic data of station X and answer the following questions:

| Month | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature °C | 23.1 | 24.8 | 26.5 | 29.3 | 32 | 32.8 | 33.1 | 32.1 | 30.5 | 29.3 | 28.7 | 26.1 |
| Rainfall (cms) | 15.3 | 10.1 | 0.3 | 0.1 | 1.3 | 4.5 | 6.1 | 10.2 | 10.5 | 20.1 | 16.8 | 19.0 |

(a) What is the total annual rainfall experienced by the station X? **[Apply]**
(b) Which is the hottest month? **[Understand]**
(c) On which coast of India does the station lie? Give a reason for your answer. **[Analyse]**

**Question 5.**

(i) State two differences between Clayey soil and Sandy soil. **[Analyse]**

(ii) How does the following processes take place :
(a) Splash erosion
(b) Sheet erosion **[Understand]**

(iii) What is soil erosion ? Why the following are the reasons for soil erosion ?
(a) Wind
(b) Overgrazing
(c) Running water **[Recall & Analyse]**

(iv) Name the soil which is :
(a) Formed by the solidification of basic lava spread over large areas of Deccan Plateau during volcanic eruption.
(b) Formed by transported alluvium brought by the rivers.
(c) Formed by weathering of ancient crystalline and metamorphic rocks. **[Recall]**

**Question 6.**

(i) State any two characteristics of Mountain forests. **[Apply]**

(ii) Name the tree according to its characteristics :
(a) It is soft and white and is used for making matchboxes, toys and packing cases.
(b) It is used for house building and railway sleepers. [Recall]

(iii) What are the preventive measures taken for protecting forest resources ? [Evaluate]

(iv) Name the type of forest found in the following regions :
(a) Western Haryana (b) Kashmir
(c) Maharashtra [Recall]

**Question 7.**

(i) Give any two reasons why water conservation is necessary. [Analyse]

(ii) Name the types of irrigation prevalent in :
(a) Himachal Pradesh (b) Gujarat [Recall]

(iii) Give geographical reason for the following :
(a) Despite rains, irrigation is necessary.
(b) Drip irrigation is best among all methods of irrigation.
(c) Most of the South Indian states are not suitable for canal irrigation. [Analyse]

(iv) (a) State two reasons why rainwater harvesting is advantageous for our ground water resources. [Analyse]
(b) Name the state where it is mandatory to harvest rainwater in every building. [Recall]
(c) Name the rainwater harvesting techniques used in Rajasthan. [Recall]

**Question 8.**

(i) Name two metallic minerals. [Recall]

(ii) Name the following :
(a) Best quality of coal that contains 80% carbon
(b) An oil refinery in Bihar [Recall]

(iii) (a) What is nuclear energy ? [Remember]
(b) Mention two reasons for the development of the petrochemical industry in India. [Analyse]
(c) State one disadvantage of using coal as a source of power. [Remember]

(iv)

(a) Identify the type of energy being harnessed in the above picture.
(b) Mention why this form of energy is preferred over fossil fuels.
(c) Where is the largest plant of this type of energy located in India? **[Understand, Evaluate & Apply]**

**Question 9.**

(i) Differentiate between a Rabi crop and a Kharif crop. [Analyse]

(ii) What are the climatic requirements for the cultivation of rice ? [Evaluate]

(iii) Define the following terms and write the names of the crops they are associated with :
(a) Kharif (c) Zaid [Remember]
(b) Rabi

(iv) Give reasons for the following :
(a) Tea is grown on the mountain slopes and hills.
(b) Ratoon cropping is popular in sugarcane.
(c) Indian agricultural yield is low as compared to the world standards. **[Analyse]**

**Question 10.**
(i) What are the resources necessary for the development of iron and steel industry? **[Evaluate]**
(ii) State two reasons why cotton textile industry has developed around Mumbai. **[Evaluate]**
(iii) Give the geographical term for the following :
(a) Used in the manufacturing of rum, fertilizers, cattle feed and chemicals.
(b) Used for making wax.
(c) Used for making paper and cardboard. **[Understand]**
(iv) With reference to the jute industry, answer the following questions:
(a) Name the largest jute producing state of India. Name two centres of jute industry in that state. **[Recall]**
(b) State two problems faced by the jute industry in India. **[Understand]**
(c) What is the temperature suitable for the growth of jute. **[Remember]**

**Question 11.**
(i) With reference to Waterways, answer the following questions:
(a) Mention two advantages of inland water transport. **[Understand]**
(b) Why is inland water transport not well developed in India? **[Analyse]**
(ii) Even though all means of transport are well developed in India, yet, road transport remains the most popular means of transport. Justify this statement. **[Evaluate]**
(iii) Give a reason for each of the following :
(a) Roadways are not well developed in North East India.
(b) Railways are under the public sector.
(c) A good network of transport is of great help for the development of the economy. **[Analyse]**
(iv) (a) Give two disadvantages of airways in recent years. **[Understand]**
(b) What are the problems faced by aviation sector in India? **[Evaluate]**

**Question 12.**
(i) How does composting work ? **[Understand]**
(ii) (a) What measures may be undertaken by individuals to reduce waste? **[Evaluate]**
(b) How can urban waste be made useful? **[Understand]**
(iii) In Industrial areas, the waste is of a hazardous nature and requires very careful handling. Most of the industrial waste generated is long-term hazardous. It has a very serious, long-lasting impact on the environment and society. Municipal waste also needs to be handled carefully. The local government must ensure the proper collection, transportation and disposal of municipal waste.
(a) Why is careful handling of hazardous waste crucial in industrial areas, and what are the potential long-term impacts on the environment and society? **[Apply]**
(b) How does the responsibility of local government in the collection, transportation, and disposal of municipal waste contribute to the well-being of the community? **[Understand]**
(c) Why is industrial waste often considered to have a more serious and long-lasting impact on the environment compared to other forms of waste, and what measures are required to address this issue? **[Apply]**
(iv) Why are recycled plastic bags considered harmful for the environment ? **[Analyse]**

❑❑

# 4 Sample Paper

## Geography [Unsolved]

### Questions

**Part-I** (Attempt all questions from this Part)

**Question 1.**

Study the extract of the Survey of India Map sheet No. 45D/7 (Easting 35-41 Northing 76-85) and answer the following questions :

(i) (a) What do the people do to earn their daily bread in the given region represented by the toposheet? Give reasons to support your answer. **[Analyse & Apply]**

(b) Comment on the topography of the given region. **[Apply & Analyse]**

(ii) (a) Comment on the only river found in the given region. **[Analyse]**

(b) Why do some of streams in the south not join the main river? **[Apply]**

(iii) The need for water of the residents of the given region is chiefly fulfilled by which source? Support your answer with a reason. **[Remember]**

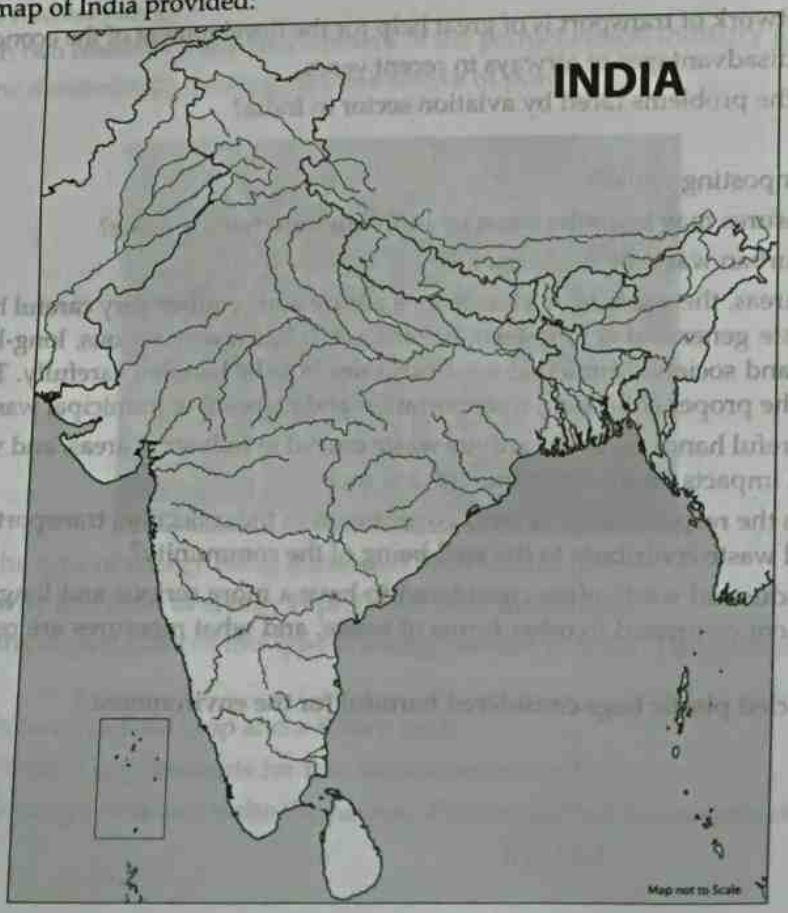
(iv) Give the six-figure grid reference of spot height .207 and .186. **[Recall]**

(v) Name the symbols by using these six figures:

(a) 353758 (b) 372763

**Question 2.**

On the outline map of India provided:



(i) Mark and name the Tropic of Cancer.
(ii) Mark and name Chennai.
(iii) Mark and label the river Krishna.
(iv) Shade and name a region with Black soil.
(v) Mark and label Western Ghats.
(vi) Mark and label Wular Lake.
(vii) Shade and label a densely populated area.
(viii) Mark with arrows the direction of North-East Monsoon wind.
(ix) Mark and name New Delhi.
(x) Shade and label Gulf of Khambhat.

**Question 3.**

**Choose the correct option:**

(i) Which of the following is the CORRECT set of water bodies from which the Southwest monsoon picks up moisture?
(a) Arabian Sea + Bay of Bengal + Indian Ocean
(b) Indian Ocean + Andaman Sea + Arabian Sea
(c) Bay of Bengal + Indian Ocean + Andaman Sea
(d) Gulf of Mannar + Mediterranean Sea + Indian Ocean **[Understand]**

(ii) Which of the following crops is suitable for growing on laterite soil?
(a) Cashew nut
(b) Wheat
(c) Groundnut
(d) Potato **[Remember]**

(iii) With reference to the Indian forests, consider the following pairs:
1. Tropical Moist Deciduous Forests: Sandalwood
2. Tropical Dry Deciduous Forests: Sal
3. Tropical Thorn Forests: Shisham

Which of the pairs given above is/are correctly matched?
(a) Only 1
(b) 1 and 2
(c) 2 and 3
(d) 1, 2 and 3 **[Apply]**

(iv) Why has the Thar developed into a desert?
(a) It has no cloud cover.
(b) It is near the sea.
(c) It is on the windward side of Western Ghats.
(d) Aravalli is parallel to S.W. Monsoon winds. **[Analyse]**

(v) What is the main reason for the red colour of Red soil?
(a) Abundance of magnesium
(b) Accumulated humus
(c) Presence of ferric oxide
(d) Abundance of phosphate **[Remember]**

(vi) **Assertion (A):** The trees in the tropical desert forests have stunted growth.
**Reason (R):** They suffer from nutrient deficiencies and dehydration due to arid conditions.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R does not explain A.
(c) A is true but R is false.
(d) A is false but R is true. **[Analyse]**

(vii) Which irrigation method is most efficient in terms of water conservation?
(a) Flood irrigation
(b) Drip irrigation
(c) Sprinkler irrigation
(d) Canal irrigation **[Remember]**

(viii) Parvati Valley and Puga Valley are two experimental power projects of _____ in India.
(a) Geothermal energy
(b) Wind energy
(c) Tidal energy
(d) Solar energy **[Remember]**

(ix) If you have to transport bulky goods over a long distance, which mode of transport will you use and why?
(a) Road transport as it is economical.
(b) Air transport because it is the fastest.
(c) Water transport as it is most suitable for carrying heavy and bulky goods.
(d) Rail transport as it is eco-friendly. [Apply]

(x) Which of the following methods of disposal is best applicable for the waste depicted in the picture below:

(a) Burning waste in open area
(b) Recycling waste
(c) Dumping
(d) Composting [Apply]

## Part-II (Attempt any five questions from this Part)

**Question 4.**

(i) Meesha went to Delhi when there was no chance of rainfall, thinking she would visit the whole city. However, suddenly, due to a western disturbance, there was heavy rainfall.
(a) What is a western disturbance and how can it lead to unexpected weather changes?
(b) Which regions of India are affected by Western Disturbance? [Analyse & Apply]

(ii) Which part of India receives the South-West Monsoon first, and what is this phenomenon known as? [Remember]

(iii) Give one reason for the following :
(a) Chennai has a lower annual range of temperature than Lucknow.
(b) Shillong gets less than 200 cms of rainfall in the year while Cherrapunji receives more than 1250 cms of rainfall.
(c) Hill stations in the south never experience snowfall even when the temperature falls to 0°C. [Analyse]

(iv) Given below is the climatic data of a station. Study the table and answer the questions that follow :

| Station A ↓ Month → | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature °C | 13.7 | 16.6 | 21.6 | 25.5 | 33.2 | 33.5 | 30.8 | 29.8 | 29.2 | 25.5 | 19.6 | 15.2 |
| Rainfall (cms) | 2.5 | 2.0 | 1.5 | 0.9 | 1.5 | 7.5 | 17.8 | 18.5 | 12.5 | 1.0 | 0.2 | 1.5 |

(a) What is the annual range of temperature of station A ? [Apply]
(b) What is the total rainfall experienced by the station ? [Apply]
(c) Which is the driest month ? [Understand]

**Question 5.**

(i) Answer the following:
(a) Name the soil known for its self-ploughing quality and capacity to hold moisture.
(b) Name one cash crop for which it is most suited.

(ii) With reference to Red Soil, answer the following :
(a) How it is formed? [Understand]
(b) Why is it good for dry farming? [Analyse]
(c) Name *any two* areas where it is found? [Recall]

(iii) Give a reason for each of the following :
(a) Soil erosion is most prominent in arid regions.
(b) Laterite soil is not suitable for cultivation.
(c) Afforestation is important for soil conservation. **[Analyse]**

(iv) Explain the following :
(a) Transported soil (b) In situ soil **[Remember]**

**Question 6.**

(i) Name one region in India for each of the following :
(a) Tidal forests (b) Thorn and Scrub **[Recall]**

(ii) Write two reasons why monsoon deciduous forests are commercially more valuable than other types of forests. **[Analyse]**

(iii) Which type of forests do the following trees belong to ? **[Apply]**
(a) Hintal and Sundari (b) Rosewood and Ebony (c) Deodar and Chir Pine.

(iv) Name any three trees found in monsoon deciduous forests and state one use of each of these trees. **[Recall]**

**Question 7.**

(i) Name the two main sources of water. **[Recall]**

(ii) Mention two advantages that surface wells have over inundation canals. **[Apply]**

(iii) (a) State two advantages of tank irrigation. **[Apply]**
(b) Give one reason why conservation of water is a necessity than a choice. **[Analyse]**

(iv) State three reasons why irrigation is important to a country like India. **[Analyse]**

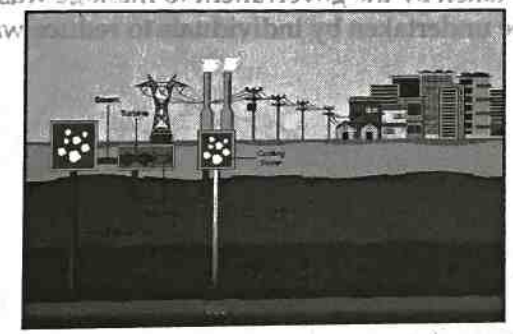
**Question 8.**

(i) (a) Name two oil fields in India. **[Recall]**
(b) Name an offshore oil field of India. **[Recall]**

(ii) Name the following:
(a) A metallic mineral for which the Balaghat district of Madhya Pradesh is famous.
(b) The multi-purpose project based on the river Sutlej. **[Recall]**

(iii) Why petroleum is called mineral oil? Write its two uses. **[Analyse]**

(iv)



(a) Identify the type of energy being harnessed in the above picture.
(b) Name the first power project of this form of energy in India.
(c) Mention two advantages of this form of energy over coal. **[Understand, Evaluate & Apply]**

**Question 9.**

(i) Mention four problems associated with agriculture in India. **[Apply]**

(ii) Which state is the leading producer of jute? Give reason for it. **[Analyse]**

(iii) Give a geographical reason for each of the following :
(a) Cultivation of rice requires flat level land.
(b) Pulses are important rotation crops.
(c) Practicing mixed farming gives security to farmers. **[Analyse]**

(iv) Differentiate between cultivation of rice and wheat on the basis of geographical conditions. **[Analyse]**

**Question 10.**

(i) Mention four problems faced by the cotton textile industry. **[Remember]**

(ii) Differentiate between Basic and Secondary Industries. [Analyse]

(iii) With reference to cotton textile industry, answer the following:

(a) Which is the country's most important manufacturing centre ? [Recall]

(b) State two geographical reasons for its importance. [Analyse]

(c) Mention two causes which are responsible for the sickness of textile industry. [Analyse]

(iv) Give a geographical reason for each of the following :

(a) Cotton is a labour intensive crop.

(b) Jute is retted after it has been harvested. [Analyse]

(c) The growing of pulses is important in India. [Analyse]

**Question 11.**

(i) Differentiate between State Highways and National Highways. [Analyse]

(ii) (a) Why travel by water has decreased ? [Analyse & Recall]

(b) Name an international port. [Understand]

(iii) Mention three disadvantages of roadways. [Evaluate]

(iv) What is the importance of the Golden Quadrilateral? Explain briefly. [Evaluate]

**Question 12.**

(i) Explain briefly how as a student, you can help in the reduction of waste generation. [Understand]

(ii) Mention two ways to reuse waste that is generated at home. [Evaluate]

(iii) Spoilage of landscape refers to the heaps of waste, garbage and trash in urban cities is left uncared or untreated. It spoils not only aesthetic beauty of the land but also causes severe damage to the environment. The decaying waste matter becomes the breeding ground for all sorts of insects, flies and mosquitoes. It is more dangerous near the overcrowded residential areas where it may spread infectious diseases.

(a) How can the spoilage of the landscape due to heaps of waste in urban cities impact the health of the residents living in overpopulated areas? [Understand]

(b) What are the potential consequences of failing to address the spoilage of landscapes and the accumulation of garbage in urban environments? [Evaluate]

(c) How can local authorities and communities collaboratively address the issue of spoilage of landscapes? [Understand]

(iv) (a) How can recycling of waste help in reducing waste? Explain with suitable examples. [Evaluate]

(b) Mention one initiative taken by the government to manage waste. [Apply]

(c) What measures may be undertaken by individuals to reduce waste? [Understand]

□□

## Questions

**Part-I** (Attempt all questions from this Part)

**Question 1.**

Study the extract of the Survey of India Map Sheet No. 45D/10 (Eastings 57-63 Northings 41-50) and answer the following questions :

(i) (a) Define the terms "sheet rock" and "causeway". **[Apply & Analyse]**

(b) What is the direction of the flow of Dior Nadi in the southern part of the map ? Give a reason to support your answer.

(ii) (a) Calculate the length of the main power line in the south-eastern part of the map. **[Apply & Understand]**

(b) What do the following colours on the toposheet represent :

(1) Yellow (2) White **[Understand]**

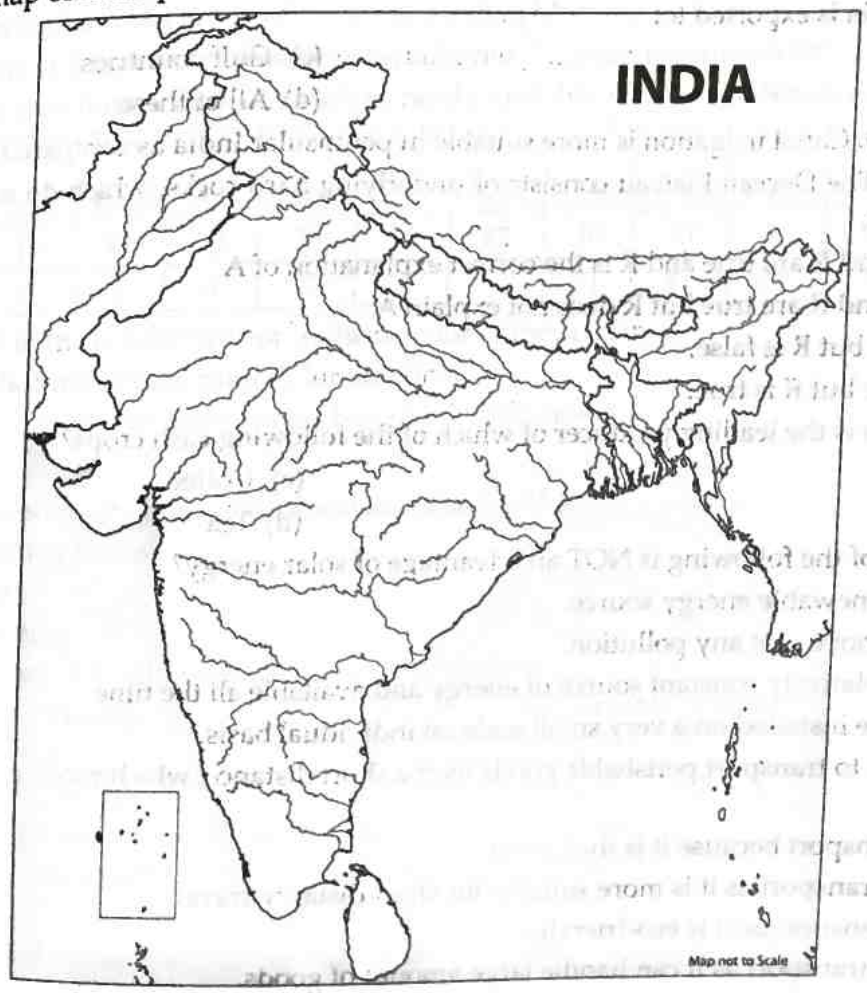
(iii) Which are the two common religious faiths in the given region ? How do you infer it ? **[Remember]**

(iv) Calculate the shortest distance between Idaria and Nagani. **[Apply & Analyse]**

(v) Which is the chief form of irrigation found in the south-western part of the map ? Give a reason to support your answer. **[Recall]**

**Question 2.**

On the outline map of India provided:



(i) Mark and name Nilgiris.
(ii) Mark and name Kochi.
(iii) Mark and name the Karakoram Pass.
(iv) Mark and name 82°30′E Longitude.
(v) Shade and name the Coromandel Coastal Plain.
(vi) Mark and name the River Brahmaputra.
(vii) Mark and name the Gulf of Kutch.
(viii) Mark and name the Satpura.
(ix) Mark using arrows, the direction of the South-West Monsoon wind during summer over the Arabian Sea and label it.
(x) Shade and label a sparsely populated region in India.

**Question 3.**

**Choose the correct option:**

(i) Which of the following is the CORRECT set of industries for which the forests provide raw materials?
(a) Paper industry + Pharmaceutical industry + Furniture industry
(b) Plywood industry + Petrochemical industry + Matchbox industry
(c) Cement industry + Sugar industry + Paper industry
(d) Iron industry + Textile industry + Timber industry **[Understand]**

(ii) Which of the following soil is most suitable for the cultivation of cotton & sugarcane? **[Recall]**
(a) Laterite soil (b) Black soil (c) Red soil (d) Alluvial soil

(iii) Cinchona trees are found in the areas of rainfall more than _____. **[Recall]**
(a) 50 cm (b) 100 cm (c) 70 cm (d) 150 cm

(iv) Shisham and Gurjan are the typical trees of which of the following natural vegetation belts?
(a) Tropical Evergreen
(b) Tropical Deciduous
(c) Tropical Desert
(d) Littoral Forest **[Understand]**

(v) Iron from India is exported to:
(a) Japan
(b) Korea
(c) Gulf countries
(d) All of these **[Remember]**

(vi) **Assertion (A):** Canal irrigation is more suitable in peninsular India as compared to northern India.
**Reason (R):** The Deccan Plateau consists of underlying hard rocks, which do not allow the water to seep through.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R does not explain A.
(c) A is true but R is false.
(d) A is false but R is true. **[Analyse]**

(vii) Maharashtra is the leading producer of which of the following cash crops?
(a) Jute
(b) Cotton
(c) Coffee
(d) Tea **[Remember]**

(viii) Which one of the following is NOT an advantage of solar energy?
(a) It is a renewable energy source.
(b) It does not cause any pollution.
(c) It is a relatively constant source of energy and available all the time.
(d) It can be installed on a very small scale on individual basis. **[Understand]**

(ix) If you have to transport perishable goods over a short distance, which mode of transport will you use and why?
(a) Air transport because it is the fastest.
(b) Road transport as it is more suitable for short distance travel.
(c) Rail transport as it is eco-friendly.
(d) Water transport as it can handle large amount of goods. **[Apply]**

(v) Which of the following methods of disposal is best applicable for the waste depicted in the picture below:

(a) Burning waste in open area
(b) Recycling waste
(c) Dumping
(d) Composting [Apply]

## Part-II (Attempt any five questions from this Part)

**Question 4.**

(i) Anjali, a student from Tamil Nadu, went on an educational trip to Ladakh with her friends. They were all shivering from the cold and were amazed by the huge temperature difference between their state and Ladakh.

(a) What geographical factors could contribute to the significant temperature difference between Tamil Nadu and Ladakh?

(b) Anjali noticed sparse vegetation in Ladakh during her educational trip. What factors could contribute to this limited vegetation in the region? [Analyse & Apply]

(ii) Which crops grow in the following period ?

(a) Cold weather season in Tamil Nadu

(b) April/May in Assam [Remember]

(iii) Give a reason for the following :

(a) Patna receives more rainfall than Varanasi.

(b) Jaipur has high annual range of temperature than Mumbai.

(c) Hill stations in South never receive snowfall even if the temperature is 0°C. [Analyse]

(iv) Given below is the climatic data of a station. Study the table and answer the questions that follow :

| Station ↓ Month→ | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature °C | 10 | 11 | 23 | 35 | 39 | 42 | 40 | 33 | 30 | 25 | 13 | 11 |
| Rainfall (cms) | 2 | 1 | 0 | 5 | 15 | 62 | 71 | 81 | 59 | 12 | 10 | 3 |

(a) Is Station X in the coastal area or in the interior of the country ? [Understand]

(b) Calculate the total annual rainfall for Station X. [Apply]

(c) Name the wind that brings most of the rainfall to Station X. [Analyse]

**Question 5.**

(i) State two differences between Alluvial soil and Black soil. [Analyse]

(ii) Define the following terms:

(a) Soil Fertility

(b) Soil conservation [Remember]

(iii) What is soil ? Name the following components of the soil :

(a) Inorganic components

(b) Organic components [Remember]

(iv) Name the soil which :

(a) is newer alluvium soil.

(b) has higher iron content and found in Manipur and Mizoram.

(c) lacks fertility but respond readily to manure and irrigation. [Recall]

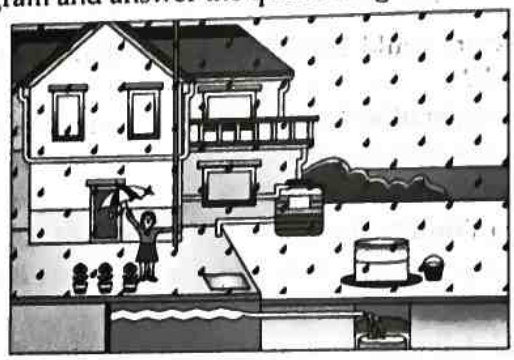
**Question 6.**

(i) Mention any two characteristics of tropical deciduous forests. [Apply]

(ii) Name the tree according to its characteristics :
(a) It has a very hard wood and is resistible to white ants.
(b) Its fruit is used for tanning leather. [Recall]
(iii) Mention any three objectives of National Forest Policy of 1988. [Apply]
(iv) Name the type of forests found in the following regions :
(a) Karnataka (c) Nilgiris
(b) Andaman & Nicobar [Recall]

**Question 7.**

(i) (a) Name the most common means of irrigation used in India.
(b) Give one reason for the popularity of this means of irrigation in our country. [Recall] [Analyse]
(ii) Name the canals found in :
(a) Punjab (b) Karnataka [Recall]
(iii) Give a geographical reason for the following :
(a) Perennial canals are widely used in Uttar Pradesh.
(b) Though sprinkler irrigation is expensive, it is gaining popularity.
(c) Tube wells should be installed in a fertile and productive region. [Analyse]
(iv) Study the following diagram and answer the questions given below :



(a) Which activity is demonstrated in the above diagram ? [Understand, Evaluate & Apply]
(b) Give two purposes of the activity shown in the diagram.
(c) Name the states where this method is commonly practiced.

**Question 8.**

(i) (a) Give two disadvantages of using Petroleum as a source of power. [Evaluate]
(b) Give one reason for the popularity of this means of irrigation in our country. [Analyse]
(ii) Name the following :
(a) Name the oil field in India that is the largest producer of petroleum.
(b) Name one offshore oil field in India. [Recall]
(iii) Answer the following :
(a) State one industrial use of copper . [Remember]
(b) Mention one advantage of generating power from biogas. [Apply]
(c) Name the mineral that toughens steel and makes it rust-proof. [Recall]
(iv)

(a) Identify the type of energy being harnessed in the picture given on the previous page.
(b) How is this form of energy produced?
(c) Mention any one disadvantage of this type of energy. **[Understand, Evaluate & Apply]**

**Question 9.**
(i) Give reasons why is the development of agriculture essential. **[Analyse]**
(ii) What are the climatic requirements for the cultivation of wheat ? **[Evaluate]**
(iii) Define the following terms : **[Remember]**
(a) Ginning (b) Retting (c) Sett method
(iv) Give a reason for the following :
(a) Cultivation of oilseeds is lagging behind in recent times.
(b) Pulses are grown extensively in India.
(c) Cultivation of wheat is confined to the northern part of India. **[Analyse]**

**Question 10.**
(i) Differentiate between the Cotton Industry and Iron and Steel Industry. **[Analyse]**
(ii) State two reasons for the need of rapid industrialisation in India. **[Analyse]**
(iii) Give a term for the following :
(a) Produced by the boiling of sugarcane juice.
(b) Produced by the age-old method of separating molasses from sucrose.
(c) Produced by sugar factories. **[Recall]**
(iv) With reference to the sugarcane industry, answer the following questions :
(a) Name the largest sugarcane producing state of India. Name two methods of irrigation used for sugarcane crops in that state. **[Recall]**
(b) State two problems faced by the sugarcane industry in India. **[Evaluate]**
(c) Name the different methods by which sugarcane can be propagated. **[Recall]**

**Question 11.**
(i) Give two reasons why cotton industry is more widespread than the jute industry. **[Analyse]**
(ii) With reference to Iron and Steel industry, answer the following :
(a) Which Iron and Steel industry is established with the help of a famous German firm in Odisha ? **[Apply]**
(b) From where does the industry get its iron ore ? **[Remember]**
(iii) Name one production centre for the following products :
(a) Diesel engines (b) Aircraft (c) HMT. **[Recall]**
(iv) Name two products for each of the following industries :
(a) Petrochemical industry (c) Heavy engineering industry **[Recall]**
(b) Electronic industry

**Question 12.**
(i) How can waste be reused ? Explain with the help of an example. **[Understand]**
(ii) (a) What do you mean by segregation of waste? **[Remember]**
(b) Why is segregation of waste essential before its disposal? **[Analyse]**
(iii) Landfills are large areas on the outskirts of cities where the waste is deposited on or in the ground and covered with earth. Since landfills are covered, there is minimum air pollution. However, it is difficult to maintain large landfills in view of the increasing overcrowding of cities due to the growing population.
(a) How does the practice of using landfills for waste disposal contribute to minimising air pollution, and what are the associated challenges? **[Understand]**
(b) What role do landfills play in waste management, and how does the issue of urban overcrowding impact their effectiveness? **[Evaluate]**
(c) In the context of waste disposal, how does the challenge of maintaining landfills reflect the broader issue of urbanisation and population growth? **[Understand]**
(iv) (a) What is municipal waste ? **[Remember]**
(b) Why do we have landfills ? Are they really necessary ? **[Analyse]**
(c) What do you mean by biomagnification ? **[Remember]**

❑❑

# 1 Sample Paper

## Geography

## Answers

### Part-I

**Answer 1.**

(i) (a) (1) Fairly dense mixed jungle.
(2) Open mixed jungle. They tell that the region receives scanty rainfall.
(b) (1) Cliff (2) Col or Saddle

(ii) (a) 4694 – Radial pattern 4201 – Dendritic pattern
(b) Metalled road represented by red parallel lines and cart track represented by curved red line and pack track represented by red dashed lines.

(iii) There is no human settlement because :
(1) Presence of Forest (Green)
(2) Hilly terrain (a lot of contour lines)

(iv) North to south distance = 20.2 cm
Scale of the map is 2 cm = 1 km

Therefore, $\frac{20.2}{2}$ = 10.1 km

Speed = 5 km/hour

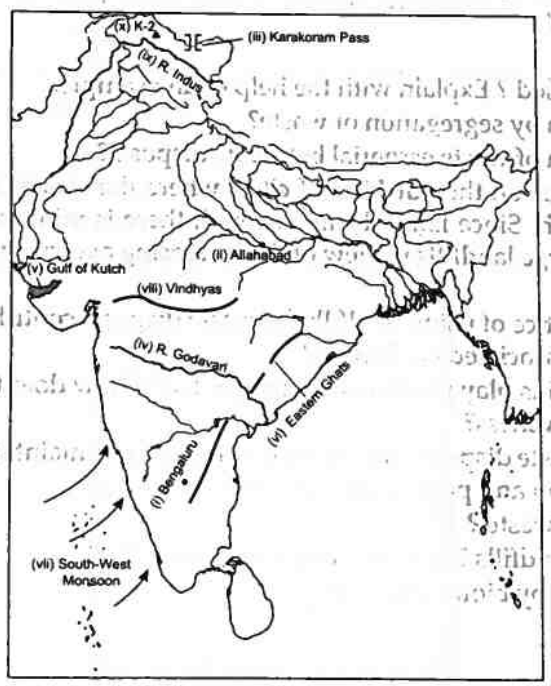
Time = Distance/Speed

$= \frac{10.1}{5}$

= 2.02 hours.

(v) When the contour lines are far apart from each other, they represent gentle slopes and when contour lines are close to each other, they represent steep height.

**Answer 2.**



**Answer 3.**

(i) (b) Location + Altitude + Distance from the sea

(ii) (b) Nhava Sheva

(iii) (c) Tidal forests

(iv) (d) Thorium

(v) (c) Agroforestry

(vi) (a) Both A and R are true and R is the correct explanation of A.

(vii) (b) Private sector industries

(viii) (d) All of these

(ix) (b) Air transport because it is the fastest.

(x) (c) Dumping

## Part-II

**Answer 4.**

(i) (a) The rainfall in Tamil Nadu during the winter season can be primarily attributed to the North-East Monsoon winds. As these winds cross the Bay of Bengal, they gather moisture, the moisture- laden winds lead to heavy rainfall. When they strike the Coromandel Coast in eastern India, particularly Tamil Nadu and the southern tip of Andhra Pradesh, the specific geographic interaction between the winds, the Bay of Bengal, and the coastal areas results in the winter rainfall pattern observed in Tamil Nadu.

(b) These winds do not bring rains to the Ganga valley.

(ii) The two reasons are :

1. The winds that blow here are dry.
2. It lies on the leeward side of the Aravallis which are very low and these winds run parallel to the Aravallis.

(iii) The technical name of the season is "the season of retreating monsoon"/"North-East Monsoon". The atmospheric condition over the Bay of Bengal during this season is very unstable causing severe cyclones. It can be a low pressure area too. The months of October and November are the rainiest months in Chennai. Thus, the match had to be cancelled.

(iv) (a) Annual range of temperature = 30.4 – 23.8 = 6.6

(b) Total rainfall during the monsoon season = 180.6 cm

(c) The station is located on the western coast of India, because heavy rainfall is observed during monsoon season.

**Answer 5.**

(i) There are four main types of soils found in India :

1. Alluvial Soil
2. Black Soil
3. Red Soil
4. Laterite Soil

(Any two)

(ii) Similarities between Red soil and Laterite soil are :

1. Both are red in colour because of the presence of iron-oxide.
2. Both are infertile soils.
3. Both are acidic in nature.
4. Both are in situ/residual soils.

(Any two)

(iii) (a) Sheet erosion is the slow removal of a thin/top-layer of soil by rainwater, washing it away from the gentle slopes.

(b) Soil conservation refers to the efforts made to prevent soil from getting eroded.

(c) In situ means the soil which is found where it is formed. It refers to residual soil.

(iv) (a) Black soil does not get leached because it is clayey, sticky, moisture-retentive and non-porous. Therefore, rain cannot wash out the silicate.

(b) It is not suitable for agriculture as it has a high content of acidity and cannot retain moisture. However, it has a high iron content, which is good for building material.

(c) Alluvial soil is regarded as the most fertile type of soil due to its deposition by rivers and its abundance of minerals and organic matter. It has excellent moisture retention capacity and is ideal for cultivating a wide variety of agricultural crops.

**Answer 6.**

(i) The tropical rainforests do not have any fixed time to flower, fruit or to shed their leaves. So, they appear green all year round. Rosewood and Shisham belong to tropical rainforests.

(ii) Reasons why forests must be conserved are :

1. Forest must be conserved because they are the storehouse of timber and used for house-making and furniture, fuel, fodder, etc.
2. They prevent soil erosion as the roots of the trees hold the soil together and help in preventing floods.

(iii) (a) Tropical deciduous forest have trees that are found in pure stands.

(b) 1. Tropical Evergreen forests are dense.
2. Heavy rainfall makes it difficult to access.
3. Trees are found in mixed-stands.
4. Dense undergrowth/heterogenous. **(Any two)**

(c) Deciduous forests are found on the western and eastern slopes of the western ghasts because this region receives moderate rainfall of (150-200 cm), with hot dry season from March to end of May.

(iv) Three methods for the conservation and development of forests :

1. Grow more trees through Van Mahotasava.
2. Forest regions are being declared "Reserved Sanctuaries" to preserve the ecosystem and protect animals.
3. **Afforestation and Reafforestation :** Afforestation is the planting of more trees and Reafforestation is to plant trees in place of those which are cut down. The policy of the government is to plant two trees in place of every one tree that is cut.

**Answer 7.**

(i) The two types of irrigation prevalent in our country are :

1. Wells : both ordinary and tube-wells
2. Tanks
3. Canals **(Any two)**

(ii) 1. The Deccan Plateau is made up of hard impermeable rock which does not allow the rainwater to percolate underground. Hence, it is ideal for tanks.
2. The Deccan Plateau is highly dissected and so, it has many natural depressions and hollows.

(iii) Reasons for water scarcity in India are :

1. Inefficient use of water for agriculture. Traditional irrigation techniques cause significant water loss due to evaporation, drainage, percolation, water conveyance, and excess use of groundwater.
2. Release of chemicals and effluents into rivers, streams and ponds. Strict monitoring and implementation of laws by the government, NGO, and social activists are required.
3. Lack of efficient water management and distribution of water between urban consumers, the agriculture sector and industry. The government needs to enhance its investment in technology and include all stakeholders at the planning level to ensure the optimisation of existing resources.

(iv) (a) Drip irrigation

(b) Two advantages of drip irrigation are:

1. Fertilizer and nutrient loss is minimised due to localised and reduced leaching.
2. Water distribution is highly uniform, controlled by the output of each nozzle.
3. Labour cost is less than other irrigation methods. **(Any two)**

**Answer 8.**

(i) Mineral resources are useful in four ways :

1. They form the basis for industries.
2. Means of communication depend upon them.
3. They are the source of energy, *e.g.*, coal and petroleum.
4. One can earn foreign exchange by exports of mineral resources. **(Any two)**

(ii) Some important iron-ore producing centres in India are :

1. Bastar, Durg and Rajhara districts in Chhattisgarh.
2. Mayurbhanj, Keonjhar and Sundargarh in Odisha.
3. Singhbhum in Jharkhand.
4. Bellary, Hospet, Bababudan Hills and Kudremukh in Karnataka. **(Any two)**

(iii) (a) Minerals should be preserved because once depleted they cannot be regenerated as, it takes millions of years for them to form.

(b) Manganese is needed in iron and steel industry because it makes steel strong, removes impurities, and makes it resistant to rust. Approximately 10 kg of manganese is required to manufacture one tonne of steel. It is also used to make alloy steel.

(c) India lies between 8°N and 37°N with the Tropic of Cancer running through it so it receives a lot of sunlight with 300 clear days in a year. Thus, India's location is advantageous for the generation of solar power.

(iv) (a) Nuclear energy

(b) It is obtained by altering the structure of atoms. When such an alteration is made, much energy is released in the form of heat and this is used to generate electric power.

(c) Compared to conventional sources like coal or petroleum, nuclear power generates a larger amount of energy with no greenhouse gas emissions.

**Answer 9.**

(i) Tea plant does not grow beyond the height of 2 to 3 metres. The leaves have to be handpicked, as it needs regular pruning. After three years, the tea bush becomes ready, the skilled pluckers pluck the two leaves and a bud. The plucking is done by hand, so tea is considered as a labour-intensive crop.

(ii) Difference between the geographical conditions for the cultivation of Rice and Wheat are :

| Rice | Wheat |
|---|---|
| 1. It is a Kharif crop sown in June-July and harvested in October-November. | It is a Rabi crop sown in October-November and harvested in March-April. |
| 2. During the ripening stage, the temperature should be 18°C–32°C, with a mean temperature of 24°C. | Wheat requires a temperature of about 10°C–15°C during the period of growth and 20°C–25°C during harvest. About 80 cm annual rainfall is ideal. |

(iii) (a) **Withering :** The tea leaves, when green, contain a lot of moisture. To remove this moisture, the leaves are spread over racks and air is passed through them. After they become soft, they are sent for rolling; this process is called withering.

(b) **Broadcasting :** This method involves sowing the seeds by sprinkling them all over the field by hand. This method is generally used to sow seeds of inferior quality, hence the yield is low.

(c) **Dibbling :** It refers to the sowing of seeds at regular intervals in the furrow with the help of a dibble, which is used to make holes in the ground for planting seeds.

(iv) (a) Agriculture can be called the backbone of India's economic system because two-thirds of the Indian population is engaged in cultivating land. Agriculture not only helps to feed the large population but also supports major manufacturing industries with raw materials and contributes substantially to the country's exports.

(b) 1. On account of variety of soils and climatic variations in India, a wide variety of crops can be grown.

2. There are two important crop seasons in India : Kharif and Rabi.

3. Both the intensive and extensive types of farming are prevalent in India.

(c) 1. **Kharif season :** Ground is prepared in April-May, seeds are sown in June on arrival of rain. Harvesting is done in the beginning of November. Major crops are: Rice, Maize, Jowar, Bajara. etc.

2. **Rabi season :** The ground is prepared by the end of October or the beginning of November. Harvesting takes place in March. Major crops are: Wheat, Barley, Gram, Mustard, etc.

**Answer 10.**

(i) Agro-based industries are those which depends on the agricultural produce for the supply of raw material. *E.g.*, Sugarcane for sugar industry.

Mineral-based industry depends on the availability of minerals and ores for the supply of raw material. *E.g.*, Iron ore for iron and steel industry.

(ii) The Electronic Industry is important for India because:

1. The electronic products like telephone and internet services have made communication easy and fast so the demand for such electronic goods and services is high.

2. Industrial and technological development has also increased the demand for electronic products.
3. It has done wonders in the field of entertainment, defence equipment and medical diagnosis.

(Any two)

(iii) (a) The location of this industry is governed by its close proximity to raw material because due to the bulky nature of the raw material and the large quantities in which they are needed, a high cost of transportation is involved.

(b) This industry is not found in western India because of the unavailability of raw material.

(c) Most of the iron and steel plants are public sector undertakings because it requires large capital investment, machinery and needs research facilities.

(iv) (a) Soviet Russia

(b) It is called a basic or key industry because it forms the backbone of the industrial economy as most of the important industries depend on it for their machinery.

(c) Jamshedpur (Jharkhand)

**Answer 11.**

(i) The expansion of railways and roads has diminished the importance of sea transport which is time-consuming. Hence, sea transport has declined. India has a large inland waterway system. Along this, ships and boats carry goods, the local produce and consumer goods to the ports for export. Ships also carry passengers.

(ii) The roads in many of the small towns and cities in India are of poor quality and have no proper maintenance. The development of the roads has not kept pace with the growing population and traffic. Hence, there are traffic jams and increase in accidents.

Measures to be taken in order to improve the roads are regular construction and maintenance of good quality roads.

(iii) Advantages of using railways are:

1. It is a fast, comfortable and cheap mode of transport.
2. It is easy to travel from Jammu-Kashmir to Kanyakumari in a matter of two days.
3. It helps the movement of goods cheaply.
4. It helps in tourism.

**Disadvantages of using railways are:**

1. The greatest disadvantages are the three different gauges. This causes inconveniences and delay for passengers and goods due to changing of trains.
2. On Ghat sections, rail journey can be hazardous.

(iv) Advantages of water transport:

1. It is suitable for carrying heavy and bulky goods.
2. It is a fully sufficient and environmental friendly mode of transport.
3. Water transport is safe and has less traffic in comparison to road and air transport.

**Answer 12.**

(i) (a) Biodegradable waste is easily broken down by natural process of decomposition. *E.g.*, leaves, plant remains, etc.

(b) The benefits of composting are:

(1) Conversion of organic waste into valuable fertilisers.

(2) Reduction of the quantity of waste.

(ii) The garbage that is disposed of each day by municipalities, counties, governments, businesses and industries must be managed in an environmentally safe manner to protect human health and the environment. Landfills are one method to dispose of our solid waste safely. We use landfills because not every item thrown out or discarded can be recycled or reused.

(iii) (a) Segregating waste into biodegradable and non-biodegradable categories at the source aids in effective waste management. It facilitates proper treatment and disposal of waste, reduces environmental pollution, and enables efficient recycling of materials.

(b) Waste should be segregated into categories like biodegradable, non-biodegradable, glass, paper, and hazardous waste (including e-waste, chemicals). This practice is crucial to minimise

environmental damage. Proper segregation allows for efficient disposal, recycling, and treatment of different waste types, reducing the negative impact on the environment.

(c) Segregating waste at its source prevents contamination of municipal solid waste with biomedical and hazardous waste. Treating biomedical waste separately is vital to prevent health risks associated with it.

(iv) In the modern industrial world, the waste has become an environmental and public health hazard. Waste can be effectively managed by using the following three strategies :

(a) Reducing the waste

(b) Reusing the waste

(c) Recycling the waste

❑❑

# Answers

## Part-I

**Answer 1.**

(i) (a) Yes, Abu is a tourist place having several points of tourist attraction such as : (i) Nakhi Talao (7133), (ii) Sunset Point (6932).

(b) The general slope of the land is towards the north-west because the absence of contour lines in that direction which indicates a plain area.

(ii) (a) Forest vegetation is found in the given region. Two examples are : Fairly dense mixed jungle with bamboo and open mixed jungle.

(b) 1. Sadka Devi ka Mandir — 753393

2. Spot height (.437) — 706409

(iii) 'Falls 7 m' refers to a waterfall whose height is 7 m from the surrounding area. Waterfalls are formed when a stream or a river falls from a height onto the ground.

(iv) Highest spot height = 1425 m

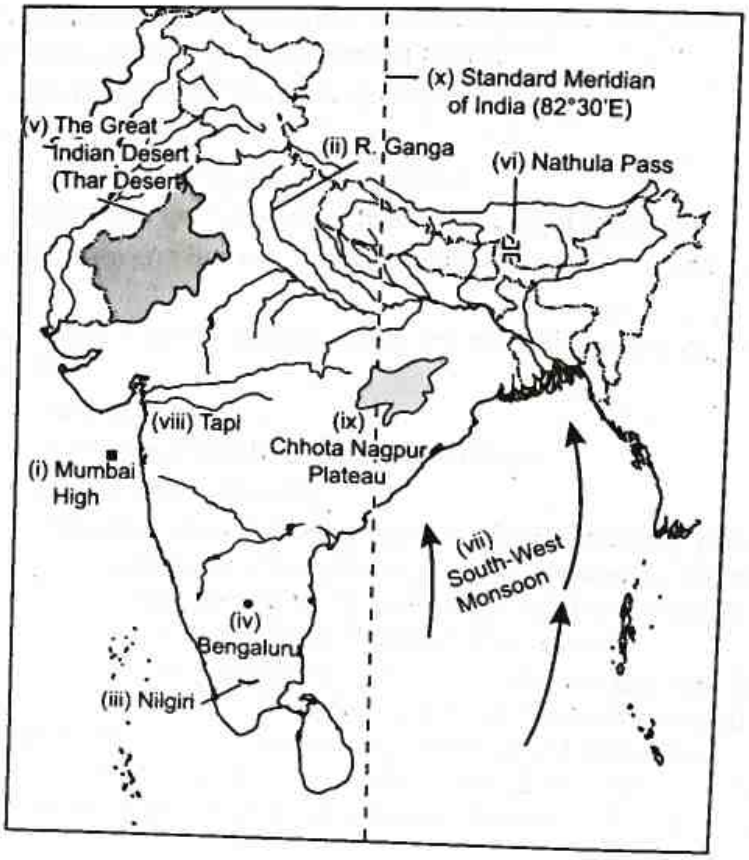
Second highest spot height = 1387 m

Difference : 1425 – 1387 = 38 m

(v) The area is characterised by:

1. **Timber work:** This is prevalent due to the extensive forested areas, as indicated by the green wash on the map.
2. **Agriculture:** The presence of agriculture is indicated by the yellow wash on the map.

**Answer 2.**



**Answer 3.**

(i) (c) Mhote

(ii) (c) Wheat and barley

(iii) (a) Silica + Clay + Chalk

(iv) (d) The moisture laden winds from the Arabian sea blows parallel to the Aravallis and hence do not shed their moisture over Rajasthan.

(v) (c) Both (a) and (b)

(vi) (c) A is true but R is false.

(vii) (d) They are also known as 'monsoon forests'.

(viii) (b) Bengaluru

(ix) (c) Rail transport as it connects the hinterland to the seaports.

(x) (b) Recycling waste

## Part-II

**Answer 4.**

(i) (a) The north of the Tropic of Cancer experiences a continental climate due to its distance from the moderating influence of large water bodies. The southern peninsula, enclosed by the Arabian Sea, Indian Ocean, and Bay of Bengal, enjoys a more moderate climate due to the maritime influence.

(b) Coastal areas have a moderate or equable temperature due to the moderating influence of nearby water bodies. The water having higher specific heat capacity means it absorbs and releases heat slowly, leading to slower temperature changes.

(ii) (a) The South-West Monsoon winds and the North-East Monsoon winds are responsible for the heavy rainfall in India.

(b) The retreating monsoon winds results in a clear sky. Consequently, the temperature increases. The land is still moist in these months. Owing to the high temperature, the humidity becomes very oppressive. This state of weather is known as 'October Heat'.

(iii) (a) Patna lies in the lower Ganga valley, Varanasi is further west. Hence, the South-West monsoon of the Bay of Bengal branch sheds its moisture as it goes up the Ganga valley, giving heavier rainfall to Patna than Varanasi.

(b) It never gets too cold in Mangaluru not even in December, due to the moderating influence of land and sea breezes, and its proximity to the equator. It experiences a maritime climate with significant coastal or oceanic influences.

(c) Mumbai is located on the western coast of India, near the Arabian Sea, while Delhi is a landlocked region that experiences cold and dry winds from the Himalayas. The proximity to the Arabian Sea and the tropical climate of Mumbai keep the temperature relatively high during winter compared to Delhi.

(iv) (a) March to September = 60.8

(b) 68.2 cm./ 2 = 5.68 cm

(c) Interior parts of the peninsular India.

**Answer 5.**

(i) Two reasons for the need to conserve soil are :

1. To increase the underground water table and soil moisture.
2. To prevent the drying of vegetation and the extension of arid lands. Soil is crucial for national industrial development and economic growth.

(ii) Difference between Alluvial soil and Red soil.

| Alluvial Soil | Red Soil |
|---|---|
| 1. It differs in colour. The colour of alluvial soil can be grey, light brown or yellowish. | It is reddish in colour due to the presence of iron oxide. |
| 2. Very fertile, suitable for wheat, sugarcane, rice, cotton, jute and oil seed. | Rice, wheat, sugarcane, cotton and pulses can be cultivated when it is well-irrigated and fertilised. |

(iii) (a) The Thar Desert, Western Rajasthan and South Punjab are parts of India where wind is the main agent of erosion.

(b) When rain falls heavily, the runoff scours out deep grooves. This cutting up of the soil gives rise to badlands or ravine lands. This type of erosion is known as gully erosion.

(c) It is the erosion where, due to heavy rains, a surface film of water carries away the even surface layer of the topsoil.

(iv) Removal or destruction of top soil by the agents like winds and running water is called soil erosion. The two agricultural techniques that can help to prevent soil erosion are as follows:

1. **Afforestation:** The best way to prevent soil erosion is to increase area under forests.
2. **Contour Farming:** This helps to reduce soil erosion by reducing water run off and promoting soil retention, as the crops and soil are not disturbed by water Flowing down the slope.

**Answer 6.**

(i) Two main characteristics of tropical rainforests are :

1. They are found in the areas of heavy rainfall.
2. Trees are evergreen and do not shed their leaves.

(ii) Social forestry involves the management and protection of forests and afforestation on barren lands with the purpose of promoting the environmental, social and rural development. Agro-forestry or agro-cultivation is a land use management system in which trees or shrubs are grown around or among crops or pastureland. It combines agriculture and forestry.

(iii) (a) Tropical deciduous forests/Tropical monsoon forests.

(b) Teak and sal

(c) These forests shed their leaves for about 6-8 weeks during the spring and early summer during March/April when sufficient moisture for leaves is not available.

(iv) (a) **Cedar :** Its wood is used to make boxes, bowls and basket.

(b) **Spruce :** It is used for making paper.

(c) **Oak :** It is used to make wine barrels.

**Answer 7.**

(i) Two advantages of surface wells over inundation canals are :

1. Surface wells are perennial and can supply water throughout the year, whereas in inundation canals, there is uncertainty of water supply.
2. Surface wells are dug in the areas where the water table is high and ground is of soft rock. It can be dug in parts of India like Uttar Pradesh, Haryana, West Bengal, Gujarat, Madhya Pradesh, Tamil Nadu and Punjab, whereas inundation canals can only be built in the lowland areas.

(ii) Two advantages of rainwater harvesting are :

1. Recharge of ground water.
2. Conservation of water, reduction of surface runoff.

(iii) (a) Perennial canals are widely used in Uttar Pradesh and Punjab.

(b) Drip methods is the best irrigation method because :

1. No loss of water through evaporation.
2. Judicious use of water with no wastage.
3. The flow of water can be customised so as to be beneficial to each crop.
4. Water is supplied only to the roots. **(Any one)**

(c) The government should undertake proper water harvesting methods that promote reuse and recycling of water to reduce water scarcity problems.

(iv) Tanks are mostly used in peninsular India. This is because :

1. Peninsular India consists of hard impermeable rocks which favour the storage of water.
2. Depressions in the plateau regions can be used as natural tanks.
3. Tank irrigation is found more popularly in rocky plateau areas of the country especially in the plateau region of Southern India. The states in which they are practised mainly are Andhra Pradesh and Tamil Nadu. Andhra Pradesh has the largest number of tank irrigation systems.

wer 8.
(i) Haematite variety of iron-ore is mostly mined in India, in Chhattisgarh and Jharkhand regions.
(ii) Bituminous coal is used for domestic purposes. This coal is most popular because it has 70% to 80% carbon content and accounts for 98% of the total reserves.
(iii) (a) Oil refineries are located close to the oilfields or near the ports to avoid leakage and evaporation.
(b) It is the best quality of coal and contains over 80% carbon and is hard, compact and black in colour.
(c) The economic development of a country is influenced by the availability of minerals because the import and export activities of a country depends on the availability of minerals as most industries need minerals.
(iv) (a) Hydel power or hydroelectricity
(b) Advantages of hydel power over thermal power:
1. Hydel power is an inexhaustible and renewable source of energy, whereas coal - the major factor in thermal power - is exhaustible and non-renewable.
2. It is cheaper to build dams than to build thermal power stations. **(Any one)**
(c) The Tehri Hydropower Complex, located in the Tehri Garhwal district of Uttarakhand, is India's largest hydroelectric power plant.

swer 9.
(i) (a) Groundnut grows well in areas where the temperature ranges between 22°C to 28°C, and the rainfall is about 50 to 75 cm. Its plants grow best in sandy soils. Warm coastal areas with high humidity are ideal places for its growth.
(b) Sugarcane can be grown in well drained medium loamy soils or rich clay-like loamy or lava soils.
(ii) Maharashtra is the most important sugar-producing state in South India. The other important sugar producers in South India are Andhra Pradesh, Karnataka and Tamil Nadu.
(iii) The agro-based industries have affected the economy of India in the following ways :
1. These industries have reached a stage of development, that has made the country self-sufficient as far as the number of products and services are concerned, it has also opened up the opportunities for exports.
2. Agro-based industries have also reduced the dependency on agriculture and have provided various job opportunities for the people and also encouraged the private sector to invest in it which has restructured the economy of India. Now, India is no more an agricultural country but it is taking the place of a major industrial country.
3. Agricultural products of the major raw material for many agro-based industries such as oil, sugar, textile, etc.
(iv) The effects of the Green Revolution in India are :
1. Remarkable increase in productivity of food grains.
2. India became self-sufficient in food production as the food grain production increased four times.
3. Reduction in import of food grains.
4. Helped the farmers in raising their income level.

nswer 10.
(i) Different kinds of natural materials and petrochemical products are :

| Natural Materials | Petrochemical Products |
|---|---|
| 1. Leather footwear | Plastic chappals, synthetic footwear |
| 2. Natural rubber | Synthetic rubber |
| 3. Jute fibre | Synthetic fibre |
| 4. Steel pipes | PVC pipes |

(ii) (a) Petroleum is oil obtained from sedimentary rocks of the earth. So it is called mineral oil. Two uses are as follows :
(1) as a fuel
(2) as a raw material for various petrochemical products.
(b) Limestone is used as a source of raw material in chemical industries for making soda ash, caustic soda, bleaching powder, etc. It is also used in making paper and cement.

(iii) 1. Most of the mills are old and consists of obsolete machinery which affects the production of sugar in Uttar Pradesh.
2. Short crushing season, only 4 months Nov.-Feb. Workers are without jobs for the rest of the year.
3. The sucrose content is higher in the tropical variety of sugarcane in the south, due to this reason the sugar production is low in the other areas.

(iv) Difference between Heavy Industries and Light Industries.

| Heavy Industries | Light Industries |
|---|---|
| 1. Require heavy machinery with raw material in large quantities. | Light raw materials and light machinery are required. |
| 2. Engage many skilled workers. Women and children are generally not employed. | Engage few workers. Women and children are also employed. |
| 3. Huge capital is required. | Less capital is required. |
| 4. Finished products are heavy in weight, *e.g.*, iron and steel, cotton textiles, fertilisers, locomotives and automobiles. | Finished products are light in weight, *e.g.*, drugs, pharmaceuticals and electrical appliances. |

**Answer 11.**

(i) Two advantages of using waterways:
1. **Cost-effective transportation:** Waterways offer a cost-effective mode of transportation for bulky goods and commodities. It is often cheaper to transport goods by water compared to other modes of transportation like road or air, especially over long distances.
2. **Environmental sustainability:** Waterways are generally considered an environment-friendly mode of transportation. They have lower fuel consumption and carbon emissions compared to road or air transport.

(ii) The importance of inland waterways has declined because the rivers of India face the problem of silting. The depth of water in some rivers decline in the dry season making navigation difficult. It is a slow means of transport.

(iii) Roadways are an important means of transport in India because :
1. Road construction can be undertaken in remote areas, difficult terrains, high altitudes and steep slopes.
2. Road transport provides door-to-door service. So, the cost of transport is reduced.
3. It provides a link between the railways and the ports.
4. For perishable commodities like fruits and vegetables, road transport is the best means.

(Any three)

(iv) **Two advantages of air transport :**
1. It is the fastest and the most comfortable mode of transport. It connects the remote areas of a country.
2. Air transport can move across mountain barriers, sandy deserts, large expanses of water and forests with ease.

**One disadvantage :**
1. It depends on weather conditions. Flights often get delayed due to bad weather.

**Answer 12.**

(i)

| Biodegradable Waste | Non-biodegradable Waste |
|---|---|
| 1. The biodegradable wastes break down and decompose by microorganism like bacteria and fungi in the soil. *E.g.* Wood, Paper etc. | Non-biodegradable waste includes that material which does not breakdown or decompose in the soil. *E.g.* Plastics, Polybags, etc. |
| 2. They do not disturb the ecological balance in Nature. | They disturb the ecological balance in Nature. |

(ii) The recycling symbols with three arrows represent the three steps in the recycling process:
1. Collection and processing of recyclable material.
2. Manufacturing of those materials into new products.
3. Products sold to consumers which then starts the process all over again.

(iii) (a) Vehicle used for transportation of waste should be covered. This prevents the waste from getting scattered. Waste should not be visible to public, nor exposed to open environment.

(b) Daily waste collection is vital as it prevents waste from accumulating and becoming a breeding ground for disease-carrying vectors. Regular collection minimises the risk of diseases, maintains sanitation, and prevents environmental pollution.

(c) Proper waste collection by the Municipality is a fundamental responsibility for maintaining public health and cleanliness. Organised collection of waste prevents the spread of diseases, keeps the environment clean, and ensures that waste is managed efficiently, benefiting the well-being of the community.

(iv) (a) **Composting :** It is a process by which biodegradable organic waste like leaves, vegetable peels etc., are converted into useful manure.

(b) **Segregation :** The process of segregating waste into different categories like biodegradable, non-biodegradable, bio-medical etc.

(c) **Landfills :** Landfills are the area on the outskirts of cities where the wastes are deposited on or in the ground and cover with earth. A major problem associated with landfill involves the contamination of surrounding water supplies, and soil by leachate.

□□

Time allowed: Three

## General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will not be allowed to write during first 15 minutes.*
*This time is to be spent in reading the question paper.*
***The time given at the head of this Paper is the time allowed for writing the answers.***
*Attempt all questions from* ***Section A*** *and* ***any four*** *questions from* ***Section B.***
***All working, including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer.***
***Omission of essential working will result in loss of marks.***
*The intended marks for questions or parts of questions are given in brackets [ ]*
***Mathematical tables are provided.***

# Questions

## ection-A (Attempt all questions from this Section) [40 M

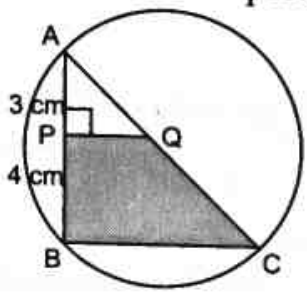
**Question 1.**

**Choose the correct answers to the questions from the given options.**
**(Do not copy the question, write the correct answers only.)**

(i) $(x - 2)$ and $(x + 2)$ are the factors of $x^3 + x^2 - 4x - 4$. The third factor of the given polynomia [Anal

(a) $(x - 1)$
(b) $(x - 4)$
(c) $(x + 1)$
(d) $(x + 4)$

(ii) In the figure given below, AC is a diameter of the circle.
AP = 3 cm and PB = 4 cm and QP ⊥ AB.
If the area of ΔAPQ is 18 cm², then the area of shaded portion QPBC is: [Understanding & Analy

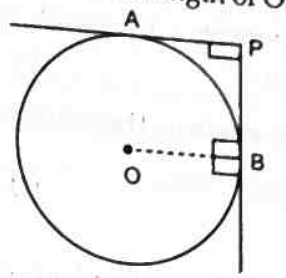



(a) 32 cm²
(b) 49 cm²
(c) 80 cm²
(d) 98 cm²

(iii) Radha deposited ₹400 per month in a recurring deposit account for 18 months.
The qualifying sum of money for the calculation of interest is: [Applicatio

(a) ₹3,600
(b) ₹7,200
(c) ₹68,400
(d) ₹1,36,800

(iv) In the given diagram, the radius of the circle with centre O is 3 cm. PA and PB are the tangents to the circle which are at right angle to each other. The length of OP is: **[Analysis & Evaluation]**




(a) $\frac{3}{\sqrt{2}}$ cm (b) 3 cm (c) $3\sqrt{2}$ cm (d) $6\sqrt{2}$ cm

(v) **Assertion (A):** If $\sec\theta + \tan\theta = a$ and $\sec\theta - \tan\theta = b$ then $ab = 1$.
**Reason (R):** $\sec^2\theta - \tan^2\theta = 1$. **[Analysis & Evaluation]**

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(vi) A solid sphere is cut into two identical hemispheres.
**Assertion (A):** The total volume of two hemispheres is equal to the volume of the original sphere.
**Reason (R):** The total surface area of two hemispheres together is equal to the surface area of the original sphere. **[Analysis]**

(a) (A) is true, (R) is false.
(b) (A) is false, (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(vii) Given that the sum of the squares of the first seven natural numbers is 140, then their mean is: **[Understanding & Evaluation]**

(a) 20 (b) 70 (c) 280 (d) 980

(viii) A bag contains 3 red and 2 blue marbles. A marble is drawn at random. The probability of drawing a black marble is: **[Application]**

(a) 0 (b) $\frac{1}{5}$ (c) $\frac{2}{5}$ (d) $\frac{3}{5}$

(ix) If matrix A= $[-1\ \ 2]$ and matrix B = $\begin{bmatrix} 3 \\ 4 \end{bmatrix}$, then matrix AB is equal to: **[Analysis]**

(a) $[-3]$ (b) $[8]$ (c) $[5]$ (d) $\begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}$

(x) A mixture of paint is prepared by mixing 2 parts of red pigments with 5 parts of the base. Using the given information in the following table, find the values of $a$, $b$ & $c$ to get the required mixture of paint. **[Application & Evaluation]**

| Parts of red pigment | 2 | 4 | $b$ | 6 |
|---|---|---|---|---|
| Parts of base | 5 | $a$ | 12.5 | $c$ |

(a) $a = 10, b = 10, c = 10$
(b) $a = 5, b = 2, c = 5$
(c) $a = 10, b = 5, c = 10$
(d) $a = 10, b = 5, c = 15$

(xi) An article which is marked at ₹1,200 is available at a discount of 20% and the rate of GST is 18%. The amount of SGST is: **[Analysis & Evaluation]**

(a) ₹216.00 (b) ₹172.80 (c) ₹108.00 (d) ₹86.40

(xii) The sum of money required to buy 50, ₹40 shares at ₹38.50 is: **[Application]**

(a) ₹1,920 (b) ₹1,924 (c) ₹1,925 (d) ₹1,952

(xiii) The roots of quadratic equation $x^2 - 1 = 0$ are: [Analysis & Evaluation]

(a) 0, 0 (b) 1, 1 (c) $-1, -1$ (d) $+1, -1$

(xiv) Which of the following equations represents a line equally inclined to the axes? [Analysis & Evaluation]

(a) $2x - 3y + 7 = 0$ (b) $x - y = 7$ (c) $x = 7$ (d) $y = -7$

(xv) Given, $x + 2 \leq \frac{x}{3} + 3$ and $x$ is a prime number. The solution set for $x$ is: [Understanding & Analysis]

(a) $\phi$ (b) {0} (c) {1} (d) {0, 1}

**Question 2.**

(i) While factorizing a given polynomial, using remainder & factor theorem, a student finds that $(2x + 1)$ is a factor of $2x^3 + 7x^2 + 2x - 3$. [4]

(a) Is the student's solution correct stating that $(2x + 1)$ is a factor of the given polynomial?

(b) Give a valid reason for your answer. [Analysis & Application]

Also, factorize the given polynomial completely.

(ii) P is a point on the $x$-axis which divides the line joining A(– 6, 2) and B(9, – 4). Find: [4]

(a) the ratio in which P divides the line segment AB.

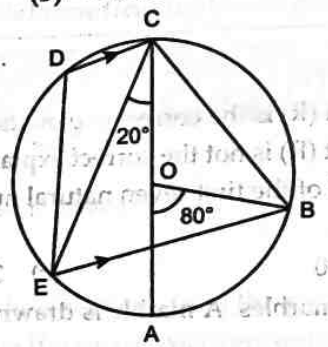
(b) the coordinates of the point P.

(c) equation of a line parallel to AB and passing through (–3, –2). [Analysis & Evaluation]

(iii) In the given figure AC is the diameter of the circle with centre O. CD is parallel to BE. [4]

$\angle AOB = 80°$ and $\angle ACE = 20°$. Calculate [Analysis & Evaluation]

(a) $\angle BEC$ (b) $\angle BCD$ (c) $\angle CED$




**Question 3.**

(i) – 11, – 7, – 3, ....., 49, 53 are the terms of a progression. [4]

Answer the following:

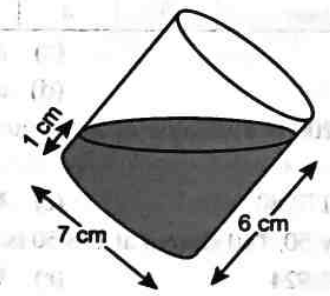
(a) What is the type of progression?

(b) How many terms are there in all?

(c) Calculate the value of middle most term. [Analysis & Evaluation]

(ii) In the diagram given below, a tilted right circular cylindrical vessel with base diameter 7 cm contains a liquid. When placed vertically, the height of the liquid in the vessel is the mean of two heights shown in the diagram. Find the area of wet surface, when the cylinder is placed vertically on a horizontal surface.

$\left(\text{Use } \pi = \frac{22}{7}\right)$ [4] [Application & Evaluation]



(iii) Use a ruler and compass to answer this question. [5]

(a) Construct a circle of radius 4.5 cm and draw a chord AB of length 6.5 cm.

(b) At A, construct $\angle CAB = 75°$, where C lies on the circumference of the circle.

(c) Construct the locus of all points equidistant from A and B.

(d) Construct the locus of all points equidistant from CA and BA.

(e) Mark the point of intersection of the two loci as P. Measure and write down the length of CP.

**[Analysis & Understanding]**

## Section-B (Attempt any four questions from this Section.) [40 Marks]

**Question 4.**

(i) Ms. Kaur invested ₹8,000 in buying ₹100 shares of a company paying 6% dividend at ₹80. After a year, she sold these shares at ₹75 each and invested the proceeds including the dividend received during the first year in buying ₹20 shares, paying 15% dividend at ₹27 each. Find the: [3]

(a) dividend received by her during the first year.

(b) number of shares purchased by her using the total proceeds. **[Application & Evaluation]**

(ii) Solve the following inequation, write the solution set, and represent it on the real number line. [3]

**[Evaluation]**

$$5x - 21 < \frac{5x}{7} - 6 \le -3\frac{3}{7} + x, x \in R.$$

(iii) Prove the following trigonometry identity: [4]

$$(\sin\theta + \cos\theta)(\text{cosec}\,\theta - \sec\theta) = \text{cosec}\,\theta.\sec\theta - 2\tan\theta.$$ **[Application & Analysis]**

**Question 5.**

(i) In the given figure (not drawn to scale) chords AD and BC intersect at P, where AB = 9 cm, PB = 3 cm and PD = 2 cm. [3]

(a) Prove that $\Delta APB \sim \Delta CPD$.

(b) Find the length of CD.

(c) Find area $\Delta$ APB : area $\Delta$CPD. **[Application & Evaluation]**

(ii) Mr. Sam has a recurring deposit account and deposits ₹600 per month for 2 years. If he gets ₹15,600 at the time of maturity, find the rate of interest earned by him. [3]

**[Application & Evaluation]**

(iii) Using step-deviation method, find mean for the following frequency distribution [4]

| Class | 0-15 | 15-30 | 30-45 | 45-60 | 60-75 | 75-90 |
|---|---|---|---|---|---|---|
| Frequency | 3 | 4 | 7 | 6 | 8 | 2 |

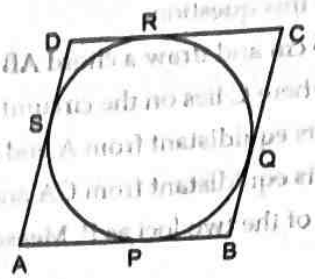
**[Application & Evaluation]**

**Question 6.**

(i) Find the coordinates of the centroid P of the $\Delta ABC$, whose vertices are A(– 1, 3), B(3, – 1) and C(0, 0). Hence, find the equation of a line passing through P and parallel to AB. [3]

**[Analysis & Evaluation]**

(ii) In the given figure, the parallelogram ABCD circumscribe a circle, touching circle at P, Q, R and S. [3]




(a) Prove that: AB = BC **[Analysis & Application]**

(b) What special name can be given to the parallelogram ABCD? **[4]**

(iii) The following bill shows the GST rate and the marked price of articles:

| Rajdhani Departmental Store | | | | |
|---|---|---|---|---|
| S. No. | Item | Marked Price | Discount | Rate of GST |
| (a) | Dry fruits (1 kg) | ₹1,200 | ₹100 | 12% |
| (b) | Packed Wheat flour (5 kg) | ₹286 | Nil | 5% |
| (c) | Bakery products | ₹500 | 10% | 12% |

Find the total amount to be paid (including GST) for the above bill. **[Application & Evaluation]**

**Question 7.** **[5]**

(i) Draw the necessary diagram for this question.

A man on the top of a lighthouse observes the angle of depression of two ships on the opposite sides of the lighthouse as 30° and 50° respectively. If the height of the lighthouse is 80m, find the distance between the two ships. Give your answer correct to the nearest meter.

**(Use Mathematical Tables for this Question)** **[Understanding, Application & Evaluation]**

(ii) The marks of 200 students in a test were recorded as follows: **[5]**

| Marks % | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. of Students | 5 | 7 | 11 | 20 | 40 | 52 | 36 | 15 | 9 | 5 |

Using graph sheet draw ogive for the given data and use it to find the:

(a) median,

(b) number of students who obtained more than 65% marks

(c) number of students who did not pass, if the pass percentage was 35.

**[Application, Analysis & Evaluation]**

**Question 8.**

(i) A box containing cards numbered between 0 and 100 are shuffled and a card is picked at random. Find the probability of getting a card which is: **[3]**

(a) divisible by 6.

(b) not divisible by 6. **[Application & Evaluation]**

(ii) If $x$, $y$ and $z$ are in continued proportion, Prove that: **[3]**

$$\frac{x}{y^2 \cdot z^2} + \frac{y}{z^2 \cdot x^2} + \frac{z}{x^2 \cdot y^2} = \frac{1}{x^3} + \frac{1}{y^3} + \frac{1}{z^3}$$ **[Application & Analysis]**

(iii) A manufacturing company prepares spherical ball bearings, each of radius 7 mm and mass 4 gm. These ball bearings are packed into boxes. Each box can have a maximum of 2156 cm$^3$ of ball bearings. Find the: **[4]**

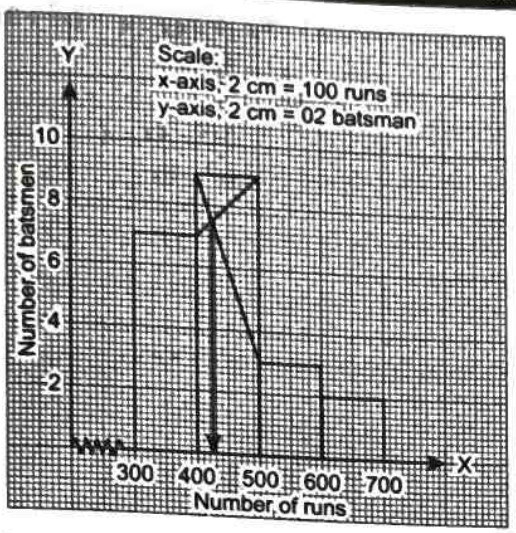
(a) maximum number of ball bearings that each box can have.

(b) mass of each box of ball bearings in kg. **[Analysis, Application & Evaluation]**

$\left(\text{Use } \pi = \frac{22}{7}\right)$

**Question 9.**

(i) Study the graph given below and answer the following: **[3]**




(a) Number of batsmen who scored 500 to 700 runs

(b) Modal class interval

(c) The value of mode **[Analysis & Evaluation]**

(ii) An arithmetic progression (A.P.) has 3 as its first term. The sum of the first 8 terms is twice the sum of the first 5 terms. Find the common difference of the A.P. **[3]**

**[Analysis, Application & Evaluation]**

(iii) The roots of equation $(q-r)x^2 + (r-p)x + (p-q) = 0$ are equal. **[4]**

Prove that: $2q = p + r$, that is, $p$, $q$ & $r$ are in A.P. **[Application & Analysis]**

**Question 10.**

(i) The sum of the squares of three consecutive even numbers is 596. Find the numbers. **[3]**

**[Analysis, Application & Evaluation]**

(ii) Given matrix, $X = \begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, prove that $X^2 = 4X + 5I$. **[3]**

**[Application & Evaluation]**

(iii) Use a graph sheet for this question. Take 1 cm = 1 unit along both the $x$ and $y$ axis. Plot ABCDE, where A(4, 0), B(4, 2), C(2, 2), D(2,4) and E(0,4). **[4]**

(a) Reflect the points A, B, C and D on the y-axis and name them as F, G, H and I respectively.

(a) Join the points A, B, C, D, E, I, H, G and F in order. Reflect the figure ABCDEIHGF on the $x$-axis and name it as AMNPQRSTF.

(a) Give the geometrical name of the closed figure AEFQ. **[Understanding]**

# Answers

## Section-A

**Solution 1.**

(i) (c) $(x + 1)$

**Explanation :**

Let $f(x) = x^3 + x^2 - 4x - 4$

Since, $(x - 2)$ and $(x + 2)$ is a factor of $f(x)$

Then,

$$
\begin{array}{r|l}
x-2 & x^3+x^2-4x-4 \quad (x^2+3x+2 \\
 & x^3-2x^2 \\
 & \underline{-\quad +} \\
 & 3x^2-4x-4 \\
 & 3x^2-6x \\
 & \underline{-\quad +} \\
 & 2x-4 \\
 & 2x-4 \\
 & \underline{-\quad +} \\
 & \times\times
\end{array}
$$

$\Rightarrow \quad x^2+3x+2$

$\Rightarrow \quad x^2+2x+x+2$

$\Rightarrow \quad x(x+2)+(x+2)$

$\Rightarrow \quad (x+1)(x+2)$

The third factor is $(x+1)$

(ii) (c) $80\ cm^2$

**Explanation :**

$\because \quad QP \perp AB$

$\therefore$ In $\Delta APQ$ and $\Delta ABC$,

$\angle APQ = \angle ABC$

$\angle PAQ = \angle BAC$ (common)

By AA similarity

$\Delta APQ = \Delta ABC$

Now, $\dfrac{ar(\Delta APQ)}{ar(\Delta ABC)} = \dfrac{(AP)^2}{(AB)^2}$

Here, $ar(\Delta APQ) = 18\ cm^2$, $AP = 3$ cm, $PB = 4$ cm

$AB = 3 + 4 = 7$

$\Rightarrow \quad \dfrac{18}{ar(\Delta ABC)} = \dfrac{(3)^2}{(7)^2}$

$\dfrac{18}{ar(\Delta ABC)} = \dfrac{9}{49}$

$ar(\Delta ABC) = \dfrac{18 \times 49}{9} = 98\ cm^2$

Now, Area of shaded portion QPBC = $ar(\Delta ABC) - ar(\Delta APQ)$

$= 98 - 18$

$= 80\ cm^2$

(iii) (c) ₹68,400

**Explanation :**

$\because$ Each instalment earn interest for different periods. The instalment earns interest for the full 18 months, the second for 17 months and so on with the last instalment earning interest for just 1 month.

Now,

Qualifying sum of money $= 400 \times (18 + 17 + 16 + ... + 1)$

$= 400 \times \dfrac{n(n+1)}{2}$ [where $n = 18$]

$= 200 \times 18 \times 19$

$= 68{,}400$

(iv) (c) $3\sqrt{2}$

**Explanation :**

Given,

$$OB = 3 \text{ cm}$$

$$PA = PB$$

If

$$\angle OPA = \angle OBP = 90°$$

Then,

$$\angle P = 90°$$

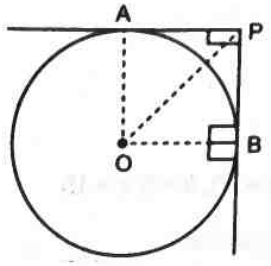
and

$$\angle AOB = 90°$$

also

So, OBPA is square

$$OB = BP = 3 \text{ cm}$$




In $\Delta OBP$ is,

Using Pythagoras theorem,

$$(OP)^2 = (OB)^2 + (BP)^2$$

$$(OP)^2 = (3)^2 + (3)^2$$

$$= 9 + 9$$

$$OP = \sqrt{18} = 3\sqrt{2} \text{ cm}$$

(v) (c) Both (A) and (R) are true and (R) is the correct explanation of (A).

**Explanation :**

Given,

$$\sec\theta + \tan\theta = a$$

and

$$\sec\theta - \tan\theta = b$$

Now,

$$ab = (\sec\theta + \tan\theta)(\sec\theta - \tan\theta)$$

$$= \sec^2\theta - \tan^2\theta$$

$$= 1 \qquad [\because \sec^2\theta - \tan^2\theta = 1]$$

(vi) (a) (A) is true, (R) is false.

**Explanation :**

The total volume of two hemispheres is equal to the volume of the original sphere and the total surface area of two hemispheres together is greater than the surface area of the original sphere.

(vii) (a) 20

**Explanation :**

The sum of the square of the first seven natural numbers = 140 (Given)

$$\text{Mean} = \frac{\text{Total}}{7}$$

$$= \frac{140}{7} = 20.$$

(viii) (a) 0

**Explanation :**

The probability of drawing a black marble is zero (0).

$\because$ A bag contains 3 red and 2 blue marbles not black marbles.

(ix) (c) [5]

**Explanation :**

Given,

$$A = [-1 \quad 2] \text{ and } B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$$

$$AB = [-1 \quad 2]\begin{bmatrix} 3 \\ 4 \end{bmatrix}$$

$$= [-3 + 8] = [5]$$

(x) (d) $a = 10, b = 5, c = 15$

**Explanation :**

According to the question,

$$\frac{2}{5} = \frac{4}{a} = \frac{b}{12.5} = \frac{6}{c}$$

We take,

$$\frac{2}{5} = \frac{4}{a}$$

$$\Rightarrow \quad a = \frac{4 \times 5}{2} = 10$$

Again, we take,

$$\frac{4}{10} = \frac{b}{12.5}$$

$$\Rightarrow \quad b = \frac{4 \times 12.5}{10} = 5$$

Again, we take,

$$\frac{5}{12.5} = \frac{6}{c}$$

$$\Rightarrow \quad c = \frac{6 \times 12.5}{5} = 15$$

Hence, $a = 10, b = 5, c = 15$

(xi) (d) ₹86.40

**Explanation :**

Marked price = 1200

Discount = 20%

$\because$ Discounted price = 1200 – 20% of 1200

= 1200 – 240

= ₹960

Now, $\text{SGST} = \frac{1}{2}\text{GST}$

$$\text{SGST} = \frac{1}{2} \times 18\% = 9\%$$

SGST amount = 9% of 960 = ₹86.40

(xii) (c) ₹1925

**Explanation :**

Number of shares = 50

Price per share = ₹38.50

Sum of money required to buy 50 shares $= 50 \times 38.50$

$= ₹1925$

(xiii) (d) $+1, -1$

**Explanation :**

Given,

$$x^2 - 1 = 0$$

$$(x-1)(x+1) = 0 \qquad [\because a^2 - b^2 = (a-b)(a+b)]$$

$$x - 1 = 0 \text{ and } x + 1 = 0$$

$$x = 1 \text{ and } x = -1$$

Hence,

$$x = \pm 1$$

(xiv) (b) $x - y = 7$

**Explanation :**

Straight line equally inclined to the axes.

Hence,

$$\theta = 45° \text{ or } 135°$$

$\Rightarrow$

$$m = \tan\theta$$

So, slope is $\pm 1$

Now, check the options,

(a)

$$2x - 3y + 7 = 0$$

$$3y = 2x + 7$$

$$y = \frac{2}{3}x + \frac{7}{3}$$

On comparing with the equation $y = mx + c$

Here,

$$m = \frac{2}{3} \neq \pm 1$$

(b) $x - y = 7$

$$y = x - 7$$

On comparing with the equation $y = mx + c$

$$m = 1$$

(c) $x = 7$

The slope of a vertical line is not defined.

(d) $y = -7$

$$y = 0, x = 7$$

$$m = 0 \neq \pm 1$$

Hence, only option (b) $x - y = 7$ represents a line equally inclined to the axes.

(xv) (a) $\phi$

**Explanation :**

Given,

$$x + 2 \leq \frac{x}{3} + 3$$

$$x + 2 - 3 \leq \frac{x}{3} + 3 - 3$$

$$x - 1 \leq \frac{x}{3}$$

$$x - 1 + 1 \leq \frac{x}{3} + 1$$

$$x \le \frac{x}{3} + 1$$

$$x - \frac{x}{3} \le 1$$

$$3x - x \le 3$$

$$2x \le 3$$

$$x \le \frac{3}{2}$$

$$x \le 1.5$$

$\because$ $x$ is a prime number

Then, the solution set of $x = \phi$

**Answer 2.**

(i) (a) Given, $f(x) = 2x^3 + 7x^2 + 2x - 3$

$\because$ Student finds that $(2x + 1)$ is a factor of $f(x)$

Then, put $x = -\frac{1}{2}$

Now,
$$f\left(-\frac{1}{2}\right) = 2\left(-\frac{1}{2}\right)^3 + 7\left(-\frac{1}{2}\right)^2 + 2\left(-\frac{1}{2}\right) - 3$$

$$= -\frac{1}{4} + \frac{7}{4} - 1 - 3$$

$$= -\frac{5}{2} \ne 0$$

$\therefore$ $(2x + 1)$ is not a factor of $f(x)$.

(b) $(2x + 1)$ is not the factor of $2x^3 + 7x^2 + 2x - 3$ because $x = -\frac{1}{2}$ is not the solution of $2x^3 + 7x^2 + 2x - 3$ and the remainder is not equal to zero.

Now put $x = \frac{1}{2}$

$$f\left(\frac{1}{2}\right) = 2\left(\frac{1}{2}\right)^3 + 7\left(\frac{1}{2}\right)^2 + 2\left(\frac{1}{2}\right) - 3$$

$$= \frac{1}{4} + \frac{7}{4} + 1 - 3$$

$$= 2 - 2 = 0$$

$\therefore$ $(2x - 1)$ is a factor of $f(x)$.

Hence, student finds the incorrect factor, the correct factor of $f(x)$ is $(2x - 1)$.

Now

$$\begin{array}{r|l} 2x - 1 & 2x^3 + 7x^2 + 2x - 3 \; (x^2 + 4x + 3 \\ & 2x^3 - x^2 \\ & - \quad + \\ \hline & 8x^2 + 2x \\ & 8x^2 - 4x \\ & - \quad + \\ \hline & 6x - 3 \\ & 6x - 3 \\ & - \quad + \\ \hline & \times\times \end{array}$$

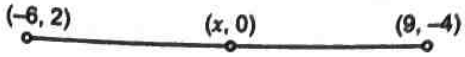
$$f(x) = (2x - 1)(x^2 + 4x + 3)$$

$$f(x) = (2x - 1)(x + 3)(x + 1)$$

(ii) (a) Given,

Points are A (– 6, 2) and B (9, – 4)

Now, using section formula,




$$P(x, y) = \left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n}\right)$$

$$(x, 0) = \left(\frac{9m - 6n}{m+n}, \frac{-4m + 2n}{m+n}\right)$$

Then,

$$\frac{-4m + 2n}{m+n} = 0,$$

$$4m = 2n$$

$$m : n = 1 : 2$$

(b) For coordinate of P

$$x = \frac{9m - 6n}{m+n}$$

$$x = \frac{9 \times 1 - 6 \times 2}{3} = \frac{9 - 12}{3}$$

$$= \frac{-3}{3} = -1$$

Hence, P(–1, 0)

(c) Slope of line AB $(m_{AB}) = \frac{y_2 - y_1}{x_2 - x_1}$

$$m_{AB} = \frac{-4 - 2}{9 + 6} = \frac{-6}{15} = -\frac{2}{5}$$

Equation of line AB

$$(y - y_1) = m_{AB}(x - x_1)$$

$$y + 2 = -\frac{2}{5}(x + 3)$$

$\Rightarrow$ $5y + 10 = -2x - 6$

$\Rightarrow$ $2x + 5y = -16$

(iii) (a) $\angle BOC = 180° - 80° = 100°$ ($\because$ AC is a straight line)

$$\angle BEC = \frac{1}{2}\angle BOC$$

($\because$ Angle at centre is twice the angle in remaining segment)

$$\angle BEC = \frac{1}{2} \times 100° = 50°$$

(b) $\because$ CD || BE

$\angle ECD = \angle BEC = 50°$ (Alternate angle)

$\angle AOB = 80°$ (given)

$$\angle BCA = \frac{1}{2}\angle AOB$$

$$= \frac{1}{2} \times 80° = 40°$$

($\because$ Angle at centre is twice the angle in remaining segment)

Now,

$$\angle BCD = \angle BCA + \angle ACE + \angle ECD$$
$$= 40° + 20° + 50°$$
$$= 110°$$

(c)

$$\angle BED = 180° - \angle BCD \quad (\because \text{cyclic quadrilateral})$$
$$= 180° - 110° = 70°$$
$$\angle CED = \angle BED - \angle BEC$$
$$= 70° - 50° = 20°$$

**Answer 3.**

(i) (a) Given,

$-11, -7, -3, \ldots, 49, 53$

$$d_1 = -7 - (-11) = -7 + 11 = 4$$
$$d_2 = -3 - (-7) = -3 + 7 = 4$$
$$d_1 = d_2$$

Hence, the given progression is A.P.

(b)

$$l = 53$$
$$a + (n-1)d = 53$$
$$-11 + (n-1)4 = 53$$
$$-11 + 4n - 4 = 53$$
$$4n = 53 + 15$$
$$4n = 68$$
$$n = 17$$

(c) Middle term $= \left(\frac{17+1}{2}\right)^{th}$ term $= 9^{th}$ term

$$T_9 = a + 8d$$
$$= -11 + 8 \times 4 = -11 + 32 = 21$$

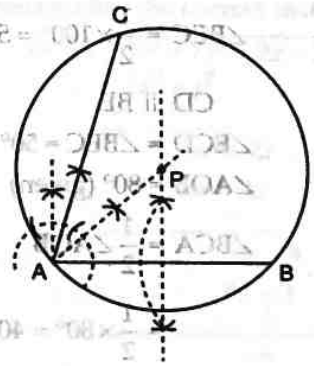
(ii) $h = \frac{1}{2}(1+6)$, given $h = \frac{7}{2}$ and $r = \frac{7}{2}$

When the cylinder is placed vertically on a horizontal surface

Area of wet surface $= \pi r^2 + 2\pi rh$

$$= \pi r(r + 2h)$$
$$= \frac{22}{7} \times \frac{7}{2}\left(\frac{7}{2} + 2 \times \frac{7}{2}\right) = 11\left(\frac{7}{2} + 7\right)$$
$$= 11 \times \frac{21}{2}$$
$$= 115.5 \text{ cm}^2$$

(iii)




(e) Length of CP = 4.9 cm

## Section-B

**Answer 4.**

(i) (a) No. of shares $= \frac{8000}{80} = 100$

Dividend on each ₹100 share at 6%

Dividend per share $= \frac{6}{100} \times 100 =$ ₹6

Total dividend $= 100 \times 6 =$ ₹600

(b) Sale proceeds = ₹75 × 100 = ₹7500

and total proceeds = 7500 + 600 = ₹8100

No. of shares $= \frac{8100}{27} = 300$

(ii) $5x - 21 < \frac{5x}{7} - 6 \le -3\frac{3}{7} + x, x \in R$

$5x - 21 < \frac{5x}{7} - 6$ $\qquad$ $\frac{5x}{7} - 6 \le -3\frac{3}{7} + x$

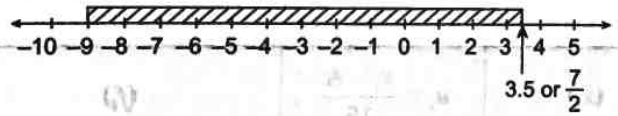
$5x - \frac{5x}{7} < -6 + 21$ $\qquad$ $\frac{5x}{7} - x \le -\frac{24}{7} + 6$

$\frac{35x - 5x}{7} < 15$ $\qquad$ $\frac{5x - 7x}{7} \le \frac{-24 + 42}{7}$

$30x < 105$ $\qquad$ $-2x \le 18$

$x < 3.5$ $\qquad$ $x \ge -9$

$\left\{x : -9 \le x < \frac{7}{2}, x \in R\right\}$




(iii) L.H.S. $= (\sin\theta + \cos\theta)(\text{cosec}\,\theta - \sec\theta)$

$= (\sin\theta + \cos\theta)\left(\frac{1}{\sin\theta} - \frac{1}{\cos\theta}\right)$

$= (\sin\theta + \cos\theta)\left(\frac{\cos\theta - \sin\theta}{\sin\theta.\cos\theta}\right)$

$= \frac{\cos^2\theta - \sin^2\theta}{\sin\theta.\cos\theta} = \frac{1 - 2\sin^2\theta}{\sin\theta.\cos\theta}$ $\qquad$ $(\because 1 - \cos^2\theta = \sin^2\theta)$

$= \frac{1}{\sin\theta.\cos\theta} - \frac{2\sin^2\theta}{\sin\theta.\cos\theta}$

$= \text{cosec}\,\theta.\sec\theta - 2\tan\theta$

L.H.S. = R.H.S. $\qquad$ **Hence Proved.**

**Answer 5.**

(i) (a) In $\Delta APB$ and $\Delta CPD$, $\angle BAP = \angle DCP$ ($\angle$s on same segme

and $\angle ABP = \angle CDP$ ($\angle$s on same segme

$\therefore$ $\Delta APB \sim \Delta CPD$ (AA axiom) **Hence Prove**

(b) $\therefore$ $\Delta APB \sim \Delta CPD$

$$\frac{AB}{CD} = \frac{PB}{PD}$$

$$\frac{9}{CD} = \frac{3}{2}$$

$$CD = \frac{9 \times 2}{3} = 6 \text{ cm}$$

(c) $$\frac{\text{area}(\Delta APB)}{\text{area}(\Delta CPD)} = \frac{BP^2}{DP^2} = \frac{9}{4} = 9:4$$

(ii) Given, P = ₹600, $n$ = 2 years = 2 × 12 = 24 month

$$\text{Qualifying sum} = \frac{P \times n(n+1)}{2}$$

$$= \frac{600 \times 24 \times 25}{2} = 1,80,000$$

$$\text{Interest} = \frac{600 \times 24 \times 25}{2} \times \frac{r}{100} \times \frac{1}{12} = 150\,r$$

Maturity value = ₹15,600

$Pn + I$ = ₹5600

$600 \times 24 + 150\,r$ = ₹15,600

$150r$ = ₹15,600 – ₹14,400

$$r = \frac{1200}{150} = 8\%$$

(iii)

| Class | $(x_i)$ | $u_i = \frac{x_i - A}{15}$ | $(f_i)$ | $f_i u_i$ |
|---|---|---|---|---|
| 0 – 15 | 7.5 | –3 | 3 | –9 |
| 15 – 30 | 22.5 | –2 | 4 | –8 |
| 30 – 45 | 37.5 | –1 | 7 | –7 |
| 45 – 60 | 52.5 = A | 0 | 6 | 0 |
| 60 – 75 | 67.5 | 1 | 8 | 8 |
| 75 – 90 | 82.5 | 2 | 2 | 4 |
| **Total** | | | $\Sigma f_i = 30$ | $\Sigma f_i u_i = -12$ |

$$\text{Mean} = A + \frac{\Sigma f_i u_i}{\Sigma f_i} \times i$$

$$= 52.5 + \frac{-12}{30} \times 15 \qquad (\because i = 15)$$

$$= 52.5 - 6$$

$$= 46.50$$

*Answer 6.*

(i) Given, Vertices are A(–1, 3), B(3, –1), C(0, 0)

Here, $x_1 = -1, y_1 = 3, x_2 = 3, y_2 = -1, z_1 = 0, z_2 = 0$

$$\text{Centroid P of the } \Delta ABC = \left(\frac{x_1+y_1+z_1}{3}, \frac{x_2+y_2+z_2}{3}\right)$$

$$P\left(\frac{-1+3+0}{3}, \frac{3+(-1)+0}{3}\right) = P\left(\frac{2}{3}, \frac{2}{3}\right)$$

Let the line parallel to AB is CD

$$m_{AB} = \frac{-1-3}{3-(-1)} = \frac{-4}{4} = -1$$

$$m_{CD} = -1$$

Required equation $(y - y_1) = m(x - x_1)$

$$y - \frac{2}{3} = -1\left(x - \frac{2}{3}\right)$$

$$3y - 2 = -3x + 2$$

$$3x + 3y = 4.$$

(ii) (a) AP = AS, BP = BQ, DR = DS and CR = CQ

(tangents drawn to a circle from an external point equal)

Adding, (AP + BP) + (DR + CR) = (AS + DS) + (BQ + CQ)

$$AB + DC = AD + BC \rightarrow 2AB = 2\,BC$$

$\therefore$ $AB = BC$ **Hence Proved.**

(b) Since, $AB = BC = CD = DA$

So, ABCD is a rhombus.

(iii)

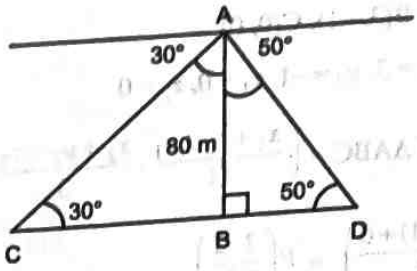
| Rajdhani Departmental Store | | | | | | |
|---|---|---|---|---|---|---|
| **S. No.** | **Item** | **Marked Price** | **Discount** | **Discounted Price** | **GST** | **Tax** |
| 1. | Dry fruits (1 kg) | ₹1,200 | ₹100 | ₹1100 | 12% | $\frac{12\times1100}{100} = 132$ |
| 2. | Packed Wheat flour (5 kg) | ₹286 | Nil | ₹286 | 5% | $\frac{5\times286}{100} = 14.30$ |
| 3. | Bakery products | ₹500 | 10% | ₹450 | 12% | $\frac{12\times450}{100} = 54$ |
| **Total** | | | | ₹1836 | | ₹200.30 |

Hence Total amount to be paid = 1836 + 200.30

= ₹2036.30

**Answer 7.**

**(i)**




In ΔABC,

$$\frac{AB}{BC} = \tan 30°$$

$$\frac{80}{BC} = \frac{1}{\sqrt{3}}$$

$$BC = 80\sqrt{3} = 80 \times 1.7321 \text{ m}$$

In ΔABD,

$$\frac{AB}{BD} = \tan 50° \text{ or } \frac{BD}{AB} = \cot 50°$$

$$\frac{BD}{80} = 0.8391$$

$$BD = 80 \times 0.8391\text{m}$$

$$CD = BC + BD$$

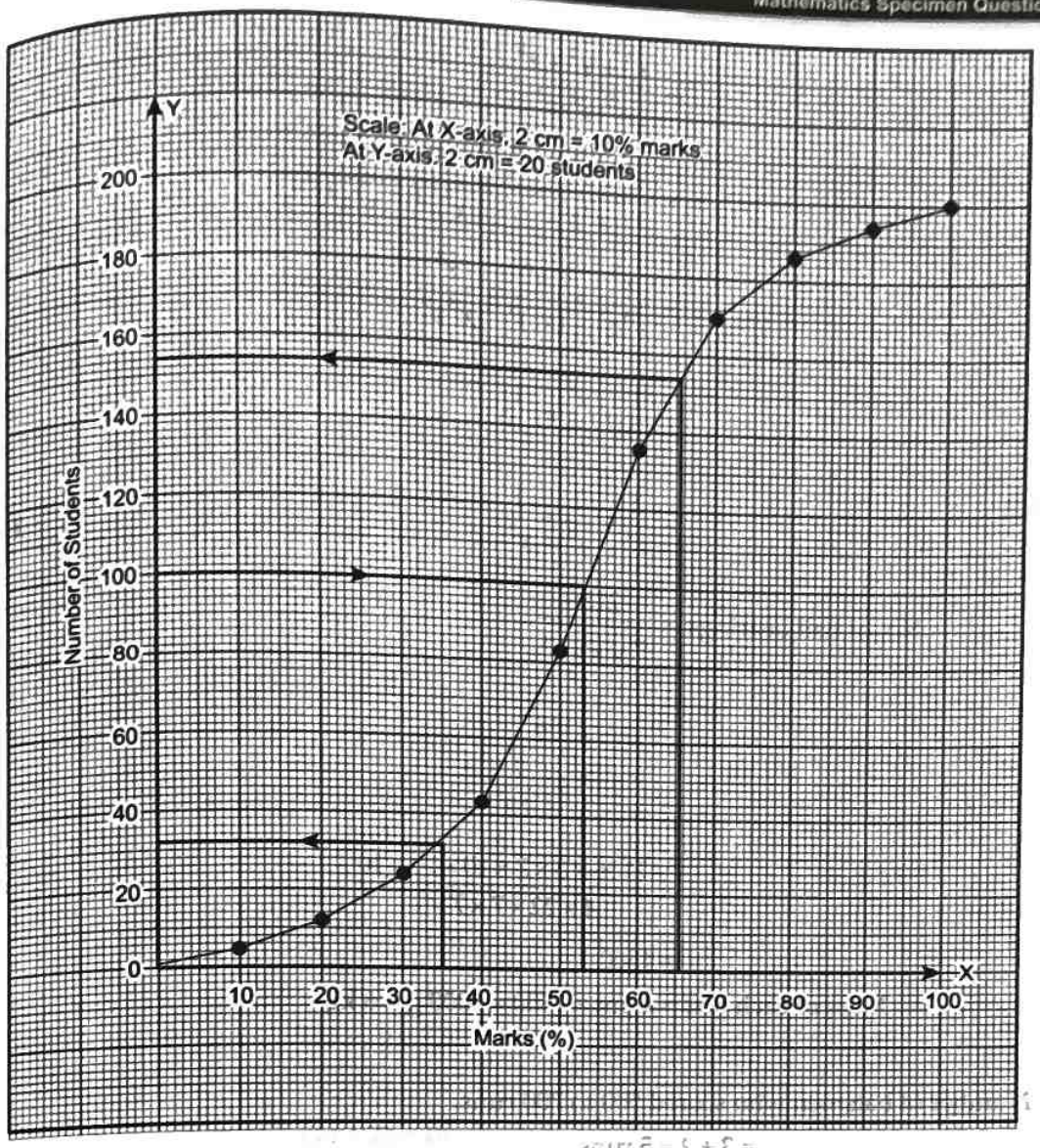
$$= 80 \times 1.732\text{m} + 80 \times 0.839\text{m} = 80\ (1.7321 + 0.8391)\text{m}$$

$$= 80\ (2.5712) = 205.696\text{m} = 206\text{m}$$

**Hence, the distance between the two ships is 206 m.**

**(ii)**

| Marks % | *f* | *cf* |
|---|---|---|
| 0 – 10 | 5 | 5 |
| 10 – 20 | 7 | 12 |
| 20 – 30 | 11 | 23 |
| 30 – 40 | 20 | 43 |
| 40 – 50 | 40 | 83 |
| 50 – 60 | 52 | 135 |
| 60 – 70 | 36 | 171 |
| 70 – 80 | 15 | 186 |
| 80 – 90 | 9 | 195 |
| 90 – 100 | 5 | 200 |




(a) Here, $N = 200$

$$\text{Median} = \frac{N}{2} = \frac{200}{2} = 100\text{th term}$$

$= 53$ (from the graph)

(b) More than 65% = 156

(c) Didn't pass = 31

**Answer 8.**

(i) (a) Possible outcomes = {6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96}

Total outcomes = 99

$$P(\text{divisible by } 6) = \frac{16}{99}$$

(b) $$P(\text{not divisible by } 6) = 1 - \frac{16}{99} = \frac{83}{99}$$

(ii) $\because$ $$\frac{x}{y} = \frac{y}{z} \Rightarrow y^2 = xz$$

$$\text{L.H.S.} = \frac{x}{y^2 \cdot z^2} + \frac{y}{z^2 \cdot x^2} + \frac{z}{x^2 \cdot y^2}$$

$$= \frac{x^3 + y^3 + z^3}{x^2 \cdot y^2 \cdot z^2}$$

$$= \frac{x^3 + y^3 + z^3}{x^3 z^3} = \frac{x^3}{x^3 z^3} + \frac{y^3}{x^3 z^3} + \frac{z^3}{x^3 z^3} \qquad (\because y^2 = xz)$$

$$= \frac{x^3}{x^3 z^3} + \frac{y^3}{(xz)^3} + \frac{z^3}{x^3 z^3}$$

$$= \frac{1}{z^3} + \frac{y^3}{y^6} + \frac{1}{x^3}$$

$$= \frac{1}{z^3} + \frac{1}{y^3} + \frac{1}{x^3}$$

**Hence Proved.**

(iii) (a) No. of ball bearings $= \dfrac{2156}{\frac{4}{3} \times \pi \times r^3}$

$$= \frac{2156}{\frac{4}{3} \times \frac{22}{7} \times \left(\frac{7}{10}\right)^3}$$

$$= \frac{2156 \times 3 \times 7 \times 10 \times 10 \times 10}{4 \times 22 \times 7 \times 7 \times 7}$$

$$= 1500$$

(b) Mass of each box = 4 gm × 1500 = 6000 g = 6 kg

**Answer 9.**

(i) (a) Number of batsmen who scored 500 to 700 runs.

$= 3 + 2 = 5$ runs

(b) Highest frequency is 9

So, the modal classi is 400 – 500

(c) From the graph,

The value of mode = 430 runs.

(ii) Given, $a = 3, S_8 = 2S_5$

$$\frac{8}{2}[2 \times 3 + (8-1)d] = 2\left\{\frac{5}{2}[2 \times 3 + (5-1)d]\right\}$$

$$4[6 + 7d] = 5[6 + 4d]$$

$$24 + 28d = 30 + 20d$$

$$28d - 20d = 30 - 24$$

$$8d = 6$$

$$d = \frac{6}{8} = \frac{3}{4}.$$

(iii) Given, $(q - r)x^2 + (r - p)x + (p - q) = 0$

On comparing with the equation $ax^2 + bx + c = 0$

Here, $a = q - r, b = r - p$ and $c = p - q$

for equal roots, $b^2 = 4ac$

$$(r-p)^2 = 4(q-r)(p-q)$$
$$r^2+p^2-2pr = 4[pq-q^2-pr+qr]$$
$$r^2+p^2-2pr+4pr = 4[pq-q^2+qr]$$
$$(p+r)^2 = 4[q(p+r)-q^2]$$
$$(p+r)^2-4q(p+r)+4q^2 = 0$$

Let $(p+r) = y$

$$y^2-4qy+4q^2 = 0$$
$$(y-2q)^2 = 0$$
$$y-2q = 0$$
$$p+r = 2q$$

**Hence Proved.**

or

er 10.

Let three numbers be $(x-2)$, $x$ and $(x+2)$

According to the question,

$$(x-2)^2+x^2+(x+2)^2 = 596$$
$$(x^2+4-4x)+x^2+(x^2+4+4x) = 596$$
$$3x^2+8 = 596$$
$$3x^2 = 596-8$$
$$3x^2 = 588$$
$$x^2 = 196$$
$$x = 14$$

The required numbers are $(14-2) = 12$

$14$

$(14+2) = 16$

) Given,

$$X = \begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix} \text{ and } I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$X^2 = \begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix}\begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix}$$

$$= \begin{bmatrix} 1\times1+(1)\times(8) & 1\times(1)+(1)\times3 \\ (8)\times1+3\times(8) & (8)\times(1)+3\times3 \end{bmatrix}$$

$$= \begin{bmatrix} 1+8 & 1+3 \\ 8+24 & 8+9 \end{bmatrix}$$

$\therefore$ $$X^2 = \begin{bmatrix} 9 & 4 \\ 32 & 17 \end{bmatrix}$$

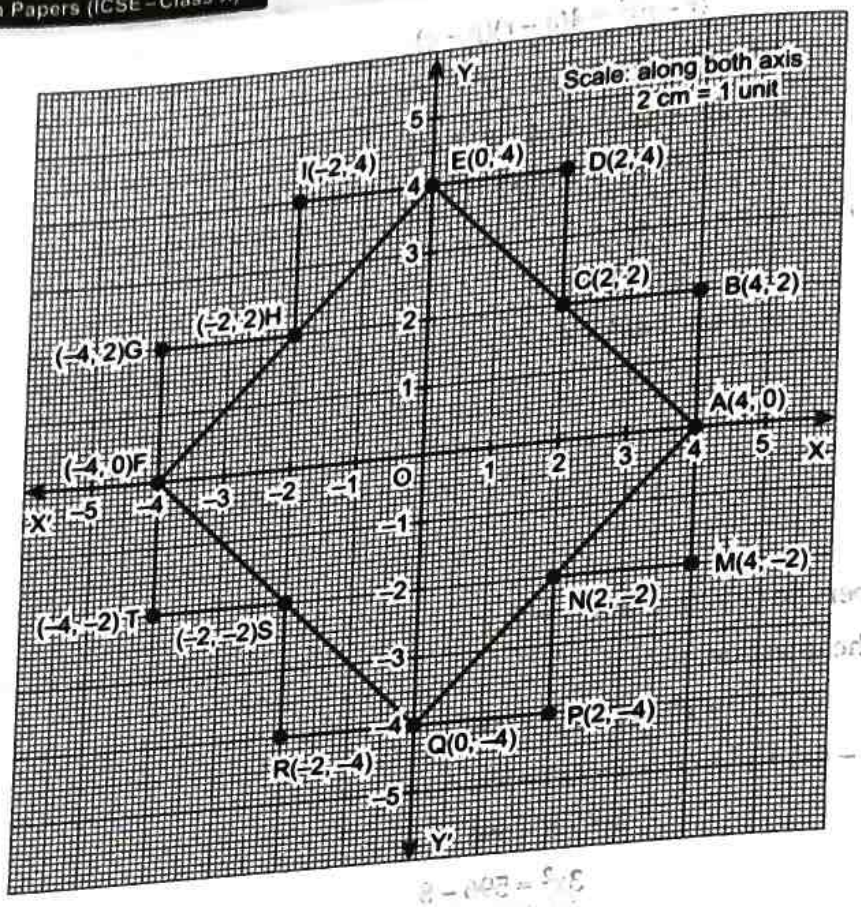
and $$4X = 4\begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix} = \begin{bmatrix} 4 & 4 \\ 32 & 12 \end{bmatrix}$$

$$4X+5I = \begin{bmatrix} 4 & 4 \\ 32 & 12 \end{bmatrix}+\begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix} = \begin{bmatrix} 9 & 4 \\ 32 & 17 \end{bmatrix}$$

**Hence Proved.**

$\therefore$ $$X^2 = 4X+5I.$$

**(iii)**




**(c) AEFQ is a square.**

# 1 Sample Paper

## Mathematics

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**

(i) An article was purchased for ₹1,239 including GST of 18%. Price of the article before GST was: **[Application]**

(a) ₹ 1,000 (b) ₹ 1,100 (c) ₹ 1,050 (d) ₹ 1,239

(ii) If $\sqrt{\frac{2}{3}}$ is a solution of equation $3x^2 + mx + 2 = 0$, then the value of $m$ is: **[Analyze]**

(a) $\pm 2\sqrt{6}$ (b) $-2\sqrt{6}$ (c) $2\sqrt{6}$ (d) 0

(iii) **Statement 1:** If a polynomial $f(x)$ is divided by $(x + \alpha)$, then remainder $= f(-\alpha)$.

**Statement 2:** If a polynomial $f(x)$ is divided by $(ax + b)$, $a \neq 0$, then remainder $= f\left(\frac{-b}{a}\right)$.

Which of the following is valid? **[Analyze]]**

(a) Both the statements are true.

(b) Both the statements are false.

(c) Statement 1 is true, and Statement 2 is false.

(d) Statement 1 is false, and Statement 2 is true.

(iv) If $A = \begin{bmatrix} 5 & 3 \\ -1 & 2 \end{bmatrix}$, find $(A - 2I)$. **[Analyze & Evaluation]**

(a) $\begin{bmatrix} 3 & 3 \\ -1 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 7 & 3 \\ -1 & 4 \end{bmatrix}$ (c) $\begin{bmatrix} 4 & 3 \\ -1 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 5 & 1 \\ -3 & 2 \end{bmatrix}$

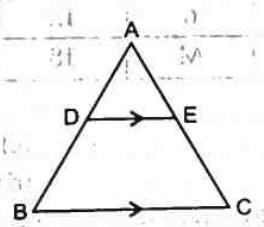
(v) Find the sum of first 14 natural numbers where each number is divisible by 9. **[Analysis & Evaluation]**

(a) 135 (b) 819 (c) 945 (d) 952

(vi) The reflection of the point (2 , 3) in the line $y = 1$ is: **[Analysis & Application]**

(a) (1, 3) (b) (3, 3) (c) (2, 4) (d) (2 , – 1)

(vii) In the given figure, DE || BC. If AB = 6 cm, AD = 2 cm and AC = 9 cm, then the length of CE is: **[Application & Evaluation]**




(a) 3 cm (b) 6 cm (c) 9 cm (d) 12 cm

(viii) **Assertion (A) :** If the solution set of $5x + 4 \le 24$ is {1, 2, 3, 4}, then the replacement set of $x$ is N.

**Reason (R) :** In number system, the symbol N denotes the set of natural numbers *i.e.*, 1, 2, 3, 4, 5, 6, ... **[Analysis & Evaluation]**

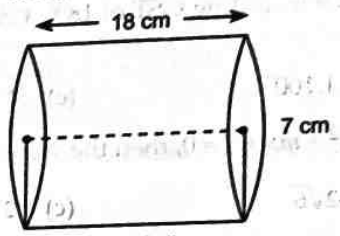
(a) (A) is true, (R) is false.
(b) (A) is false, (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of A.
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(ix) **Assertion (A):** The sum of the first hundred natural numbers, divisible by 5, is 25250.

**Reason (R):** The sum of first $n$ terms of an A.P. is given by $\frac{n}{2}(a + l)$, where, $l$ is the last term. **[Application & Evaluation]**

(a) (A) is true, (R) is false.
(b) (A) is false, (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of A.
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(x) In the given figure, A road roller is cylindrical in shape. Its circular end has a radius 7 cm and its length is 18 cm. Find the area of circular base: **[Analysis, Application & Evaluation]**



Road Roller

(a) 49 cm$^2$
(b) 98 cm$^2$
(c) 154 cm$^2$
(d) 210 cm$^2$

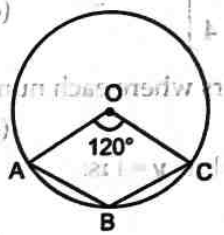
(xi) If $\begin{bmatrix} x-2y & 5 \\ 3 & y \end{bmatrix} = \begin{bmatrix} 6 & 5 \\ 3 & -2 \end{bmatrix}$, then the value of $x$ is : **[Analysis]**

(a) –2 (b) 0 (c) 1 (d) 2

(xii) The equation of the line with slope 2 and passing through (1, 2) is: **[Application]**

(a) $y = 2x - 3$
(b) $y = 2x$
(c) $y = 2x + 2$
(d) $y = 2x + 1$

(xiii) If O is the centre of the circle and the measure of arc ABC is 120°, then ∠ABC will be: **[Understanding & Analysis]**




(a) 70° (b) 120° (c) 125° (d) 240°

(xiv) The table shows the values of $x$ and $y$, where $x$ is proportional to $y$. **[Application & Evaluation]**

| $x$ | 6 | 12 | N |
|---|---|---|---|
| $y$ | M | 18 | 6 |

What are the values of M and N?

(a) M = 4, N = 9
(b) M = 9, N = 3
(c) M = 9, N = 4
(d) M = 12, N = 0

(xv) Find the total possible outcomes when three coins are thrown simultaneously. **[Application]**

(a) 5 (b) 6 (c) 7 (d) 8

**Question 2.**

(i) Katrina opened a recurring deposit account with a Nationalised Bank for a period of 2 years. If the bank pays interest at the rate of 6% per annum and the monthly instalment is ₹ 1,000, find the: **[Analysis & Application]**

(a) interest earned in 2 years.

(b) matured value.

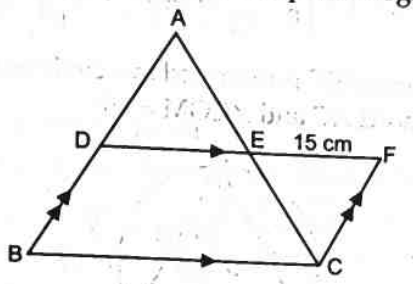
(ii) If $a, b, c$ are in A.P., prove that the following are also in A.P. : **[Application & Analysis]**

(a) $b + c, c + a, a + b$.

(b) $\frac{1}{bc}, \frac{1}{ca}, \frac{1}{ab}$

(c) $\frac{1}{\sqrt{b}+\sqrt{c}}, \frac{1}{\sqrt{c}+\sqrt{a}}, \frac{1}{\sqrt{a}+\sqrt{b}}$

(iii) In the given diagram, ABC is a triangle and BCFD is a parallelogram. **[Analysis & Evaluation]**




AD : DB = 4 : 5 and EF = 15 cm.

Find:

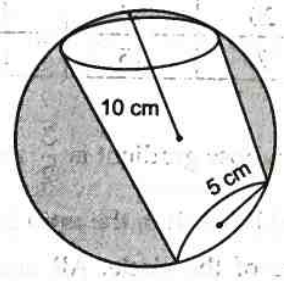
(a) AE : EC

(b) DE

(c) BC

**Question 3.**

(i) A right circular cylinder inscribed in a sphere of radius 10 cm. Find the volume of the shaded region. Give your answer in terms of $\pi$ and rounded to the nearest tenth. **[Application & Evaluation]**




(ii) Points A and B have coordinates (7, – 3) and (1, 9) respectively. Find : **[Analysis, Application & Evaluation]**

(a) The slope of AB,

(b) The equation of the perpendicular bisector of AB,

(c) The value of $p$ if (– 2, $p$) lies on it.

(iii) (For this question, use a graph paper. Scale: 2 cm = 1 unit along both $x$ and $y$-axis.) **[Analysis & Understanding]**

Plot the points A(2, 2) and B (6, –2) on the graph and answer the following:

(a) Reflect points A on origin to point D and write the co-ordinates of point D.

(b) Reflect points A on line $y = -2$ to point C and write the co-ordinates of points C.

(c) Find a point P on CD which is invariant under reflection in $x = 0$, write its co- ordinates.

(d) Write the geometrical name of the closed figure ABCD.

(e) Write the co-ordinates of the point of intersection of the diagonals of ABCD.

## Section B (Attempt any four questions from this section.)

**Question 4.**

(i) Goods/Services are sold from Agra (U.P.) to Kanpur (U.P.) for ₹ 20,000 and then from Kanpur to Jaipur (Rajasthan). If the rate of GST is 18% and the profit made at Kanpur is ₹ 5,000 find : **[Application & Evaluation]**

(a) The net GST payable by the dealer at Kanpur.

(b) The cost of goods/ services at Jaipur.

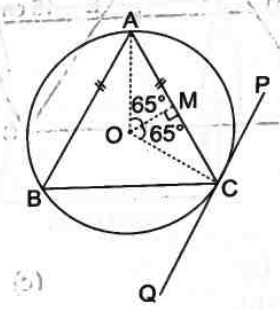
(ii) For what value of '$k$' will the following quadratic equation $(k + 1)x^2 - 4kx + 9 = 0$ have real and equal roots? Solve the equation. **[Application & Analysis]**

(iii) Prove that : $(\text{cosec}\,\theta - \sin\theta)(\sec\theta - \cos\theta)(\tan\theta + \cot\theta) = 1$. **[Application & Analysis]**

**Question 5.**

(i) Determine matrices X and Y, if $X + Y = \begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix}$ and $X - Y = \begin{bmatrix} 3 & 6 \\ 0 & -1 \end{bmatrix}$. **[Application & Evaluation]**

(ii) In the given diagram an isosceles $\Delta ABC$ is inscribed in a circle with centre O. PQ is a tangent to the circle at C. OM is perpendicular to chord AC and $\angle COM = 65°$. **[Application & Evaluation]**




Find:

(a) $\angle ABC$

(b) $\angle BAC$

(c) $\angle BCQ$.

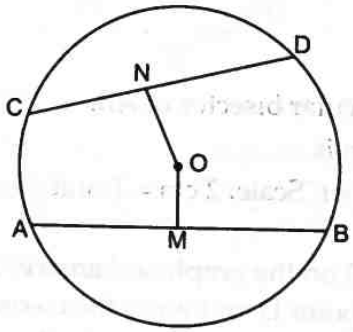
(iii) Calculate the arithmetic mean from the following table : **[Application & Evaluation]**

| Marks : Less than | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|
| No. of students | 2 | 7 | 15 | 18 | 20 |

**Question 6.**

(i) Write down the equation of the line whose gradient is $\frac{3}{2}$ and which passes through P, where P divides the line segment joining A(– 2, 6) and B(3, – 4) in the ratio 2 : 3. **[Analysis & Evaluation]**

(ii) In the figure given, O is the centre of the circle. AB and CD are two chords of the circle. OM is perpendicular to AB and ON is perpendicular to CD. **[Application & Evaluation]**




AB = 24 cm, OM = 5 cm, ON = 12 cm. Find the

(a) radius of the circle.

(b) length of chord CD.

(iii) The following bill shows the GST rate and the marked price of items: **[Application & Evaluation]**

**Grow Shree Groceries**

| S.N. | Item | Marked Price (₹) | Quantity | Rate of GST |
|---|---|---|---|---|
| 1. | Wheat Flour (Branded & Packed) | 35.00 | 5 kg | $x$% |
| 2. | Basmati Rice (Branded & Packet) | 180.00 | 5 kg | 5% |
| 3. | Surf Excel Quick Wash Detergent | 220.00 | $y$ kg | 18% |

Find:

(a) the value of $x$ if the total GST on wheat flour and basmati rice is ₹45.

(b) the value of $y$, if CGST paid for detergent powder is ₹39.60.

(c) total amount to be paid (including GST) for the above bill.

**Question 7.**

(i) Draw the necessary diagram for this question.

From the top of a cliff, the angle of depression of the top and bottom of a tower are observed to be 45° and 60° respectively. If the height of the tower is 20 m.

**[Analysis, Application & Evaluation]**

Find :

(a) the height of the cliff

(b) the distance between the cliff and the tower.

(ii) Marks obtained by 200 students in an examination are given below :

| Marks | 0–10 | 10–20 | 20–30 | 30–40 | 40–50 | 50–60 | 60–70 | 70–80 | 80–90 | 90–100 |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 5 | 11 | 10 | 20 | 28 | 37 | 40 | 29 | 14 | 6 |

Draw an ogive for the given distribution taking 1 cm = 10 marks on one axis and 1 cm = 20 students on the other axis. Using the graph, determine : **[Application, Analysis & Evaluation]**

(a) The median marks.

(b) The number of students who failed if minimum marks required to pass is 40.

(c) If scoring 85 and more marks is considered as grade one, find the number of students who secured grade one in the examination.

**Question 8.**

(i) Solve the following inequation, write the solution set and represent it on the number line : **[Evaluation]**

$$-\frac{x}{3} \le \frac{x}{2} - 1\frac{1}{3} < \frac{1}{6}, x \in R$$

**[Analysis & Application]**

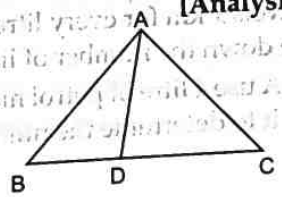
(ii) If $(x-2)$ is a factor of $2x^3 - x^2 - px - 2$.

(a) Find the value of $p$.

(b) With the value of $p$, factorize the above expression completely.

**[Analysis & Evaluation]**

(iii) In $\Delta ABC$, $\angle ABC = \angle DAC$, AB = 8 cm, AC = 4 cm, AD = 5 cm.




(a) Prove that $\Delta ACD$ is similar to $\Delta BCA$.

(b) Find BC and CD.

**Question 9.**

(i) The king, queen and jack of clubs are removed from the deck of 52 playing cards and are well shuffled. If one card is selected from the remaining cards, find the probability of getting: **[Analysis & Evaluation]**

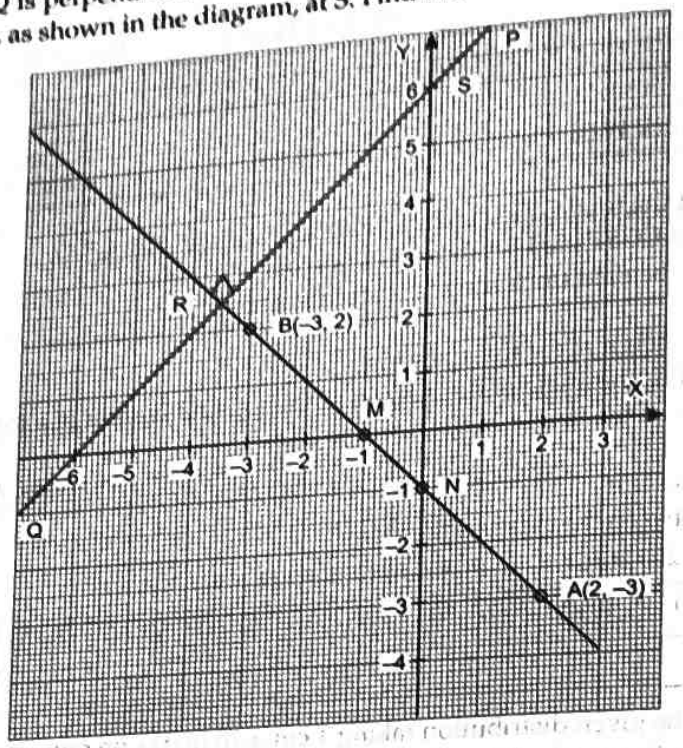
(a) a king,

(b) a club,

(c) the '10' of hearts.

(ii) A buoy is made in the form of a hemisphere surmounted by a right cone whose circular base coincides with the plane surface of hemisphere. The radius of the base of the cone is 3.5 metres and its volume is two-thirds of the hemisphere. Calculate the height of the cone and the surface area of buoy correct to two places of decimal. **[Application, Analysis & Evaluation]**

(iii) The line segment joining A(2, – 3) and B(– 3, 2) is intercepted by the X-axis at the point M and the Y-ax at the point N. PQ is perpendicular to AB produced at R and meets the Y-axis at a distance of 6 uni from the origin O, as shown in the diagram, at S. Find the: **[Analyze & Applicatio**




(a) coordinates of M and N
(b) coordinates of S
(c) slope of AB
(d) euqation of line PQ

**Question 10.**

(i) Using the properties of proportion, solve for $x$, given $\frac{x^4+1}{2x^2} = \frac{17}{8}$. **[Application & Analysi**

(ii) Ruler and compasses in this question. All constructions lines and arcs must be clearly shown, and b sufficient length and clarity to permit assessment : **[Analysis & Creativity**

(a) Construct a triangle ABC, in which AB = 9 cm, BC = 10 cm and ∠ABC = 45°.
(b) Draw a circle, with centre A and radius 2·5 cm. Let it meet AB at D.
(c) Construct a circle to touch the circle with centre A externally at D and also to touch the line BC.

(iii) Car A travels $x$ km for every litre of petrol, while car B travels $(x + 5)$ km for every litre of petrol.
(a) Write down the number of litres of petrol used by car A and car B in covering a distance of 400 km
(b) If car A use 4 litre of petrol more than car B in covering the 400 km, write down the equation in $x$ an solve it to determine the number of litre of petrol used by car B for the journey.

**[Analysis, Application, Evaluation**

# 2 Sample Paper

## Mathematics

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**

(i) Ashi deposits ₹2,500 per month for one year in a bank's recurring deposit account. If the rate of (simple) interest is 8% per annum, then the interest earned by her is: **[Application]**

(a) ₹650 (b) ₹1,200 (c) ₹1,300 (d) ₹1,260

(ii) The roots of the quadratic equation $3x^2 - 14x + 8 = 0$ are: **[Analyze]**

(a) $\frac{1}{3}, 2$ (b) $\frac{1}{2}, 3$ (c) $\frac{2}{3}, 4$ (d) $\frac{3}{4}, 2$

(iii) If $(x + 2)$ is a factor of $3x^3 - x^2 - px - 4$, then the value of $p$ is: **[Analyze]**

(a) 14 (b) 12 (c) 10 (d) 16

(iv) If $\begin{bmatrix} 1 & -2 \\ 8 & x \end{bmatrix} = \begin{bmatrix} 1 & -2 \\ 8 & 6 \end{bmatrix}$, then $x$ is equal to: **[Application & Evaluation]**

(a) 6 (b) ±6 (c) –6 (d) 0

(v) **Statement 1:** The first term and the common difference of the A.P. 2, 7, 12, ..., is 2 and 5 respectively.

**Statement 2:** The 10th term of the A.P. 2, 7, 12, ..., is 47

Which of the Following is valid? **[Analyze & Evaluation]**

(a) Both the statements are true.

(b) Both the statements are false.

(c) Statement 1 is true, and Statement 2 is false.

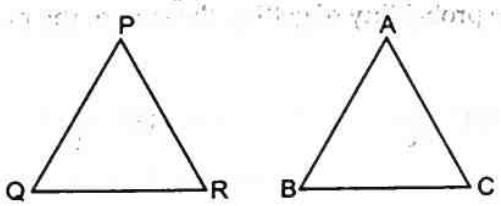
(d) Statement 1 is false, and Statement 2 is true.

(vi) An equation with one variable in which the highest power of the variable is two is known as _____. **[Application]**

(a) Linear equation (c) Cubic equation

(b) Quadratic equation (d) None of these

(vii) If in two triangles ABC and PQR, $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$ then: **[Application]**




(a) $\Delta PQR \sim \Delta CAB$ (b) $\Delta PQR \sim \Delta ABC$ (c) $\Delta CBA \sim \Delta PQR$ (d) $\Delta BCA \sim \Delta PQR$

(viii) **Assertion (A):** The diameter of a cylinder is 7 cm and its height is 16 cm, then the total surface area of the cylinder is 429 $cm^2$.

**Reason (R):** Let $r$ be the radius and $h$ be the height of a solid cylinder, then total surface area of the cylinder is $2\pi r(h + r)$. **[Analysis & Evaluation]**

(a) (A) is true, (R) is false.
(b) (A) is false, (R) is true.
(c) Both (A) and (R) are true and R is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(ix) **Assertion (A):** If $(4a + 5b)(4c - 5d)(4a - 5b)(4c + 5d)$, then $a, c, b, d$ are in proportion. **[Application & Analysis]**

**Reason (R):** If $\frac{x}{y} = \frac{m}{n}$, then $x, y, m, n$ are in proportion.

(a) (A) is true, (R) is false.
(b) (A) is false, (R) is true.
(c) Both (A) and (R) are true and R is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

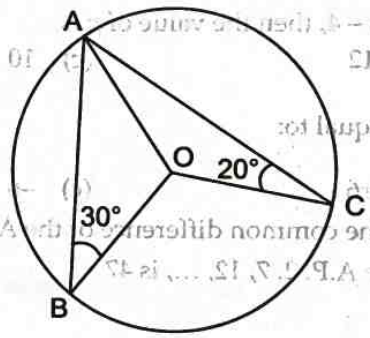
(x) Which of the following is not a linear inequality? **[Evaluation]**

(a) $ax^2 + bx + c < 0$ (c) $ax + b < 0$
(b) $ax + by + c \geq 0$ (d) $ax + by + c \leq 0$

(xi) The ratio in which the line segment joining of (–1, 3) and (4, 2) divided by the $y$-axis is: **[Analysis & Evaluation]**

(a) 1 : 2 (b) 2 : 1 (c) 1 : 4 (d) 4 : 1

(xii) In the given figure, O is the centre of the circle and $\angle OBA = 30°$ and $\angle OCA = 20°$, find $\angle BOC$. **[Understanding & Analysis]**




(a) 100° (b) 110° (c) 120° (d) 130°

(xiii) Find the mean value of the following distribution: **[Application & Evaluation]**

| $x$ | 9 | 8 | 7 | 6 | 5 |
|---|---|---|---|---|---|
| $f$ | 3 | 11 | 14 | 8 | 4 |

(a) 6·71 (b) 7·03 (c) 7·51 (d) 8·25

(xiv) If a card is drawn from a well-shuffled deck of 52 cards, what is the probability of drawing a Jack? **[Analysis & Evalution]**

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{1}{52}$ (d) $\frac{1}{13}$

(xv) If a pair of dice is tossed, the probability of getting the sum of the numbers on the top more than 12 is: **[Analysis & Evaluation]**

(a) 1 (b) $\frac{1}{36}$ (c) $\frac{1}{2}$ (d) 0

**Question 2.**

(i) A manufacturer sells a washing machine to a wholesaler for ₹ 15,000. The wholesaler sells it to a trader at a profit of ₹ 1,200 and the trader in turn sells it to a consumer at a profit of ₹ 1,800. If the rate of GST is 8%, find : **[Application & Evaluation]**

(a) The amount of GST received by the State Government on the sale of this machine from the manufacturer and the wholesaler.

(b) The amount that the consumer pays for the machine.

(ii) The 5th term and the 9th term of an Arithmetic Progression are 4 and – 12 respectively.

**[Analysis & Evaluation]**

Find:

(a) the first term

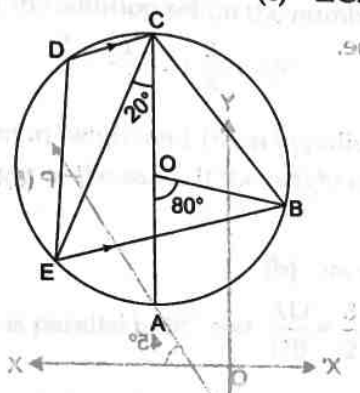
(b) common difference

(c) sum of 16 terms of the AP.

(iii) In the given figure AC is the diameter of the circle with centre O. CD is parallel to BE. $\angle AOB = 80°$ and $\angle ACE = 20°$. Calculate

**[Analysis & Evaluation]**

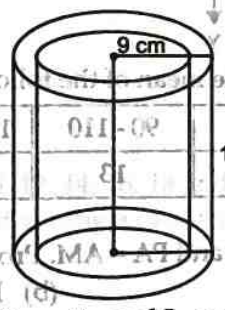
(a) $\angle BEC$ (b) $\angle BCD$ (c) $\angle CED$




**Question 3.**

(i) The volume of a metallic cylindrical pipe is 1408 cm³. Its length is 14 cm and its external radius is 9 cm. Find its thickness.

**[Analysis, Application & Evaluation]**




(ii) Given the equations of two straight lines, $L_1$ and $L_2$ are $x - y = 1$ and $x + y = 5$ respectively. If $L_1$ and $L_2$ intersects at point Q(3, 2). Find:

**[Analysis & Evaluation]**

(a) the equation of line $L_3$ which is parallel to $L_1$ and has $y$-intercept 3.

(b) the value of $k$, if the line $L_3$ meets the line $L_2$ at a point P ($k$, 4).

(c) the coordinate of R and the ratio PQ : QR, if line $L_2$ meets $x$-axis at point R.

(iii) Use graph sheet for this question. Take 2 cm = 1 unit along the axes. **[Analysis & Understanding]**

(a) Plot A(0, 3), B(2, 1) and C(4, –1).

(b) Reflect point B and C in $y$-axis and name their images as B' and C' respectively. Plot and write coordinates of the points B' and C'.

(c) Reflect point A in the line BB' and name its images as A'.

(d) Plot and write coordinates of point A'.

(e) Join the points ABA'B' and give the geometrical name of the closed figure so formed.

## Section-B (Attempt any four questions from this Section.)

**Question 4.**

(i) A shopkeeper bought a washing machine at a discount of 20% from a wholesaler, the printed price of the washing machine being ₹ 18,000. The shopkeeper sells it to a consumer at a discount of 10% on the printed price. If the rate of GST is 8%, find :

**[Application & Evaluation]**

(a) the GST paid by the shopkeeper.
(b) the total amount that the consumer pays for the washing machine.

(ii) Without solving the following quadratic equation, find the value of '$p$' for which the given equation has real and equal roots : [Application & Analysis]

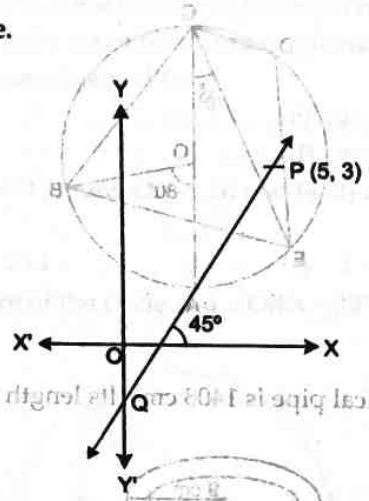
$$x^2 + (p-3)x + p = 0$$

(iii) Prove that : $\frac{1}{\text{cosec A} - \cot A} - \frac{1}{\sin A} = \frac{1}{\sin A} - \frac{1}{\text{cosec A} + \cot A}$ [Application & Analysis]

**Question 5.**

(i) If $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$, find A(BA). [Analysis & Evaluation]

(ii) The line through P (5, 3) intersects Y - axis at Q. [Analyze & Application]
(a) Write the slope of the line.
(b) Write the equation of the line.
(c) Find the coordinates of Q.

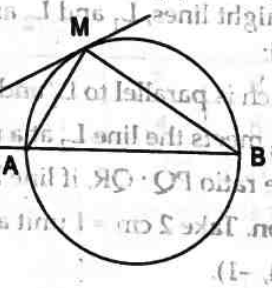



(iii) Using the Step-Deviation Method, find the mean of the following data: [Application & Evaluation]

| Class | 50 – 70 | 70 – 90 | 90 – 110 | 110 – 130 | 130 – 150 | 150 – 170 |
|---|---|---|---|---|---|---|
| Frequency | 18 | 12 | 13 | 27 | 8 | 22 |

**Question 6.**

(i) In the figure, PM is a tangent to the circle and PA = AM. Prove that : [Understanding & Analysis]
(a) ΔPMB is isosceles.
(b) PA × PB = MB².




(ii) Prove that: $\frac{\cos^2\theta}{1-\tan\theta} + \frac{\sin^3\theta}{\sin\theta - \cos\theta} = 1 + \sin\theta\cos\theta$. [Application & Evaluation]

(iii) Mrs. Arora bought the following articles from a departmental store:

| S. No. | Item | Price | Rate of GST | Discount |
|---|---|---|---|---|
| 1. | Hair oil | ₹ 1200 | 18% | ₹ 100 |
| 2. | Cashew nuts | ₹ 600 | 12% | |

Find the: [Analysis & Understanding]
(a) Total GST paid,
(b) Total bill amount including GST.

**Question 7.**

(i) Draw the necessary diagram for this question.
An aeroplane when 3,000 metres high passes vertically above another aeroplane. At an instance, their angles of elevation from an observation point are 60° and 45° respectively. How many metres higher is one plane than the other? **[Understanding, Application & Evaluation]**

(ii) For the following frequency distribution find : **[Application, Analysis & Evaluation]**

(a) Lower quartile
(b) Upper quartile
(c) Inter quartile range
(d) Semi-inter quartile range.

| $x$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| $f$ | 3 | 5 | 9 | 15 | 20 | 16 | 10 | 2 |

**Question 8.**

(i) Solve the inequation and represent the solution set on the number line: **[Evaluation]**

$$-\frac{2}{3} < -\frac{x}{3} + 2 \le \frac{2}{3}, x \in R$$

(ii) A girl fills a cylindrical bucket 32 cm in height and 18 cm in radius with sand. She empties the bucket on the ground and makes a conical heap of the sand. If the height of the conical heap is 24 cm, find: **[Analyze & Evaluation]**

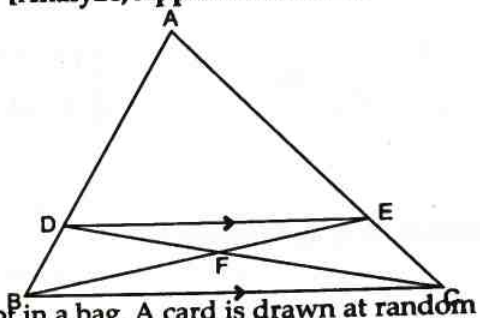
(a) its radius,
(b) its slant height.

(iii) In the figure, ABC is a triangle. DE is parallel to BC and $\frac{AD}{DB} = \frac{3}{2}$. **[Analyze, Application & Evaluation]**

(a) Determine the ratio $\frac{AD}{AB}, \frac{DE}{BC}$.

(b) Prove that: $\Delta DEF \sim \Delta CBF$

Hence, find $\frac{EF}{FB}$.

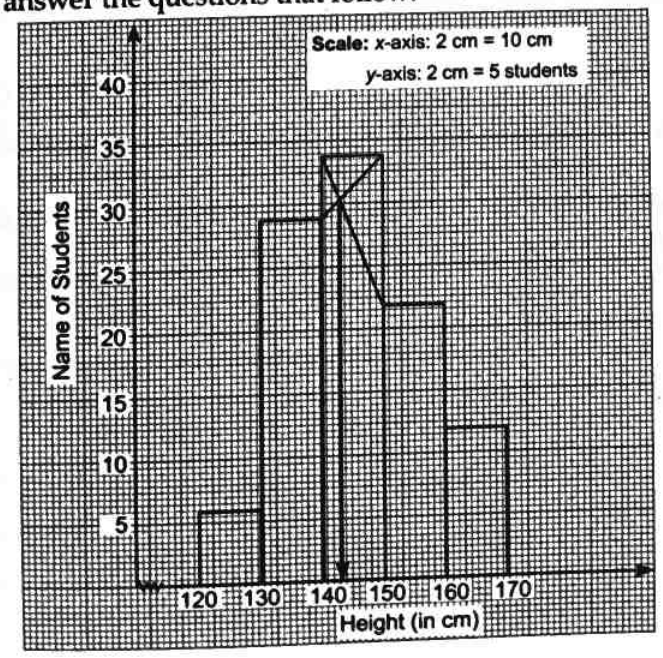



**Question 9.**

(i) Cards bearing numbers 2, 4, 6, 8, 10, 12, 14, 16, 18 and 20 are kept in a bag. A card is drawn at random from the bag. Find the probability of getting a card which is: **[Analyze & Evaluation]**

(a) a prime number.
(b) a number divisible by 4.
(c) a number that is a multiple of 6.
(d) an odd number.

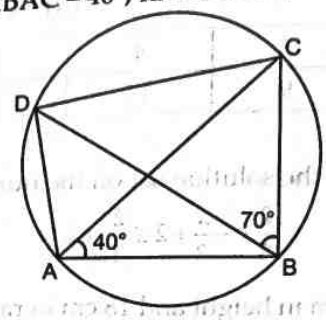
(ii) Study the graph and answer the questions that follow: **[Analysis & Evaluation]**



(a) Make a frequency table for the information provided in the graph.
(b) The number of students whose height is less than 150 cm.
(c) The total number of students.
(d) The modal height.
(e) The difference in the modal height and the mean height, if the average height of the students 145.5 cm.

**[Understanding & Analysis]**

(iii) In the figure, if $\angle DBC = 70°$ and $\angle BAC = 40°$, find $\angle BCD$.




**Question 10.**

(i) If $a : b :: c : d$, prove that $(2a + 3b)(2c - 3d) = (2a - 3b)(2c + 3d)$. **[Application & Analysis]**

(ii) Use Graph paper for this question.

A survey regarding height (in cm) of 60 boys belonging to Class 10 of a school was conducted. The following data was recorded : **[Application, Analysis & Evaluation]**

| Height in cm | No. of boys |
|---|---|
| 135 – 140 | 4 |
| 140 – 145 | 8 |
| 145 – 150 | 20 |
| 150 – 155 | 14 |
| 155 – 160 | 7 |
| 160 – 165 | 6 |
| 165 – 170 | 1 |

Taking 2 cm = height of 10 cm along one axis and 2 cm =10 boys along the other axis draw an ogive of the above distribution. Use the graph to estimate the following :

(a) the median

(b) lower quartile

(c) if above 158 cm is considered as the tall boys of the class. Find the number of boys in the class who are tall.

(iii) The difference between the ages of a man and his son is 25 years now. If the product of their ages, ten years back, be 350, find the present age of the father and his son. **[Analysis & Evaluation]**

□□

# 3 Sample Paper

## Mathematics [Unsolved]

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**

(i) Mr. Raj gets ₹ 7,688 at the end of one year at the rate of 12% per annum in a recurring deposit account. Find the monthly instalment. **[Application]**

(a) ₹500 (b) ₹600 (c) ₹700 (d) ₹800

(ii) If $A = \begin{bmatrix} -2 & 3 \\ 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 3 & 5 \end{bmatrix}$, then find AB. **[Analysis]**

(a) $\begin{bmatrix} 6 & 5 \\ 14 & 14 \end{bmatrix}$ (b) $\begin{bmatrix} 7 & 11 \\ 7 & 13 \end{bmatrix}$ (c) $\begin{bmatrix} 7 & 13 \\ 11 & 7 \end{bmatrix}$ (d) $\begin{bmatrix} 8 & 11 \\ 12 & 13 \end{bmatrix}$

(iii) **Statement 1:** If $6 : x :: 2 : 13$, then $x$ is 39.

**Statement 2:** The third proportional to 9 and 15 is 35.

Which of the statement is valid? **[Application & Evaluation]**

(a) Both the statements are true.

(b) Both the statements are false.

(c) Statement 1 is true, and Statement 2 is false.

(d) Statement 1 is false, and Statement 2 is true.

(iv) **Assertion (A) :** The values of $k$ for which the equation $kx^2 + 1 - 2(k-1)x + x^2 = 0$ has equal roots are 0, 3.

**Reason (R) :** If the roots of a quadratic equation are equal, then its discriminant is greater than zero. **[Analysis & Evaluation]**

(a) (A) is true, (R) is false.

(b) (A) is false, (R) is true.

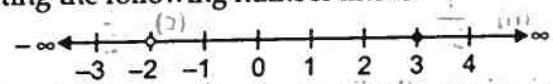
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true, but (R) is not correct explanation of (A).

(v) If $\frac{1}{2}$ is a root of the quadratic equation $x^2 - mx - \frac{5}{4} = 0$, then the value of $m$ is: **[Analyze]**

(a) 2 (b) –2 (c) –3 (d) 3

(vi) The solution set representing the following number line is: **[Understanding & Analysis]**



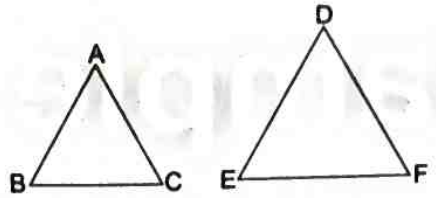

(a) $\{x : x \in R, -2 < x < 3\}$

(b) $\{x : x \in R, -2 < x \leq 3\}$

(c) $\{x : x \in R, -2 \leq x < 3\}$

(d) $\{x : x \in R, -2 \leq x \leq 3\}$

(vii) In the given figure, $\Delta ABC$ is similar to $\Delta DEF$, AB = $(x - 0.5)$ cm, AC = $1.5\,x$ cm, DE = 9 cm, and DF = $3x$ cm. Find the length of AB. **[Application & Analysis]**




(a) 4 cm (b) 3 cm (c) 4.5 cm (d) 3.5 cm

(viii) Find the curved surface area of the solid cylinder of diameter 21 cm and height 15 cm. **[Application & Evaluation]**

(a) 345 $cm^2$ (b) 315 $cm^2$ (c) 630 $cm^2$ (d) 990 $cm^2$

(ix) **Assertion (A):** The sum of 2nd and 7th terms of an A.P. is 30. If its 15th term is 1 less than twice its 8th term, then the A.P. is 1, 5, 9, 13, 17, ... **[Analysis & Evaluation]**

**Reason (R):** The $n^{th}$ term of an A.P. is given by $a + (n - 1)d$, where $a$ and $d$ are the first term and the common difference respectively.

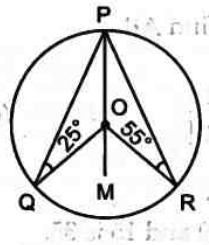
(a) (A) is true, (R) is false.

(b) (A) is false, (R) is true.

(c) Both (A) and (R) are true and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true, but (R) is not correct explanation of (A).

(x) In the given figure, O is the centre of the circle, $\angle OQP = 25°$ and $\angle ORP = 55°$. Find the $\angle QOR$. **[Understanding & Analysis]**




(a) 120° (b) 140° (c) 160° (d) 110°

(xi) If sec A + tan A = $m$ and sec A – tan A = $n$, the value of $mn$ is: **[Application & Analysis]**

(a) 0 (b) 1 (c) sec A (d) tan A

(xii) The median class of the following frequency distribution table is: **[Application & Evaluation]**

| Class | Frequency |
|---|---|
| 0 – 10 | 9 |
| 10 – 20 | 3 |
| 20 – 30 | 12 |
| 30 – 40 | 4 |
| 40 – 50 | 12 |

(a) 10 – 20 (b) 20 – 30 (c) 30 – 40 (d) 40 – 50

(xiii) If a pair of dice is tossed, the probability of getting the sum of the numbers on the top less than 12 is: **[Analysis & Evaluation]**

(a) 1 (b) $\frac{1}{36}$ (c) $\frac{1}{2}$ (d) $\frac{35}{36}$

(xiv) The ratio in which the X-axis divides the line joining the points (– 3, 6) and (2, – 8) is: **[Analysis & Evaluation]**

(a) 2 : 1 (b) 3 : 2 (c) 2 : 3 (d) 3 : 4

(xv) The reflection of the point A(5, – 3) in the point P(3, – 2) is: **[Application]**

(a) (– 5, 3) (b) (– 3, 2) (c) (1, – 1) (d) (4, 0)

**Question 2.**

(i) In a recurring deposit account for 2 years, the total amount deposited by a person is ₹ 9600. If the interest earned by him is one-twelfth of his total deposit, then find: **[Analysis & Evaluation]**

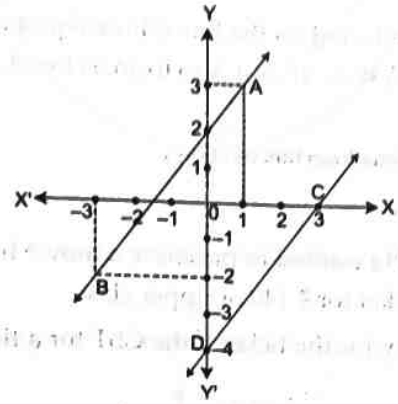
(a) the interest he earns.

(b) his monthly deposit.

(c) the rate of interest.

(ii) From the adjacent figure : **[Analyze & Application]**

(a) Write the coordinates of the points A, B and C




(b) Write the slope of the line AB.

(c) Line through C, drawn parallel to AB, intersects Y-axis at D. Calculate the coordintes of D.

(iii) Prove that : **[Application & Analysis]**

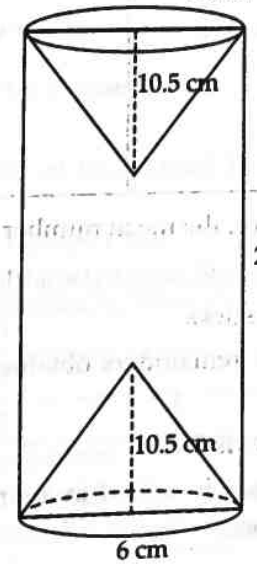
(a) $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \frac{1-\cos\theta}{\sin\theta}$

(b) $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}} = \frac{1+\sin\theta}{\cos\theta}$

**Question 3.**

(i) From a solid wooden cylinder of height 28 cm and diameter 6 cm, two conical cavities are hollowed out. The diameters of the cones are also of 6 cm and height 10.5 cm. **[Application & Evaluation]**

Taking $\pi = \frac{22}{7}$ find the volume of the remaining solid.




(ii) Gagan invested ₹80% of his savings in 10% ₹100 shares at 20% premium and the rest of his savings in 20% ₹50 shares at ₹20% discount. If his incomes from these shares is ₹5,600. Calculator: **[Analysis & Evaluation]**

(a) His investment in shares on the whole

(b) The number of shares of first kind that he bought

(c) Percentage return, on the shares bought on the whole.

(iii) Plot points A(0, 3), B (4, 0), C(6, 2), and D(5, 0). Reflect the points as given below and write their coordinates: **[Analysis & Understanding]**

(a) Reflect A on $x$-axis to A'.

(b) Reflect B on $y$-axis to B'.

(c) Reflect C on $x$-axis to C'.

(d) D remain invariant when reflected on the line whose equation is_____.

(e) Join the points A, B, C, D, C', B, A', B' and A to form a closed figure. Name the closed figure BCDC'.

## Section-B (Attempt any four questions from this Section.)

**Question 4.**

(i) Shyam went to watch a movie. He wanted to purchase a movie ticket for ₹ 90. As the ticket for ₹ 90 was not available, he purchased a ticket for ₹ 140 of upper class.

How much extra GST did he pay for the ticket if the GST for a ticket below ₹ 100 is 18% and GST for a ticket above ₹ 100 is 28%? **[Application & Evaluation]**

(ii) Solve the equation correct to two significant figures : $x^2 - 3(x + 3) = 0$. **[Application & Analysis]**

(iii) Given $\begin{bmatrix} 4 & 2 \\ -1 & 1 \end{bmatrix} M = 6\,I$, where M is a matrix and I is unit matrix of order $2 \times 2$. **[Application & Evaluation]**

(a) State the order of matrix M.

(b) Find the matrix M.

**Question 5.**

(i) The contents of 100 match box were checked to determine the number of match sticks they contained. **[Application, Analysis & Evaluation]**

| Number of match sticks | Number of boxes |
|---|---|
| 35 | 6 |
| 36 | 10 |
| 37 | 18 |
| 38 | 25 |
| 39 | 21 |
| 40 | 12 |
| 41 | 8 |

(a) Calculate correct to one decimal place, the mean number of match sticks per box.

(b) Determine how many matchsticks would have to be added to the total contents of the 100 boxes to bring the mean up exactly 39 match sticks.

(ii) Using the Remainder Theorem, find the remainders obtained when $x^3 + (kx + 8)\,x + k$ is divided by $(x + 1)$ and $(x - 2)$.

Hence, find $k$ if the sum of the remainders is 1. **[Application & Analysis]**

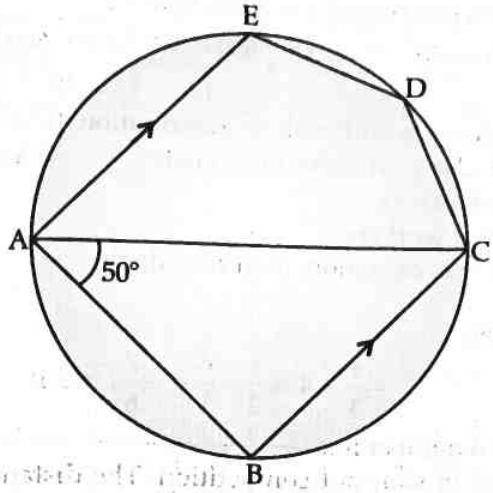
(iii) In the given figure, ABCDE is a pentagon inscribed in a circle such that AC is a diameter and side BC ∥ AE. If ∠BAC = 50°, find giving reasons: **[Understanding & Evaluation]**

(a) ∠ACB

(b) ∠EDC

(c) ∠BEC

Hence, prove that BE is also a diameter.

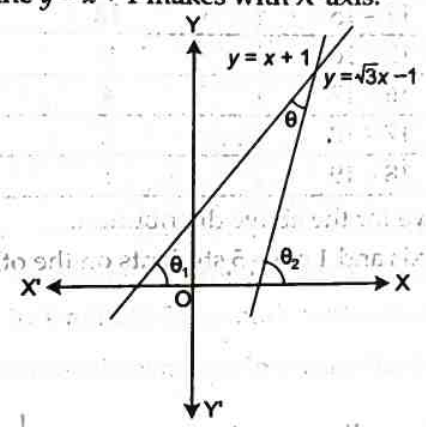



**Question 6.**

(i) The figure alongside (not drawn to scale) represents the lines $y = x + 1$ and $y = \sqrt{3}x - 1$.

**[Analysis & Evaluation]**

(a) Find the angle which the line $y = x + 1$ makes with X-axis.




(b) Find the angle which the line $y = \sqrt{3}x - 1$ makes with X-axis.

(c) Determine angle θ.

(d) Find the point where the line $y = x + 1$ meets X-axis.

(e) Find the point where the line $y = \sqrt{3}x - 1$ meets Y-axis.

(ii) Prove that : $\dfrac{\tan A}{1 - \cot A} + \dfrac{\cot A}{1 - \tan A} = \sec A \operatorname{cosec} A + 1.$ **[Application & Analysis]**

(iii) The table below shows the number of books read by four students over consecutive months in an arithmetic progression: **[Application & Evaluation]**

Reading Progress Tracker – School Library Club

| S. No. | Name | Books Read in 1st Month | Common Difference (Books) | Number of Months |
|---|---|---|---|---|
| (a) | Aryan | 3 | 2 | 5 |
| (b) | Meera | 4 | 1 | 6 |
| (c) | Zoya | 5 | 3 | 4 |

Using the information in the table, calculate:

(a) The total number of books read by each student over the given number of months.

(b) The average number of books read per month for each student (rounded to one decimal place).

**Question 7.**

(i) Draw the necessary diagram for this question.

A pole being broken by the wind the top struck the ground at an angle of 30° and at a distance of 8 m from the foot of the pole. Find the whole height of the pole. **[Understanding, Application & Evaluation]**

(ii) The daily wages of 80 workers in a project are given below :

| Wages (in ₹) | 400 – 450 | 450 – 500 | 500 – 550 | 550 – 600 | 600 – 650 | 650 – 700 | 700 – 750 |
|---|---|---|---|---|---|---|---|
| Number of workers | 2 | 6 | 12 | 18 | 24 | 13 | 5 |

Use a graph paper to draw an ogive for the above distribution. (Use a scale of 2 cm = ₹ 50 on X-axis and 1 cm = 10 workers on Y-axis). Use your ogive to estimate : **[Application, Analysis & Evaluation]**

(a) The median wage of the workers.

(b) The lower quartile wage of workers.

(c) The number of workers who earn more than ₹625 daily.

**Question 8.**

(i) Solve the following inequation: **[Evaluation]**

$$-\frac{x}{3} - 4 \le \frac{x}{2} - \frac{7}{3} < -\frac{7}{6},\ x \in R$$

Represent the solution set on a number line.

(ii) 40 students enter for a game of shot-put competition. The distance thrown (in metres) is recorded below :

| Distance in m | Number of Students |
|---|---|
| 12 – 13 | 3 |
| 13 – 14 | 9 |
| 14 – 15 | 12 |
| 15 – 16 | 9 |
| 16 – 17 | 4 |
| 17 – 18 | 2 |
| 18 – 19 | 1 |

Use a graph paper to draw an ogive for the above distribution.

Use a scale of 1 cm = 1 m on one axis and 1 cm = 5 students on the other axis.

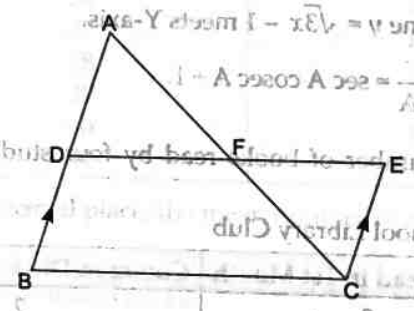
Hence using your graph find : **[Application & Evaluation]**

(a) the median

(b) Upper Quartile

(c) Number of students who cover a distance which is above $16\frac{1}{2}$ m.

(iii) In the given figure, ABC and CEF are two triangles where BA is parallel to CE and AF : AC = 5 : 8. **[Analysis & Evaluation]**




(a) Prove that ΔADF ~ ΔCEF

(b) Find AD, if CE = 6 cm.

**Question 9.**

(i) Study the graph and answer each of the following:

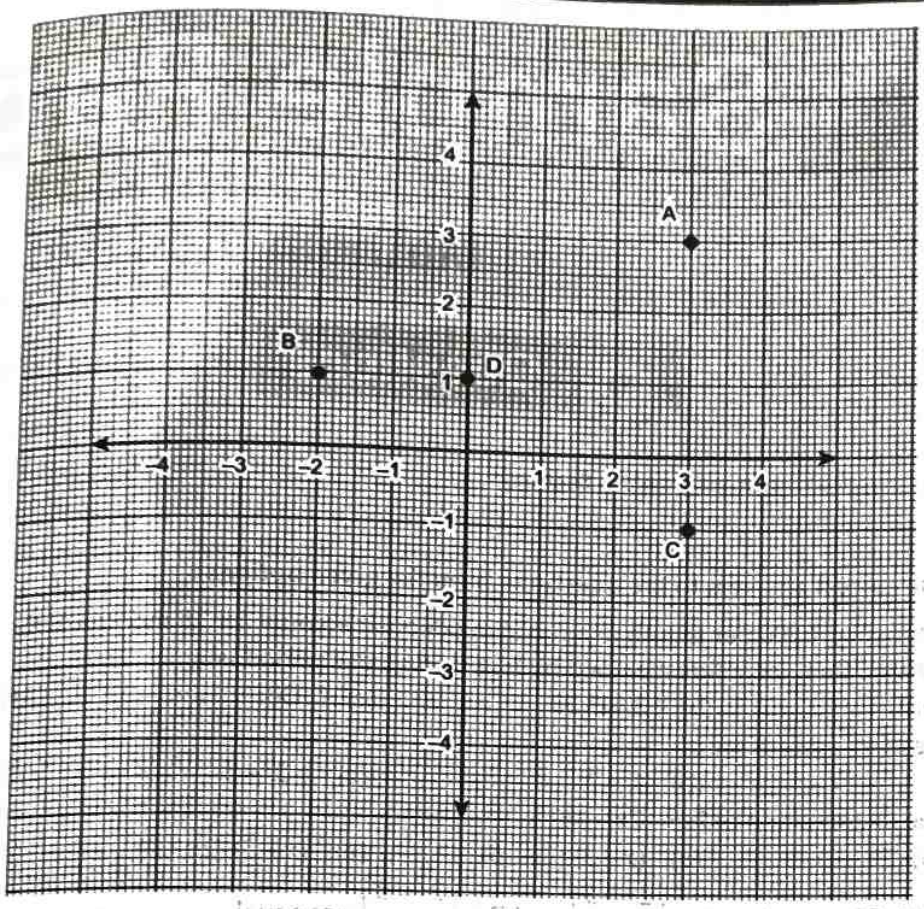
(a) Write the coordinates of points A, B, C & D.

(b) Given that, point C is the image of point A. Name and write the equation of the line of reflection.

(c) Write the coordinates of the image of the point D under reflection in Y-axis.

(d) What is the name given to a point whose image is the point itself?

(e) On joining the points A, B, C, D and A in order, a figure is formed. Name the closed figure. **[Analysis & Evaluation]**



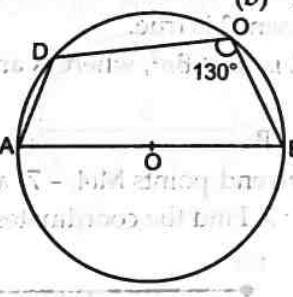

(ii) A bucket is raised from a well by means of a rope which is wound round a wheel of diameter 77 cm. Given that the bucket ascends in 1 minute 28 seconds with a uniform speed of 1.1 m/sec, calculate the number of complete revolutions the wheel makes in raising the bucket. $\left(\text{Take } \pi = \frac{22}{7}\right)$

**[Analysis, Application & Evaluation]**

(iii) In the given figure, AB is the diameter of a circle with centre O and $\angle BCD = 130°$. Find :

**[Application & Evaluation]**

(a) $\angle DAB$ (b) $\angle DBA$




**Question 10.**

(i) If $(2x - 5) : (3x + 1)$ is the duplicate ratio of $2 : 3$, find the value of $x$. **[Application & Analysis]**

(ii) Draw a circle, centre O and radius 3.5 cm. Mark a point P outside the circle at a distance of 6 cm from the circle. Construct two tangents from P to the given circle. Measure and write the length of one tangent.

**[Analysis & Creativity]**

(iii) There are 25 discs numbered 1 to 25. They are put in a closed box and shaken thoroughly. A disc is drawn at random from the box.

Find the probability that the number on the disc is : **[Analysis & Evaluation]**

(a) an odd number

(b) divisible by 2 and 3 both

(c) a number less than 16.

□□

# 4 Sample Paper

## Mathematics [Unsolved]

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**

(i) Satyam deposited ₹ 200 per month in a recurring deposit account for 18 months. If the rate of interest is 9% per annum, then the interest earned by him during this period is: **[Application]**

(a) ₹ 3,856.50 (b) ₹ 3,343.50 (c) ₹ 330 (d) ₹ 256.50

(ii) The zeroes of $x^2 - 2x - 8$ are : **[Analyze]**

(a) 2, – 4 (b) 4, – 2 (c) – 2, – 2 (d) – 4, 4

(iii) What is the factorisation of $2x^2 - 7x - 15$? **[Evaluation]**

(a) $(x + 5)(2x - 3)$ (b) $(x + 3)(2x - 5)$ (c) $(x - 5)(2x + 3)$ (d) $(x - 3)(2x - 5)$

(iv) **Statement 1:** The matrices $A = \begin{bmatrix} 2 & 5 \\ 7 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 5 \\ 7 & -4 \end{bmatrix}$ are equal. **[Analysis]**

**Statement 2:** The Matrices $A = \begin{bmatrix} 2 & 3 & 0 \\ 7 & -6 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 & 3 \\ 7 & -6 & 5 \end{bmatrix}$ are equal.

Which of the following is valid?

(a) Both the statements are true.

(b) Both the statements are false.

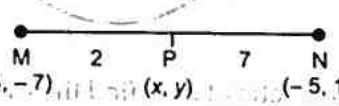
(c) Statement 1 is true, and Statement 2 is false.

(d) Statement 1 is false, and Statement 2 is true.

(v) If the sum of first $n$ terms of an A.P. is $An + Bn^2$, where A and B are constants, the common difference of A.P. will be: **[Analysis & Evaluation]**

(a) A + B (b) A – B (c) 2A (d) 2B

(vi) In the adjoining figure, there are two end-points M(4, – 7) and N(– 5, 11). A point P($x$, $y$) divides the line segment internally in the ratio of 2 : 7. Find the coordinates of the point P. **[Analysis & Evaluation]**




(a) (1, 1) (b) (– 1, 3) (c) (– 2, 5) (d) (2, – 3)

(vii) Determine the slope ($m$) and $y$-intercept ($c$) of the following line: $3y = \sqrt{3}x + 6$. **[Application]**

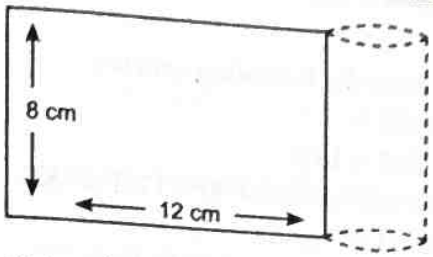
(a) $m = \sqrt{3}, c = \frac{1}{3}$

(b) $m = \frac{1}{\sqrt{3}}, c = \sqrt{3}$

(c) $m = \frac{1}{\sqrt{3}}, c = 2$

(d) $m = 1, c = -1$

(viii) In given figure, a rectangular sheet of size 12 cm by 8 cm is folded around to form a cylinder of height 8 cm. Find the volume of the cylinder. **[Understanding & Analysis]**




(a) 91·6 $cm^3$ (b) 85·4 $cm^3$ (c) 78·6 $cm^3$ (d) 42·6 $cm^3$

(ix) **Assertion (A) :** The number of terms to be taken in the A.P. 9, 17, 25, ... So as to make a sum of 636 is 13.

**Reason (R) :** The sum of first $n$ terms of an A.P. is given by $\frac{n}{2}[2a + (n-1)d]$. **[Analysis & Evaluation]**

(a) (A) is true, (R) is false.

(b) (A) is false, (R) is true.

(c) Both (A) and (R) are true and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(x) Evaluate: $(1 + \tan A)^2 + (1 - \tan A)^2$ **[Application & Analysis]**

(a) 0 (b) 2 sec A (c) $2\sec^2 A$ (d) $2\tan^2 A$

(xi) $A = [3 \ \ -2]$ and $B = \begin{bmatrix} -1 & 4 \\ 2 & 0 \end{bmatrix}$

**Assertion (A):** Product AB of the two matrices A and B is possible.

**Reason (R):** Number of columns of matrix A is equal to number of rows in matrix B. **[Analysis & Evaluation]**

(a) (A) is true, (R) is false.

(b) (A) is false, (R) is true.

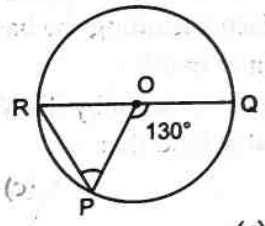
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true but (R) is not the corret explanation of (A).

(xii) If the line $2y = 3x + 2$ and $y = ax + 5$ are perpendicular to each other, find the value of $a$: **[Application & Evaluation]**

(a) $\frac{3}{2}$ (b) $\frac{2}{3}$ (c) $-\frac{2}{3}$ (d) $-\frac{3}{2}$

(xiii) O is the centre of the circle and $\angle POQ = 130°$. Find the $\angle OPR$. **[Application & Evaluation]**




(a) 45° (b) 65° (c) 75° (d) 55°

(xiv) Find the average of the following distribution: **[Application & Evaluation]**

| Variate ($x$) | 10 | 30 | 50 | 70 | 90 |
|---|---|---|---|---|---|
| Frequency ($f$) | 8 | 10 | 10 | 12 | 10 |

(a) 47.5 (b) 51.7 (c) 52.4 (d) 52.8

(xv) The solution of $2x - 5 \le 5x + 4 < 11, x \in R$ is : **[Evaluation]**

(a) $\left\{x : -3 \le x < \frac{7}{5}, x \in R\right\}$

(b) $\left\{x : \frac{-7}{5} < x < 3, x \in R\right\}$

(c) $\left\{x : \frac{7}{5} \le x < 3, x \in R\right\}$

(d) $\left\{x : -3 \le x < -\frac{7}{5}, x \in R\right\}$

**Question 2.** **[Application & Evaluation]**

(i) Mr. Bedi visits the market and buys the following articles :

Medicines costing ₹ 950, GST @ 5%

A pair of shoes costing ₹ 3000, GST @ 18%

A laptop bag costing ₹ 1000 with a discount of 30%, GST @ 18%.

(a) Calculate the total amount of GST paid.

(b) The total bill amount including GST paid by Mr. Bedi.

(ii) Find:

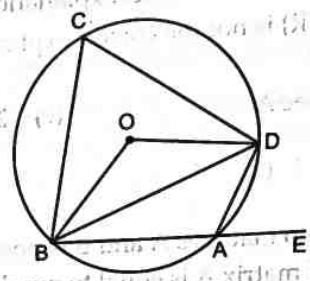
(a) $(\sin\theta + \text{cosec}\,\theta)^2$

(b) $(\cos\theta + \sec\theta)^2$

(c) Using the above results prove the following trigonometry identity. **[Analysis & Evaluation]**

$(\sin\theta + \text{cosec}\,\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$

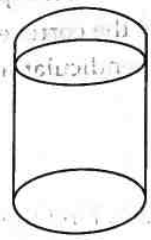
(iii) In the figure given, O is the centre of the circle and $\angle DAE = 70°$. Find giving suitable reasons, the measure of : **[Understanding & Analysis]**




(a) $\angle BCD$ (b) $\angle BOD$ (c) $\angle OBD$

**Question 3.**

(i) With reference to the figure given a alongside, a metal container in the form of a cylinder is surmounted by a hemisphere of the same radius. The internal height of the cylinder is 7 m and the internal radius is 3.5 m. Calculate : **[Analysis, Application & Evaluation]**



(a) The total area of the internal surface, including the base;

(b) The internal volume of the container in $m^3$.

(ii) A line segment joining P (2, –3) and Q (0, –1) is cut by the X-axis at the point R. A line AB cuts the Y-axis at T(0, 6) and is perpendicular to PQ at S. Find the: **[Analysis & Evaluation]**

(a) equation of line PQ

(b) equation of line AB

(c) coordinates of points R and S.

(iii) Use ruler and compass only for the following question. All construction lines and arcs must be clearly shown.

(a) Construct a $\Delta ABC$ in which BC = 6.5 cm, $\angle ABC = 60°$, AB = 5 cm.

(b) Construct the locus of points at a distance of 3.5 cm from A.

(c) Construct the locus of points equidistant from AC and BC.

(d) Mark 2 points X and Y which are at a distance of 3.5 cm from A and also equidistant from AC and BC.

(e) Measure XY. **[Analysis & Understanding]**

## Section-B (Attempt any four questions from this Section.)

**Question 4.**

(i) Mohan has a recurring deposit account in a bank for 2 years at 6% p.a. simple interest. If he gets ₹ 1200 as interest at the time of maturity, find : **[Application & Evaluation]**

(a) the monthly instalment

(b) the amount of maturity.

(ii) If $-5$ is a root of the quadratic equation $2x^2 + px - 15 = 0$ and the quadratic equation $p(x^2 + x) + k = 0$ has equal roots, find the value of $k$. **[Analysis & Application]**

(iii) A study of the yield of 150 tomato plants, resulted in the record: **[Application, Analysis & Evaluation]**

| Tomatoes per Plant | 1 – 5 | 6 – 10 | 11 – 15 | 16 – 20 | 21 – 25 |
|---|---|---|---|---|---|
| Number of Plants | 20 | 50 | 46 | 22 | 12 |

(a) Calculate the mean of the number of tomatoes per plant.

(b) Name the modal class.

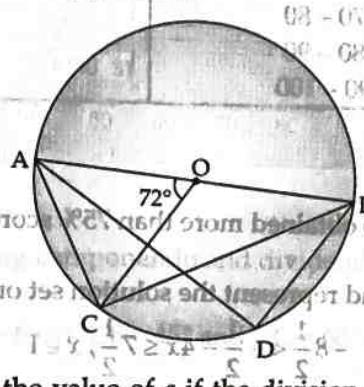
(c) What is the frequency of the class preceding the modal class ?

**Question 5.**

(i) If $A = \begin{bmatrix} 1 & 4 \\ 0 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & x \\ 0 & \frac{-1}{2} \end{bmatrix}$, find the value of $x$ if $AB = BA$. **[Application & Evaluation]**

(ii) In the figure given below, O is the centre of the circle and AB is a diameter. If AC = BD and $\angle AOC = 72°$. Find : **[Analysis & Evaluation]**

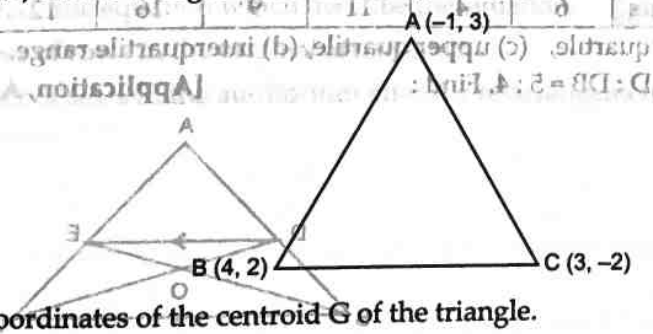
(a) $\angle ABC$ (b) $\angle BAD$ (c) $\angle ABD$




(iii) Using remainder theorem, find the value of $a$ if the division of $x^3 + 5x^2 - ax + 6$ by $(x - 1)$ leaves the remainder $2a$. **[Analysis & Application]**

**Question 6.**

(i) The given figure, shows triangle with vertices A, B and C **[Analysis & Evaluation]**




(a) Find the coordinates of the centroid G of the triangle.

(b) Find the equation of the line through G and parallel to AC.

(ii) Prove that : $\dfrac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$. **[Application & Analysis]**

(iii) Rohan bought the following eatables for his friends: **[Application & Analysis]**

| Soham Sweet Mart: Bill | | | | |
|---|---|---|---|---|
| S.N. | Item | Price | Quantity | Rate of GST |
| 1 | Laddu | ₹500 per kg | 2 kg | 5% |
| 2 | Pastries | ₹100 per piece | 12 pieces | 18% |

Calculate:

(a) Total GST paid.

(b) Total bill amount including GST.

**Question 7.**

(i) Draw the necessary diagram for this question.
A man observes the angle of elevation of the top of a building to be 30°. He walks towards it in a horizontal line through its base. On covering 60 m the angle of elevation changes to 60°. Find the height of the building correct to the nearest metre. **[Understanding, Application & Evaluation]**

(ii) The table below shows the distribution of the scores obtained by 120 shooters in a shooting competition. Using a graph sheet, draw an ogive for the distribution. **[Analysis, Application & Evaluating]**

| Score obtained | Number of shooters |
|---|---|
| 0 – 10 | 5 |
| 10 – 20 | 9 |
| 20 – 30 | 16 |
| 30 – 40 | 22 |
| 40 – 50 | 26 |
| 50 – 60 | 18 |
| 60 – 70 | 11 |
| 70 – 80 | 6 |
| 80 – 90 | 4 |
| 90 – 100 | 3 |

Use your ogive to estimate :

(a) The median.

(b) The interquartile range.

(c) The number of shooters who obtained more than 75% scores.

**Question 8.**

(i) Solve the following inequation and represent the solution set on a number line. **[Evaluation]**

$$-8\frac{1}{2} < -\frac{1}{2} - 4x \le 7\frac{1}{2}, x \in I$$

(ii) The heights of 60 students of a certain school are given in the following frequency distribution table: **[Application, Analysis & Evaluation]**

| Height (in cm) | 151 | 152 | 153 | 154 | 155 | 156 | 157 |
|---|---|---|---|---|---|---|---|
| No. of students | 6 | 4 | 11 | 9 | 16 | 12 | 2 |

Find : (a) median, (b) lower quartile, (c) upper quartile, (d) interquartile range.

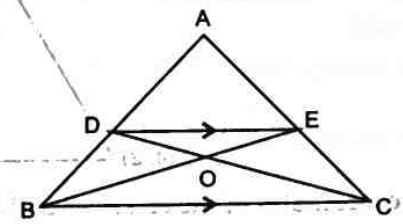
(iii) In the figure, DE || BC and AD : DB = 5 : 4. Find : **[Application, Analysis & Evaluation]**

(a) DE : BC

(b) DO : DC

(c) $\dfrac{\text{Area of } \Delta DOE}{\text{Area of } \Delta DCE}$

(d) $\dfrac{\text{Area of } \Delta DOE}{\text{Area of } \Delta COB}$




**Question 9.**

(i) Tickets numbered from 1 to 20 are mixed up together and then a ticket is drawn at random. What is the probability that the ticket has a number which is a multiple of 3 or 7 ? **[Analysis & Evaluation]**

(ii) A solid metallic sphere of radius 6 cm is melted and made into a solid cylinder of height 32 cm. Find the: **[Analysis, Application & Evaluation]**

(a) radius of the cylinder

(b) curved surface area of the cylinder

(Take $\pi = 3.14$)

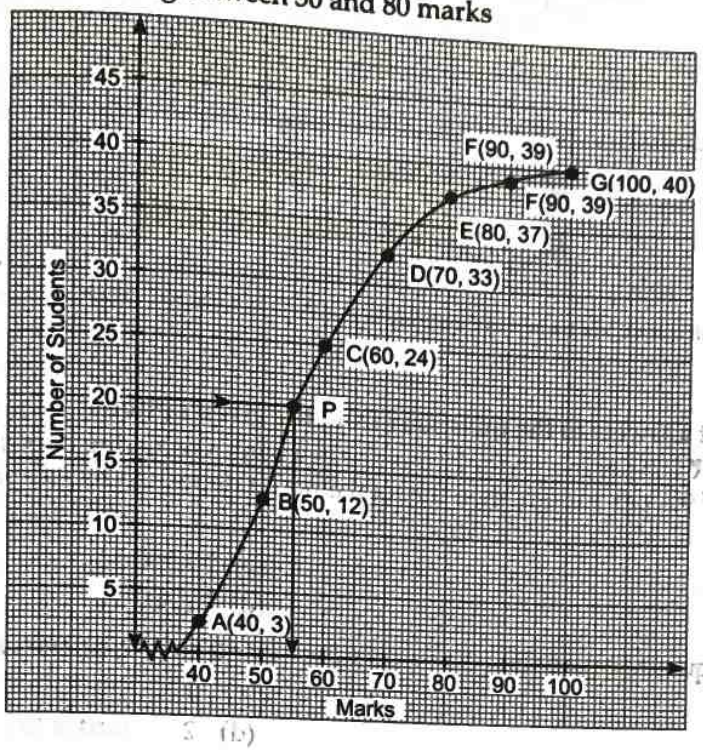
(iii) Study the graph and answer each of the following: **[Analyze & Application]**

(a) Name the curve plotted

(b) Total number of students

(c) The median marks

(d) Number of students scoring between 50 and 80 marks




**Question 10.**

(i) Given $\frac{x^3+12x}{6x^2+8}=\frac{y^3+27y}{9y^2+27}$. Using componendo and dividendo find $x:y$. **[Application & Evaluation]**

(ii) Construct a $\Delta ABC$ in which BC = 6 cm, $\angle B = 45°$ and $\angle C = 60°$. Draw the circumcircle of $\Delta ABC$. **[Analysis & Creativity]**

(iii) In an auditorium, seats were arranged in rows and columns. The number of rows was equal to the number of seats in each row. When the number of rows was doubled and the number of seats in each row was reduced by 10, the total number of seats increased by 300. Find : **[Analysis & Evaluation]**

(a) Write a quadratic equation which describe the situation.

(b) The number of rows in the original arrangement.

(c) The number of seats in the auditorium after the re-arrangement.

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# 5 Sample Paper

## Mathematics [Unsolved]

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**

(i) Deepali deposited ₹ 100 per month for 12 months in a bank's recurring deposit account. If the bank pays interest at a rate of 9% per annum, then the total amount deposited by Deepali during this period is: **[Application]**

(a) ₹ 1,200
(b) ₹ 2,400
(c) ₹ 1,500
(d) ₹ 1,800

(ii) If the roots of the quadratic equation $2kx^2 + (2a + b)x - ab = 0$ are $(-2, a)$, the value of $k$ is: **[Analyze]**

(a) $-1$
(b) $-2$
(c) 1
(d) 2

(iii) What is the remainder, if we divide $6x^3 + x^2 - 2x + 4$ by $(x - 2)$ ? **[Evaluation]**

(a) 48
(b) 52
(c) $-26$
(d) $-24$

(iv) If $A = \begin{bmatrix} 2 & -1 \\ 2 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$ and $C = \begin{bmatrix} -3 & 2 \\ 4 & 0 \end{bmatrix}$ then, $AB + C =$ **[Analysis]**

(a) $\begin{bmatrix} -1 & 0 \\ 6 & 0 \end{bmatrix}$
(b) $\begin{bmatrix} 2 & -2 \\ 2 & 0 \end{bmatrix}$
(c) $\begin{bmatrix} 1 & -2 \\ 6 & 0 \end{bmatrix}$
(d) $\begin{bmatrix} -1 & 7 \\ 9 & 0 \end{bmatrix}$

(v) If 3 times the third term of an AP is equal to 5 times the fifth term, then its eight term is : **[Understanding & Evaluation]**

(a) 0
(b) 1
(c) 2
(d) 3

(vi) **Statement 1:** The coordinates of the centroid of a triangle with vertices at (2, 3), (4, –5) and (–6. 7) are (0, 5/3). **[Analysis & Evaluation]**

**Statement 2:** The slope of the line passing through points (1, 2) and (3, 6) is 2.

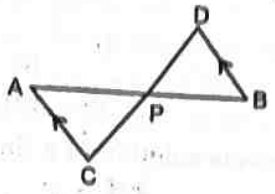
Which of the following is valid?

(a) Both the statements are true.
(b) Both the statements are false.
(c) Statement 1 is true, and Statement 2 is false.
(d) Statement 1 is false, and Statement 2 is true.

(vii) If the base radius of two cylinders are in the ratio 4 : 5 and their heights are in the ratio 5 : 2, then the ratio of their volume is: **[Analysis]**

(a) 8 : 5
(b) 2 : 1
(c) 1 : 2
(d) 5 : 8

(viii) In the given figure, $\Delta APC \sim \Delta BPD$ by which of the following similarity criterion? **[Application]**




(a) SAS
(b) SSS
(c) ASA
(d) AA

(ix) **Assertion (A):** If $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} X = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$, then the order of matrix X is $1 \times 2$.

**Reason (R):** The product AB of two matrices A and B is possible if number of columns in A is equal to the number of rows in B. Also, the order of the product matrix AB is number of rows in AX number of columns in B. **[Application]**

(a) (A) is true and (R) is false
(b) (A) is false and (R) is true
(c) Both (A) and (R) are true and (R) is the correct explanation of (A)
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A)

(x) **Assertion (A):** A die is thrown once and the probability of getting an even number is $\frac{2}{3}$.

**Reason (R):** The sample space for even numbers on a die is {2, 4, 6}. **[Analysis & Evaluation]**

(a) (A) is true and (R) is false
(b) (A) is false and (R) is true
(c) Both (A) and (R) are true and (R) is the correct explanation of (A)
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A)

(xi) Find the mean of the following distribution: **[Analysis & Evaluation]**

| Heights (in cms) | No. of Sticks |
|---|---|
| 15 | 10 |
| 18 | 15 |
| 20 | 10 |
| 22 | 8 |
| 25 | 7 |
| 30 | 10 |

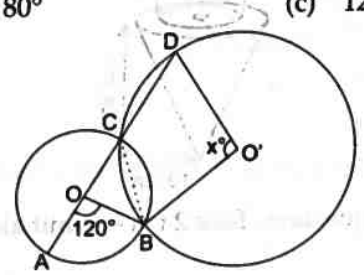
(a) 21.18
(b) 21.36
(c) 21.54
(d) None

(xii) The co-ordinates of the point which divides the line segment joining (– 3, 10) and (6, – 8) in the ratio 2 : 7 are: **[Application & Evaluation]**

(a) (1, 6) (b) (1, – 6) (c) (– 1, – 6) (d) (– 1, 6)

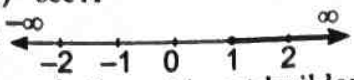
(xiii) In the given Fig. $\angle AOB = 120°$ $\angle BO'D =$ **[Application]**

(a) 100° (b) 80° (c) 120° (d) 90°



(xiv) $\dfrac{\cos A}{1-\sin A} - \tan A =$ **[Application & Evaluation]**

(a) $\cos A$
(b) $\sec A$
(c) $\sin A$
(d) $\operatorname{cosec} A$

(xv) If 

represents solution of a linear inequation in $x$ on a number line, then the solution set in set-builder form is: **[Evaluation]**

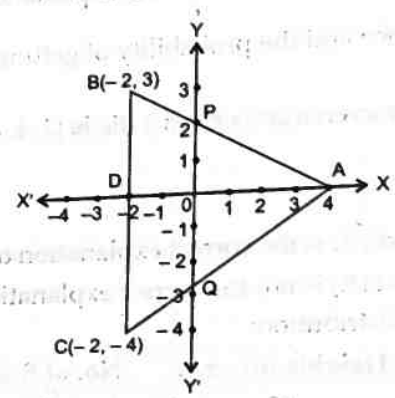
(a) $\{x : x > 1, x \in R\}$
(b) $\{x : x \geq 1, x \in R\}$
(c) $\{x : x > 1, x \in W\}$
(d) $\{x : x \geq 1, x \in W\}$

**Question 2.**

(i) A wholesaler buys a TV from the manufacturer for ₹ 25,000. He marks the price of the TV 20% above his cost price and sells it to a retailer at a 10% discount on the marked price. If the rate of GST is 8%, Find the: **[Application & Evaluation]**

(a) marked price.
(b) retailer's cost price inclusive of tax.
(c) GST paid by the wholesaler.

(ii) In the given figure, ABC is a triangle and BC is parallel to the Y-axis. AB and AC intersects the Y-axis at P and Q respectively. **[Analyze & Application]**




(a) Write the coordinates of A.
(b) Find the ratio in which Q divides AC.
(c) Find the equation of the line AC.

(iii) Prove that : **[Application & Analysis]**

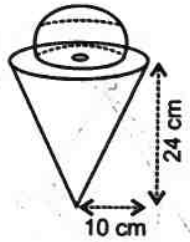
(a) $\sqrt{\dfrac{1-\cos\theta}{1+\cos\theta}} = \operatorname{cosec}\theta - \cot\theta$

(b) $\sqrt{\dfrac{1+\sin\theta}{1-\sin\theta}} = \sec\theta + \tan\theta$

**Question 3.**

(i) The given block is made of two solids : a cone and a hemisphere. If the height and the base radius of the cone are 24 cm and 10 cm respectively and the diameter of the hemisphere is 10 cm; find the total surface area of the block. (Take $\pi = 3.14$)

**[Analysis, Application & Evaluation]**




(ii) Use graph sheet to Solution this question. Take 2 cm = 1 unit alogn both the axes.

**[Analyze & Understanding]**

(a) Plot A, B, C where A (0, 4), B(1,1) and C (4, 0)
(b) Reflect A and B on the $x$-axis and name them as E and D respectively.

(c) Reflect B through the origion and name it F. Write down the coordinates of F.

(d) Reflect B and C on the $y$-axis and name them as H and G respectively.

(e) Join points A, B C, D, E, F, G, H and A in order and name the closed figure formed.

(iii) The triangle A (1, 2), B (4, 4) and C (3, 7) is first reflected in the line $y = 0$ onto triangle A′B′C′ and then triangle A′B′C′ is reflected in the origin onto triangle A″B″C″. **[Analyze & Application]**

Write down the coordinates of:

(a) A′, B′, C′,

(b) A″, B″, C″,

(c) Assign the special name to the quadrilateral BCC″B″ and find its area.

## Section B (Attempt any four questions from this Section.)

**Question 4.**

(i) Shweta purchased a microwave from 'Rajesh Electronics' The discount of 10% was given on the printed price of ₹ 20,000. Rate of GST charged was 28%. Find the purchase price of microwave. Also find the amount if CGST and SGST shown in the tax invoice. **[Application & Evaluation]**

(ii) Solve the equation $4x^2 - 5x - 3 = 0$ and give your answer correct to two decimal places. **[Evaluation]**

(iii) In a class of 40 students, marks obtained by the students in a class test (out of 10) are given below :

| Marks | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Students | 1 | 2 | 3 | 3 | 6 | 10 | 5 | 4 | 3 | 3 |

Calculate the following for the given distribution : **[Application & Evaluation]**

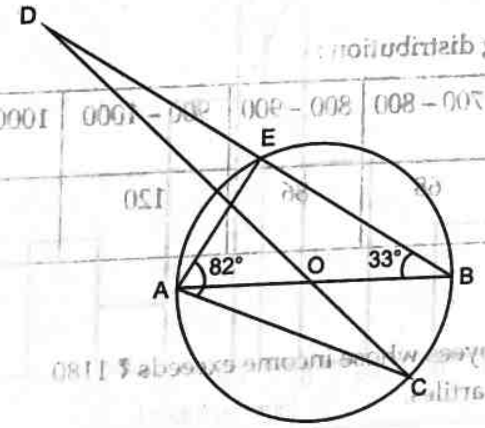
(a) Median

(b) Mode

**Question 5.**

(i) If $A = \begin{bmatrix} 9 & 1 \\ 5 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 5 \\ 7 & -11 \end{bmatrix}$, find matrix X such that $3A + 5B - 2X = 0$. **[Application & Evaluation]**

(ii) AB and CD intersect at the centre O of the circle given in the above diagram. If ∠EBA = 33° and ∠EAC = 82°, find **[Application & Evaluation]**




(a) ∠BAE

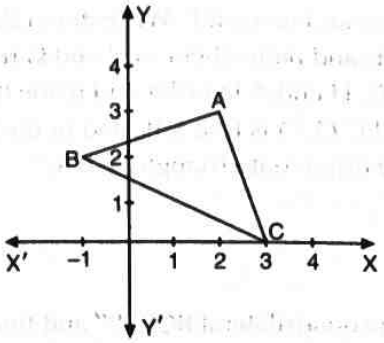
(b) ∠BOC

(c) ∠ODB.

(iii) What must be subtracted from $16x^3 - 8x^2 + 4x + 7$ so that the resulting expression has $(2x + 1)$ as a factor ? **[Application & Analysis]**

**Question 6.**

(i) In the adjoining figure, write **[Analyze & Application]**




(a) The co-ordinates of A, B and C.

(b) The equation of the line through A and parallel to BC.

(ii) Prove that : **[Application & Evaluation]**

$$\sin^4\theta - \cos^4\theta = \sin^2\theta - \cos^2\theta = 2\sin^2\theta - 1 = 1 - 2\cos^2\theta.$$

(iii) The following table shows the monthly savings made by four students over a few months in an arithmetic progression:

Monthly Savings Table – Budget Smart Group

| S.No. | Name | 1st Month Saving (₹) | Common Difference (₹) | Number of Months |
|---|---|---|---|---|
| (a) | Riya | 500 | 100 | 6 |
| (b) | Kunal | 400 | 150 | 5 |
| (c) | Salma | 600 | 200 | 4 |

Find the total amount saved by each student in the given number of months. Then, calculate the combined total savings of all three students. **[Application & Evaluation]**

**Question 7.**

(i) Draw the necessary diagram for this question.

A man standing on the bank of a river observes that the angle of elevation of a tree on the opposite bank is 60°. When he moves 50 m away from the bank, he finds the angle of elevation to be 30°. Calculate : **[Analysis, Application & Evaluation]**

(a) The width of the river, and

(b) The height of the tree.

(ii) Draw ogive for the following distribution :

| Monthly income (in ₹) | 600 – 700 | 700 – 800 | 800 – 900 | 900 – 1000 | 1000 – 1100 | 1100 – 1200 | 1200 – 1300 |
|---|---|---|---|---|---|---|---|
| No. of Employees | 40 | 68 | 86 | 120 | 90 | 40 | 26 |

Hence estimate : **[Application & Evaluation]**

(a) the median income

(b) the percentage of employees whose income exceeds ₹ 1180

(c) the lower and upper quartiles.

**Question 8.**

(i) Graph the solution sets of the following inequalities: **[Application & Evaluation]**

(a) $2x - 4 > 3, x \in W$

(b) $3x - 5 \geq -7, x \in I$.

(ii) Using step-deviation method, find the mean of following frequency distribution : **[Application, Analysis & Evaluation]**

| $x$ | 10 | 30 | 50 | 70 | 90 | 110 |
|---|---|---|---|---|---|---|
| $y$ | 135 | 187 | 240 | 273 | 124 | 151 |

(iii) Find the equation of a line : **[Analysis & Evaluation]**

(a) whose inclination is 45° and $y$-intercept is 5.

(b) with inclination = 60° and passing through (– 2, 5).

(c) passing through the points (– 3, 1) and (1, 5).

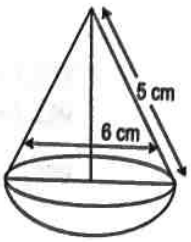
**Question 9.**

(i) A bag contains 5 red balls, 8 white balls, 4 green balls and 7 black balls. If one ball is drawn at random, find the probability that it is : (a) black, (b) red, (c) not green. **[Application & Evaluation]**

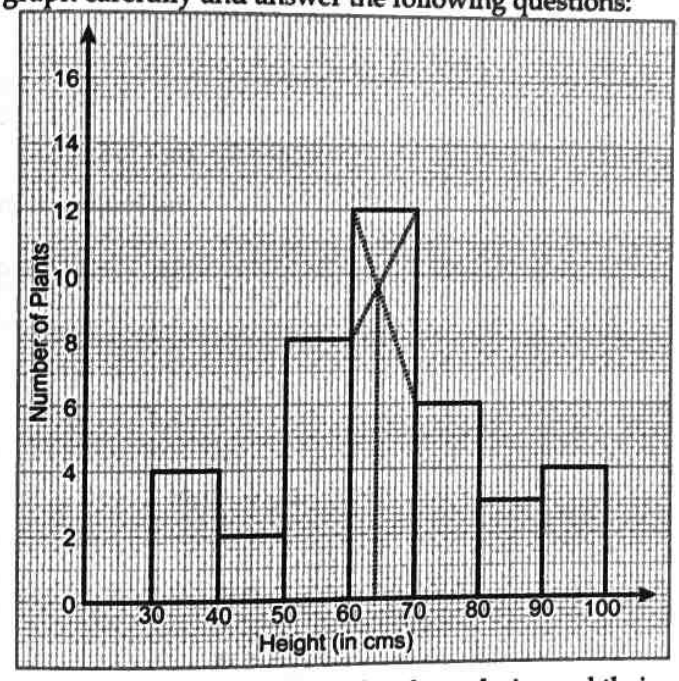
(ii) The given figure represents a hemisphere surmounted by a conical block of wood. The diameter of their bases is 6 cm each and the slant height of the cone is 5 cm. Calculate : **[Analysis, Application & Evaluation]**

(a) the height of the cone.

(b) the volume the solid.




(iii) The given graph with a histogram represents the number of plants of different heights grown in a school campus. Study the graph carefully and answer the following questions: **[Analysis & Evaluation]**




(a) Make a frequency table with respect to the class boundaries and their corresponding frequencies.

(b) State the modal class.

(c) Identify and note down the mode of the distribution.

(d) Find the number of plants whose height range is between 80 cm to 90 cm.

**Question 10.**

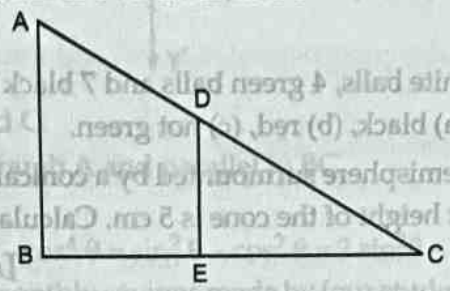
(i) Using properties of proportion, solve for $x$ : $16\left(\frac{a-x}{a+x}\right)^3 = \frac{a+x}{a-x}$. **[Application & Analysis]**

(ii) In the given figure, AB and DE are perpendi-cular to BC. **[Understanding]**

(a) Prove that $\Delta ABC \sim \Delta DEC$

(b) If AB = 6 cm, DE = 4 cm and AC = 15 cm. Calculate CD.

(c) Find the ratio of the area of $\Delta ABC$ : area of $\Delta DEC$.




(iii) Ram wishes to start a 200 $m^2$ rectangular vegetable garden. Since he has 50 m barbed wire, he fences three sides of the rectangular garden letting the compound wall act as the fourth side of the fence. Find the dimensions of the garden. **[Analysis & Evaluation]**

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# 1 Sample Paper

## Mathematics

## Answers

### Section-A

**Answer 1.**

(i) (c) ₹ 1,050

**Explanation:**

Let the price of the article be ₹ $x$.

So,
$$x + \text{GST} = 1{,}239$$
$$\Rightarrow \quad x + 18\% \text{ of } x = 1{,}239$$
$$\Rightarrow \quad x + \frac{18x}{100} = 1{,}239$$
$$\Rightarrow \quad \frac{118x}{100} = 1{,}239$$
$$\Rightarrow \quad x = ₹\ 1{,}050$$

(ii) (b) $-2\sqrt{6}$

**Explanation:**

$$3x^2 + mx + 2 = 0$$

$\sqrt{\frac{2}{3}}$ is a solution of the equation.

So,
$$3 \times \left(\sqrt{\frac{2}{3}}\right)^2 + m \times \sqrt{\frac{2}{3}} + 2 = 0$$
$$3 \times \frac{2}{3} + m\sqrt{\frac{2}{3}} + 2 = 0$$
$$m\sqrt{\frac{2}{3}} = -4$$
$$\Rightarrow \quad m = \frac{-4\sqrt{3}}{\sqrt{2}}$$
$$\Rightarrow \quad m = -2\sqrt{6}$$

(iii) (a) Both the statements are true.

**Explanation:**

For statement 1,

Since, $x + \alpha = x - (-\alpha)$, therefore, when a polynomial $f(x)$ is divided by $(x + \alpha)$ *i.e.*, by $[x - (-\alpha)]$, then remainder = $f(-\alpha)$ = the value of the polynomial at $x = -\alpha$

Statement 1 is correct

For statement 2,

To find the remainder on dividing $f(x)$ by $(ax + b)$ *i.e.*, by $a\left(x+\frac{b}{a}\right)$ *i.e.*, by $a\left[x-\left(\frac{-b}{a}\right)\right]$. Let $Q(x)$ and $r$ be the quotient and remainder respectively on dividing $f(x)$ by $\left[x-\left(\frac{-b}{a}\right)\right]$, then

$$f(x) = \left[x-\left(\frac{-b}{a}\right)\right] Q(x) + r$$

$$= (ax + b).\ \frac{Q(x)}{a} + r$$

This shows that when $f(x)$ is divided by $(ax + b)$, the remainder $= r$, which is the same as obtained on dividing $f(x)$ by $\left[x-\left(\frac{-b}{a}\right)\right]$

Hence, the required remainder $= f\left(\frac{-b}{a}\right)$

Statement 2 is correct.

(iv) (a) $\begin{bmatrix} 3 & 3 \\ -1 & 0 \end{bmatrix}$

**Explanation:**

Given, $A = \begin{bmatrix} 5 & 3 \\ -1 & 2 \end{bmatrix}$

We know $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

Required matrix $= A - 2I$

$$= \begin{bmatrix} 5 & 3 \\ -1 & 2 \end{bmatrix} - 2\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} 5 & 3 \\ -1 & 2 \end{bmatrix} - \begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$$

$$= \begin{bmatrix} 5-2 & 3-0 \\ -1-0 & 2-2 \end{bmatrix}$$

$$A - 2I = \begin{bmatrix} 3 & 3 \\ -1 & 0 \end{bmatrix}$$

(v) (c) 945

**Explanation:**

List of first 14 natural numbers, where each number is divisible by 9 is :
9, 18, 27, ..... .

Clearly, this list forms an A. P.

$\therefore$ First term of A.P. $(a) = 9$

Common difference $(d) = 9$

We know, $S_n = \frac{n}{2}[2a + (n-1)d]$

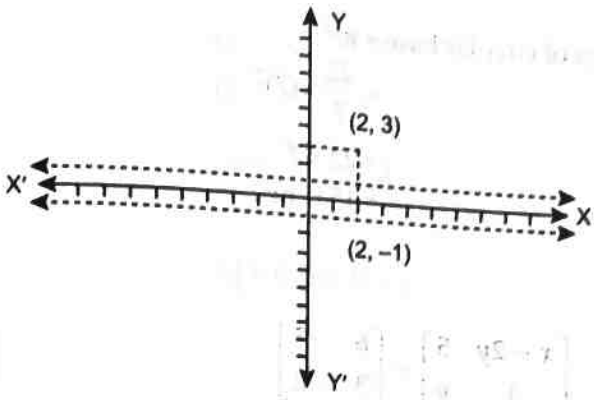
$\therefore$ $S_{14} = \frac{14}{2}[2 \times 9 + (14-1) \times 9]$

$= 7[18 + 117] = 945$

$\therefore$ Required sum $= 945$

(vi) (d) (2, – 1)

**Explanation:**




(vii) (b) 6 cm

**Explanation:**

In ΔADE and ΔABC,

$\angle ADE = \angle ABC$ [Corresponding angles]

$\angle A = \angle A$ [Common angle]

$\therefore \quad \Delta ADE \sim \Delta ABC$ [AA similarity rule]

$\therefore \quad \frac{AD}{AB} = \frac{AE}{AC}$

$\Rightarrow \quad \frac{2}{6} = \frac{AE}{9}$

$\Rightarrow \quad AE = 3$ cm

$\therefore \quad CE = AC - AE$

$= 9 - 3 = 6$ cm.

(viii) (d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

**Explanation:**

We have,

$5x + 4 \le 24$

$\Rightarrow \quad 5x \le 20$

$\Rightarrow \quad x \le 4$

But $x = \{1, 2, 3, 4\}$, which are natural numbers.

$\therefore$ The replacement set of $x$ is N.

(ix) (c) Both (A) and (B) are true and (R) is the correct explanation of (A).

**Explanation:**

First 100 natural numbers divisible by 5 are 5, 10, 15, 20, ...

The above series is an A.P. with $a = 5$, $d = 10 - 5 = 5$ and $n = 100$.

last term $(l) = a + (n-1)d$

$= 5 + (100 - 1)5$

$= 5 + 495$

$= 500$

$S_n = \frac{n}{2}(a + l)$

$S_n = \frac{100}{2}(5 + 500)$

$S_n = 50 \times 505$

$S_n = 25250.$

(x) (c) $154\ cm^2$

**Explanation :**

$$\text{Area of circular base} = \pi r^2$$
$$= \frac{22}{7} \times (7)^2$$
$$= 22 \times 7$$
$$= 154\ cm^2.$$

(xi) (d) 2

**Explanation:**

$$\begin{bmatrix} x-2y & 5 \\ 3 & y \end{bmatrix} = \begin{bmatrix} 6 & 5 \\ 3 & -2 \end{bmatrix}$$

Comparing, we get

$$y = -2$$

and

$$x - 2y = 6$$
$$\Rightarrow \quad x - 2(-2) = 6$$
$$\Rightarrow \quad x + 4 = 6$$
$$\Rightarrow \quad x = 6 - 4 = 2$$

(xii) (b) $y = 2x$

**Explanation:**

Let the equation be $y = mx + c$

As the slope is 2, $\quad y = 2x + c$

As it is passing through (1,2), substituting this in the given equation

$$2 = 2 \times 1 + c$$
$$\Rightarrow \quad c = 0$$

Hence, the equation is $y = 2x$.

(xiii) (b) 120°

**Explanation :**

$$\text{reflex } \angle AOC = 360° - 120° = 240°$$

$\because$ since, the angle subtended at the centre by an arc of a circle is double the angle which this arc subtends at any remaining part of the circumference.

$$\therefore \quad \text{reflex } \angle AOC = 2 \times \angle ABC$$
$$\Rightarrow \quad \angle ABC = \frac{1}{2} \text{ reflex } \angle AOC$$
$$= \frac{1}{2} \times 240° = 120°.$$

(xiv) (c) M = 9, N = 4

**Explanation:**

According to question,

$$\frac{x}{y} = \frac{6}{M} = \frac{12}{18} = \frac{N}{6}$$

We take,

$$\frac{6}{M} = \frac{12}{18}$$

$\Rightarrow$ $$M = \frac{6 \quad 18}{12} = 9$$

Again we take,

$$\frac{12}{18} = \frac{N}{6}$$

$\Rightarrow$ $$N = \frac{12 \quad 6}{18} = 4$$

Hence, we get,

$$M = 9 \text{ and } N = 4$$

(xv) (d) 8

**Explanation:**

No. of possible outcomes $n(S) = n$(HHH, HHT, HTH, HTT, THH, THT, TTH, TTT)
$= 8.$

**Answer 2.**

(i) Since, money deposited = ₹ 1,000 per month *i.e.*, P = ₹ 1,000
and number of months = 2 × 12 = 24 *i.e.*, $n = 24$ and $r = 6\%$

(a) Interest earned in 2 years

$$= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 1000 \times \frac{24\,(24+1)}{2 \times 12} \times \frac{6}{100} = ₹1{,}500.$$ **Ans.**

(b) Matured value = Sum deposited + Interest
= ₹(1,000 × 24) + ₹1,500
= ₹25,500. **Ans.**

(ii) (a) $b + c, c + a, a + b$ will be in A.P.

if $(c + a) - (b + c) = (a + b) - (c + a)$

*i.e.*, if $a - b = b - c$

*i.e.*, if $2b = a + c$

*i.e.*, if $a, b, c$ are in A.P.

Thus, if $a, b, c$ are in A.P.

$\Rightarrow b + c, c + a, a + b$ are in A.P. **Hence Proved.**

(b) Given, $a, b, c$ are in A.P.

$\Rightarrow \frac{a}{abc}, \frac{b}{abc}, \frac{c}{abc}$ are in A.P.

[on dividing each term by $abc$]

$\Rightarrow \frac{1}{bc}, \frac{1}{ca}, \frac{1}{ab}$ are in A.P. **Hence Proved.**

(c) $\frac{1}{\sqrt{b}+\sqrt{c}}, \frac{1}{\sqrt{c}+\sqrt{a}}, \frac{1}{\sqrt{a}+\sqrt{b}}$ will be in A.P.

if $$\frac{1}{\sqrt{c}+\sqrt{a}} - \frac{1}{\sqrt{b}+\sqrt{c}} = \frac{1}{\sqrt{a}+\sqrt{b}} - \frac{1}{\sqrt{c}+\sqrt{a}}$$

*i.e.*, if $$\frac{\sqrt{b}-\sqrt{a}}{(\sqrt{c}+\sqrt{a})(\sqrt{b}+\sqrt{c})} = \frac{\sqrt{c}-\sqrt{b}}{(\sqrt{a}+\sqrt{b})(\sqrt{c}+\sqrt{a})}$$

*i.e.*, if $\frac{\sqrt{b}-\sqrt{a}}{\sqrt{b}+\sqrt{c}} = \frac{\sqrt{c}-\sqrt{b}}{\sqrt{b}+\sqrt{a}}$

*i.e.*, if $b - a = c - b$

*i.e.*, if $2b = a + c$

*i.e.*, if $a, b, c$ are in A.P.

**Hence Proved.**

(iii) Given, $\frac{AD}{DB} = \frac{4}{5}$, EF = 15cm

(a) In BC FD is Parallelogram

In ΔABC

$$\frac{AD}{DB} = \frac{AE}{EC} = \frac{4}{5}$$

$$\frac{AD}{DB} = \frac{AE}{EC}$$ [∵ line DE ∥ BC]

$$\therefore \quad \frac{AE}{EC} = \frac{4}{5}$$

AE : EC = 4 : 5

In ΔADE & ΔCFE

∠AED = ∠CEF (Vertically opp. angles)

∠ADE = ∠CFE (alternate into angles)

ΔADE ~ ΔCFE (by AA axioms)

(b) $\frac{AE}{EC} = \frac{DE}{EF} \Rightarrow \frac{4}{5} = \frac{DE}{15}$

$$DE = \frac{4 \times 15}{5} = 12\text{cm}$$

DE = 12cm

(c) BC = DE + EF

= 12 + 15 = 27cm

**Answer 3.**

(i) Given,

Radius of sphere = 10 cm = R

Radius of cylinder = 5 cm = $r$

∴ Height of cylinder = 20 cm = $h$

Volume of shaded region = Volume of sphere – Volume of cylinder

Volume of sphere $= \frac{4}{3}\pi R^3$

$= \frac{4}{3}\pi (10)^3$

$= 1333.33\,\pi \text{ cm}^3$

Volume of cylinder $= \pi r^2 h$

$= \pi (5)^2 \times 20$

$= 500\pi \text{ cm}^3$

Now, Volume of shaded region $= 1333.33\,\pi - 500\,\pi$

$= 833.33\,\pi$

$= 833.33 \times 3.14$

$= 2616.65 \text{ cm}^3$ **Ans.**

Hence, the volume of the shaded region is 2616.65 cm³. **Ans.**

(ii) Given, A(7, – 3) and B(1, 9).

(a) Slope of AB $= \frac{y_2 - y_1}{x_2 - x_1} = \frac{9-(-3)}{1-7} = \frac{12}{-6} = -2$ **Ans.**

(b) Slope of perpendicular bisector of AB $(m) = -\frac{1}{(-2)} = \frac{1}{2}$

$\therefore$ Mid-point of AB $= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) = \left(\frac{7+1}{2}, \frac{-3+9}{2}\right) = (4, 3)$

Let the equation of required line be

$$y - y_1 = m(x - x_1)$$

$$\Rightarrow \quad y - 3 = \frac{1}{2}(x - 4)$$

$$\Rightarrow \quad 2y - 6 = x - 4$$

$$\Rightarrow \quad x - 2y - 4 + 6 = 0$$

$$\Rightarrow \quad x - 2y + 2 = 0$$, which is the required line. **Ans.**

(c) Since $(-2, p)$ lies on $x - 2y + 2 = 0$

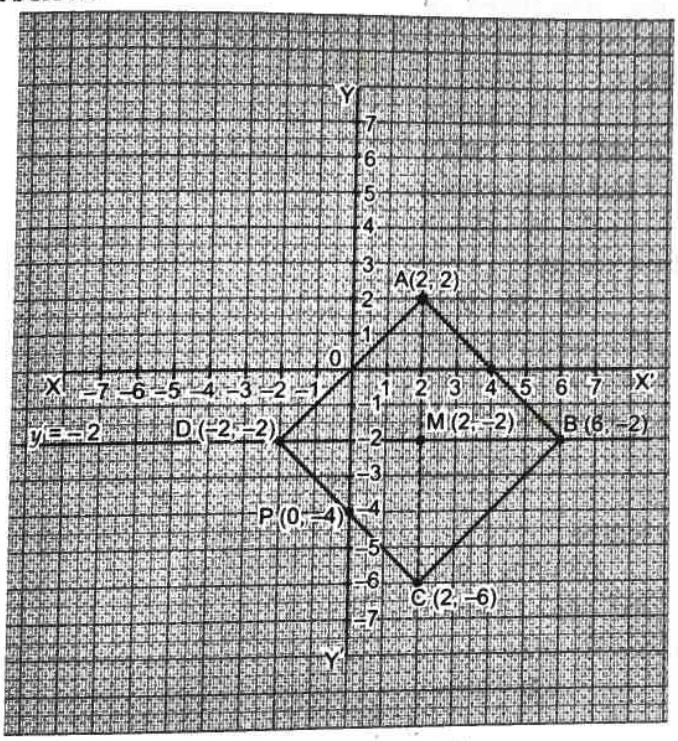
Putting $x = -2$, $y = p$, we get

$$-2 - 2p + 2 = 0$$

$$\Rightarrow \quad 2p = 0$$

$$\Rightarrow \quad p = 0$$ **Ans.**

(iii) The graph is shown below:




(a) **From the graph:**
Coordinates of point D = (–2, –2)

(b) **From the graph:** Coordinates of point C = (2, – 6)

(c) The point P, lies on $y$-axis
Therefore, it is invariant under reflection in $x = 0$
Now, the coordinates of point P = (0, – 4)

(d) **From the graph:** Name of the closed figure ABCD is a square.

(e) **From the graph:** M is the point of intersection of the diagonals of ABCD.
Coordinates of M = (2, –2)

## Section-B

**Answer 4.**

(i) When the product is sold from Agra to Kanpur (intra - state transaction) :

For dealer in Agra :

S.P. = ₹ 20,000

CGST = 9% *of* ₹ 20,000 = ₹ 1,800

SGST = 9% *of* ₹ 20,000 = ₹ 1,800

When product is sold from Kanpur to Jaipur (inter- state transaction):

For the dealer in Kanpur :

Input tax credit = ₹ 1,800 + ₹ 1,800 = ₹ 3,600

C.P. = ₹ 20,000 and Profit = ₹ 5,000

S.P. = ₹ 20,000 + ₹ 5,000 = ₹ 25,000

IGST = 18% of 25,000 = ₹ 4,500

(a) Net GST paid by the dealer at Kanpur

= Output GST – Input GST

= 4,500 – 3,600 = ₹ 900

(b) The cost of goods/services at Jaipur

= S.P. in Kanpur + IGST

= 25,000 + 18% of 25,000

= 25,000 + 4,500 = ₹ 29,500

(ii) Given equation is,

$$(k+1)x^2 - 4kx + 9 = 0$$

Here, $a = (k+1)$, $b = -4k$, $c = 9$

For real and equal roots,

$$D = b^2 - 4ac = 0$$

$$\Rightarrow \quad (-4k)^2 - 4(k+1)9 = 0$$

$$\Rightarrow \quad 16k^2 - 36(k+1) = 0$$

$$\Rightarrow \quad 16k^2 - 36k - 36 = 0$$

Dividing both sides by 4, we get

$$4k^2 - 9k - 9 = 0$$

$$\Rightarrow \quad 4k^2 - 12k + 3k - 9 = 0$$

$$\Rightarrow \quad 4k(k-3) + 3(k-3) = 0$$

$$\Rightarrow \quad (k-3)(4k+3) = 0$$

$$\Rightarrow \quad k = 3 \quad \text{or} \quad k = -\frac{3}{4}$$

For $k = 3$, the equation will be

$$4x^2 - 12x + 9 = 0$$

$$\Rightarrow \quad 4x^2 - 6x - 6x + 9 = 0$$

$$\Rightarrow \quad 2x(2x-3) - 3(2x-3) = 0$$

$$\Rightarrow \quad (2x-3)^2 = 0$$

$$\Rightarrow \quad x = \frac{3}{2}, \frac{3}{2}$$

For $k = -\frac{3}{4}$, the equation will be

$$\left(-\frac{3}{4} + 1\right)x^2 - 4\left(\frac{-3}{4}\right)x + 9 = 0$$

$$\Rightarrow \quad \frac{1}{4}x^2 + 3x + 9 = 0$$

$$\Rightarrow \quad x^2 + 12x + 36 = 0$$

$$x^2 + 6x + 6x + 36 = 0$$

$$\Rightarrow \quad x(x+6) + 6(x+6) = 0$$

$$\Rightarrow \quad (x+6)^2 = 0$$

$$\Rightarrow \quad x = -6, -6.$$

$$\Rightarrow \quad x = \frac{3}{2}, -6$$

**Ans.**

Hence,

(iii) $(\text{cosec}\,\theta - \sin\theta)(\sec\theta - \cos\theta)(\tan\theta + \cot\theta) = 1$

$$\therefore \quad \text{L.H.S.} = (\text{cosec}\,\theta - \sin\theta)(\sec\theta - \cos\theta)(\tan\theta + \cot\theta)$$

$$= \left(\frac{1}{\sin\theta} - \sin\theta\right)\left(\frac{1}{\cos\theta} - \cos\theta\right)\left(\frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta}\right)$$

$$= \left(\frac{1-\sin^2\theta}{\sin\theta}\right)\left(\frac{1-\cos^2\theta}{\cos\theta}\right)\left(\frac{\sin^2\theta + \cos^2\theta}{\sin\theta\cos\theta}\right)$$

$$= \frac{\cos^2\theta}{\sin\theta} \times \frac{\sin^2\theta}{\cos\theta} \times \frac{1}{\sin\theta\cos\theta} \qquad [\because \sin^2\theta + \cos^2\theta = 1]$$

$$= \frac{\sin^2\theta\cos^2\theta}{\sin^2\theta\cos^2\theta}$$

$$= 1 = \text{R.H.S.}$$

**Hence Proved.**

**Answer 5.**

(i) We have

$$X + Y = \begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix}$$

and

$$X - Y = \begin{bmatrix} 3 & 6 \\ 0 & -1 \end{bmatrix}$$

Now

$$(X+Y) + (X-Y) = \begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix} + \begin{bmatrix} 3 & 6 \\ 0 & -1 \end{bmatrix}$$

$$\Rightarrow \quad 2X = \begin{bmatrix} 8 & 8 \\ 0 & 8 \end{bmatrix}$$

$$\Rightarrow \quad X = \frac{1}{2}\begin{bmatrix} 8 & 8 \\ 0 & 8 \end{bmatrix} = \begin{bmatrix} 4 & 4 \\ 0 & 4 \end{bmatrix}$$

Also

$$(X+Y) - (X-Y) = \begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix} - \begin{bmatrix} 3 & 6 \\ 0 & -1 \end{bmatrix}$$

$$\Rightarrow \quad 2Y = \begin{bmatrix} 2 & -4 \\ 0 & 10 \end{bmatrix}$$

$$\Rightarrow \quad Y = \frac{1}{2}\begin{bmatrix} 2 & -4 \\ 0 & 10 \end{bmatrix} = \begin{bmatrix} 1 & -2 \\ 0 & 5 \end{bmatrix}$$

Thus,

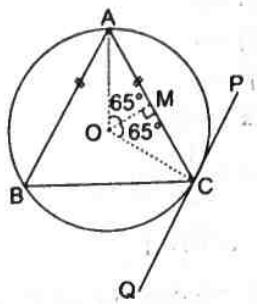
$$X = \begin{bmatrix} 4 & 4 \\ 0 & 4 \end{bmatrix} \text{ and } Y = \begin{bmatrix} 1 & -2 \\ 0 & 5 \end{bmatrix}$$

**Ans.**

(ii) PQ is tangent to circle OM is perpendicular PQ

Chord AC and $\angle COM = 65$

(a) Here, $\angle AOM = \angle COM = 65°$




$= 65° + 65° = 130°$

Now, $\angle ABC = \frac{1}{2}\angle AOC$ (Since, angle at the centre is twice the angle formed by the same arc at any other point of the circle)

$= \frac{1}{2} \times 130° = 65°$

(b) In $\Delta ABC$,

$AB = AC$

$\angle ABC = \angle ACB = 65°$ (since, angles opposite to equal sides are equal)

$\therefore$ $\angle BAC = 180° - (65° + 65°)$

$= 180° - 130° = 50°$

(c) $\angle OCQ = 90°$ (since, angle between the radius and the tangent is 90°)

In $\Delta OMC$

$\angle OCM = 180° - (\angle OMC + \angle MOC)$ [By angle sum property of triangle]

$= 180° - (90° + 65°)$

$= 180° - 155°$

$= 25°$

$\angle ACB = 65°$

$\angle OCB = \angle ACB - \angle OCM$

$= 65° - 25° = 40°$

$\angle BCQ = \angle OCQ - \angle OCB$

$= 90° - 40° = 50°$

(iii)

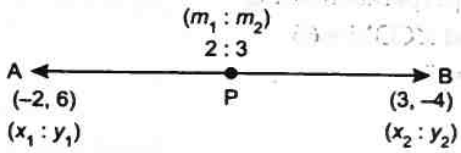
| Marks : Less than | Classes | Mid Values ($x$) | No. of students ($c.f.$) | Frequency ($f$) | $fx$ |
|---|---|---|---|---|---|
| 10 | 0 – 10 | 5 | 2 | 2 | 10 |
| 20 | 10 – 20 | 15 | 7 | 5 | 75 |
| 30 | 20 – 30 | 25 | 15 | 8 | 200 |
| 40 | 30 – 40 | 35 | 18 | 3 | 105 |
| 50 | 40 – 50 | 45 | 20 | 2 | 90 |
| | | | | $\Sigma f = 20$ | $\Sigma fx = 480$ |

$\therefore$ Arithmetic mean $= \frac{\Sigma fx}{\Sigma f} = \frac{480}{20} = 24.$ Ans.

**Answer 6.**

(i) For Point P :

$(x_1, y_1) = A(-2, 6)$, $(x_2, y_2) = B(3, -4)$ and $m_1 : m_2 = 2 : 3$.



$\therefore$ Using section formula,

$$P = \left(\frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \frac{m_1y_2 + m_2y_1}{m_1 + m_2}\right)$$

$$= \left(\frac{2 \times 3 + 3 \times (-2)}{2+3}, \frac{2 \times (-4) + 3 \times 6}{2+3}\right)$$

$$= \left(\frac{6-6}{5}, \frac{-8+18}{5}\right)$$

$$= \left(0, \frac{10}{5}\right) = (0, 2)$$

For the required line :

$$m = \frac{3}{2} \text{ and } (x_1, y_1) = P(0, 2)$$

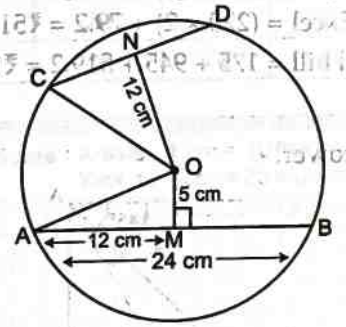
Equation of a line is given as,

$$y - y_1 = m(x - x_1)$$

$$y - 2 = \frac{3}{2}(x - 0)$$

$\Rightarrow$ $2y - 4 = 3x$ *i.e.*, $3x - 2y + 4 = 0$ **Ans.**

(ii) Given,
AB = 24 cm, ON = 12 cm, OM = 5 cm.




(a) In $\Delta AOM$,

$$OA^2 = OM^2 + AM^2 \quad (\because \text{ by Pythagoras theorem})$$

$$= (5)^2 + (12)^2$$

$$= 25 + 144 = 169$$

$\therefore$ $OA = 13$ cm

Thus, radius of the circle is 13 cm.

(b) In $\Delta CON$,

$$OC^2 = ON^2 + CN^2 \quad [\because OC = OA = 13 \text{ (Radius)}]$$

$$(13)^2 = (12)^2 + CN^2$$

$\Rightarrow$ $169 - 144 = CN^2$

$\Rightarrow$ $CN^2 = 25$

$\Rightarrow$ $CN = 5$

Thus, length of chord CD = 2 CN

$= 2 \times 5$

$= 10$ cm. **Ans.**

(iii) (a) GST on wheat flour = (Price of wheat flour) × (Rate of GST)

$$= (35 \times 5) \times \frac{x}{100}$$

$$= ₹\frac{175x}{100}$$

GST on Basmati Rice = (Price of Basmati Rice) × (Rate of GST)

$$= (180 \times 5) \times \frac{5}{100} = ₹45$$

Since, the total GST on wheat flour and Basmati Rice is ₹45.

Then, $$\frac{175x}{100} + 45 = ₹45$$

$$x = 0$$

Hence, the value of $x$ is ₹0.

(b) $$\text{CGST Rate} = \frac{\text{GST Rate}}{2} = \frac{18}{2} = 9\%$$

Now, $$\text{CGST} = (\text{Price per unit} \times y) \times \frac{\text{CGST Rate}}{100}$$

$$39.60 = (220 \times y) \times \frac{9}{100}$$

$$220 \times y = 440$$

$$y = 2$$

Hence, the value of $y$ is 2.

(c) Price of wheat flour = (35 × 5) + 0 = ₹175

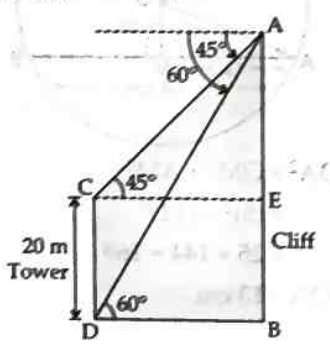
Price of Basmati Rice = (180 × 5) + 45 = ₹945

Price of Surf Excel = (220 × 2) + 79.2 = ₹519.2

Hence, the total bill = 175 + 945 + 519.2 = ₹1639.2

**Answer 7.**

(i) Let AB be the cliff and CD be the tower.




Also, let DB = CE = $x$ m and AB = $h$ m

(a) In $\Delta ABD$,

$$\tan 60° = \frac{AB}{DB}$$

$$\Rightarrow \quad \sqrt{3} = \frac{h}{x}$$

$$\Rightarrow \quad h = x\sqrt{3} \quad \text{...(i)}$$

And, in $\Delta ACE$,

$$\tan 45° = \frac{AE}{CE}$$

$$\Rightarrow \quad 1 = \frac{AB - BE}{x}$$

$$\Rightarrow \quad 1 = \frac{h - 20}{x}$$

$$\Rightarrow \quad x = h - 20 \quad \text{...(ii)}$$

Putting the value of $x$ in equation (i), we get

$$h = (h - 20)\sqrt{3}$$

$$h = \sqrt{3}\,h - 20\sqrt{3}$$

$$\Rightarrow \quad \sqrt{3}\,h - h = 20\sqrt{3}$$

$$\Rightarrow \quad h(\sqrt{3} - 1) = 20\sqrt{3}$$

$$\Rightarrow \quad h = \frac{20\sqrt{3}}{\sqrt{3} - 1} \times \frac{\sqrt{3} + 1}{\sqrt{3} + 1}$$

$$\Rightarrow \quad h = \frac{20\sqrt{3}(\sqrt{3} + 1)}{3 - 1}$$

$$= 10(3 + \sqrt{3}) = 10(3 + 1.732)$$

$$= 10 \times 4.732$$

$$= 47.32 \text{ m}$$

Hence, the height of cliff is 47.32 m. **Ans.**

(b) Putting the value of $h$ in equation (ii), we get

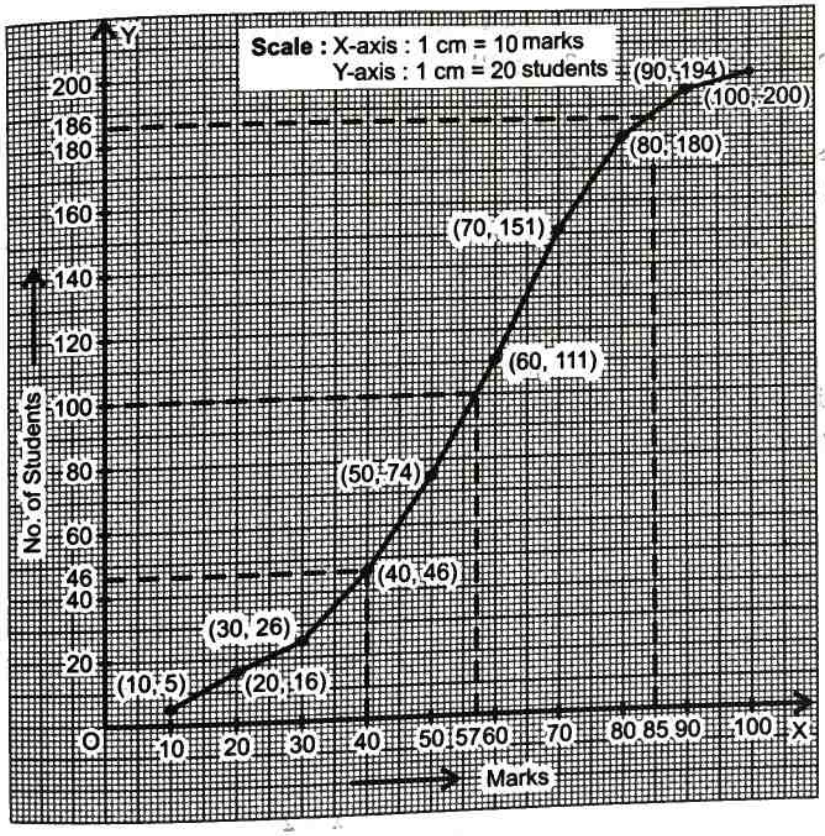
$$x = h - 20 = 47.32 - 20$$

$$= 27.32$$

Hence, the distance between the cliff and the tower is 27.32 m. **Ans.**

(ii) On graph

| Marks | 0 – 10 | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | 60 – 70 | 70 – 80 | 80 – 90 | 90 – 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| $f$ | 5 | 11 | 10 | 20 | 28 | 37 | 40 | 29 | 14 | 6 |
| c.f. | 5 | 16 | 26 | 46 | 74 | 111 | 151 | 180 | 194 | 200 |




(a) $$\text{Median} = \left(\frac{n}{2}\right)^{\text{th}} \text{ observation}$$

$$= \left(\frac{200}{2}\right)^{\text{th}} \text{ observation} = 100^{\text{th}} \text{ observation} = 57$$ **Ans.**

(b) Number of students who failed = 46

(c) Number of students who secured grade one = 200 – 186 = 14 Ans.

**Answer 8.** Ans.

(i) We have $-\frac{x}{3} \le \frac{x}{2} - 1\frac{1}{3} < \frac{1}{6}, x \in R$

Now,

$$-\frac{x}{3} \le \frac{x}{2} - 1\frac{1}{3}$$

$$-\frac{x}{3} \le \frac{x}{2} - \frac{4}{3}$$

$$\frac{4}{3} \le \frac{x}{2} + \frac{x}{3}$$

$$\frac{4}{3} \le \frac{5x}{6}$$

$$\frac{6}{5} \times \frac{4}{3} \le x$$

$$\frac{8}{5} \le x \quad ...(i)$$

$$\frac{x}{2} - 1\frac{1}{3} < \frac{1}{6}$$

$$\frac{x}{2} < \frac{1}{6} + \frac{4}{3}$$

$$\frac{x}{2} < \frac{1+8}{6}$$

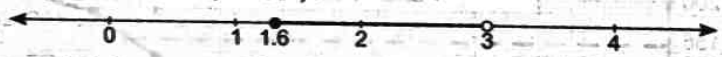
$$x < \frac{9 \times 2}{6}$$

$$x < 3 \quad ...(ii)$$

Thus, $\frac{8}{5} \le x < 3$

or $1.6 \le x < 3$

$\therefore$ Solution set = $\{x : 1.6 \le x < 3, x \in R\}$.




(ii) Given expression is $2x^3 - x^2 - px - 2$ and $(x - 2)$ is the factor.

(a) Put $x - 2 = 0 \Rightarrow x = 2$ in expression, we get

$$2(2)^3 - (2)^2 - p(2) - 2 = 0$$

$$\Rightarrow \quad 16 - 4 - 2p - 2 = 0$$

$$\Rightarrow \quad 10 - 2p = 0$$

$$\Rightarrow \quad p = 5$$

(b) Putting the value of $p$, the expression becomes $2x^3 - x^2 - 5x - 2$. Ans.

Dividing the expression by $(x - 2)$,

$$\begin{array}{r|l} & (2x^2 + 3x + 1) \\ \hline x - 2 & 2x^3 - x^2 - 5x - 2 \\ & 2x^3 - 4x^2 \\ & - \quad + \\ \hline & 3x^2 - 5x \\ & 3x^2 - 6x \\ & - \quad + \\ \hline & x - 2 \\ & x - 2 \\ & - \quad + \\ \hline & \times \end{array}$$

$\therefore$

$$2x^3 - x^2 - 5x - 2 = (x - 2)(2x^2 + 3x + 1)$$

$$= (x - 2)\{2x^2 + (2 + 1)x + 1\}$$

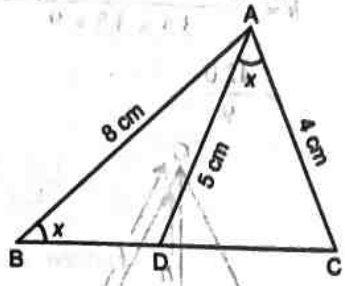
$= (x-2)(2x^2+2x+x+1)$

$= (x-2)\{2x(x+1)+1(x+1)\}$

$= (x-2)(2x+1)(x+1)$ **Ans.**

(iii) Given, $\angle ABC = \angle DAC = x$ (say)

$AB = 8$ cm, $AC = 4$ cm, $AD = 5$ cm.




(a) In $\Delta ACD$ and $\Delta BCA$

$\angle DAC = \angle ABC$ **[Given]**

$\angle ACD = \angle BCA$ **[Common]**

$\Delta ACD \sim \Delta BCA$ **[AA axiom]**

$\therefore$ Hence $\Delta ACD$ is similar to $\Delta BCA$. **Hence Proved.**

(b) $\because$ $\Delta ACD \sim \Delta BCA$

$\therefore$ $\dfrac{AC}{BC} = \dfrac{CD}{CA} = \dfrac{AD}{BA}$ **[Corresponding parts of similar triangles]**

$\Rightarrow$ $\dfrac{4}{BC} = \dfrac{CD}{4} = \dfrac{5}{8}$

$\Rightarrow$ $\dfrac{4}{BC} = \dfrac{5}{8}$

$\Rightarrow$ $BC = \dfrac{8 \times 4}{5} = \dfrac{32}{5} = 6.4$ cm

and $\dfrac{CD}{4} = \dfrac{5}{8}$

$\Rightarrow$ $CD = \dfrac{5 \times 4}{8}$

$\Rightarrow$ $CD = 2.5$ cm. **Ans.**

**Answer 9.**

(i) After removing king, queen and jack of clubs, 49 cards are left in the deck.

$\therefore$ Total number of possible outcomes = 49

(a) There are 3 kings left in the deck.

$\therefore$ Number of favourable outcomes = 3

$\therefore$ $P(\text{a king}) = \dfrac{3}{49}$. **Ans.**

(b) After removing king, queen and jack of clubs, number of clubs cards left = 13 – 3 = 10.

$\therefore$ Number of favourable outcomes = 10

$\therefore$ $P(\text{a club}) = \dfrac{10}{49}$. **Ans.**

(c) There is only one '10' of hearts

$\therefore$ Number of favourable outcomes = 1

$\therefore$ $P(\text{a '10' of hearts}) = \dfrac{1}{49}$. **Ans.**

(ii) According to the question,

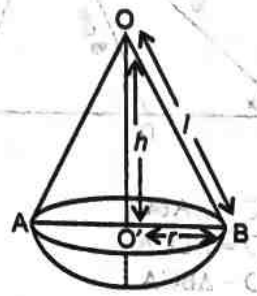
$\dfrac{2}{3}$ (Volume of hemisphere) = Volume of cone

$$\Rightarrow \quad \frac{2}{3}\left(\frac{2}{3}\pi r^3\right) = \frac{1}{3}\pi r^2 h$$

$$\Rightarrow \quad \frac{4}{9}(3.5)^3 = \frac{1}{3}(3.5)^2 . h$$

$$\Rightarrow \quad h = \frac{4 \times 3.5 \times 3.5 \times 3.5 \times 3}{3.5 \times 3.5 \times 9}$$

$$= \frac{42.0}{9}$$




$$= \frac{14}{3} \text{ m} = 4.67 \text{ m}$$

Slant height of cone, $l = \sqrt{r^2 + h^2}$

$$= \sqrt{(3.5)^2 + (4.67)^2}$$

$$= 5.92\text{m}$$

Now, Surface area of buoy = Surface area of right cone + Surface area of hemisphere

$$= \pi r l + 2\pi r^2$$

$$= \pi r(l + 2r)$$

$$= \frac{22}{7} \times 3.5\,(5.92 + 2 \times 3.5)$$

$$= 11 \times (5.92 + 7)$$

$$= 11 \times 12.92$$

$$= 142.12 \text{ m}^2$$

**(iii)** **(a)** M is placed on X-axis **Ans.**

So, coordinates of M = (– 1, 0)

and N is placed on Y-axis.

So, coordinates of N = (0, –1) **Ans.**

**(b)** S is placed on Y-axis

So, coordinates of S = (0, 6) **Ans.**

**(c)** Given:

A (2, – 3), and B (– 3, 2) [By figure]

$x_1 = 2, y_1 = -3, x_2 = -3, y_2 = 2$

$$\text{Slope } m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{2-(-3)}{-3-2}$$

$$m = \frac{2+3}{-5} = -1$$ **Ans.**

**(d)** Straight line PQ passing through two fixed points (0, 6), and (– 6, 0)

$x_1 = 0, y_1 = 6, x_2 = -6, y_2 = 0$

Equation of line

$$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$$

$$y - 6 = \frac{0-6}{-6-0}(x - 0)$$

$$y - 6 = x$$

$$y - x = 6$$

**Ans.**

**Answer 10.**

(i) We have,

$$\frac{x^4 + 1}{2x^2} = \frac{17}{8}$$

Using componendo and dividendo, we have

$$\frac{x^4 + 1 + 2x^2}{x^4 + 1 - 2x^2} = \frac{17 + 8}{17 - 8}$$

$$\Rightarrow \quad \frac{(x^2)^2 + 2x^2 \cdot 1 + 1}{(x^2)^2 - 2x^2 \cdot 1 + 1} = \frac{25}{9}$$

$$\Rightarrow \quad \frac{(x^2 + 1)^2}{(x^2 - 1)^2} = \frac{25}{9}$$

$$\Rightarrow \quad \frac{x^2 + 1}{x^2 - 1} = \pm\frac{5}{3}$$

Taking (+)

$$\Rightarrow \quad 5(x^2 - 1) = 3(x^2 + 1)$$

$$\Rightarrow \quad 5x^2 - 5 = 3x^2 + 3$$

$$\Rightarrow \quad 5x^2 - 3x^2 = 3 + 5$$

$$\Rightarrow \quad 2x^2 = 8$$

$$\Rightarrow \quad x^2 = 4$$

$$\Rightarrow \quad x = \pm 2.$$

Taking (–)

$$\frac{x^2 + 1}{x^2 - 1} = -\frac{5}{3}$$

$$\Rightarrow \quad 3x^2 + 3 = -5x^2 + 5$$

$$\Rightarrow \quad 8x^2 = 2$$

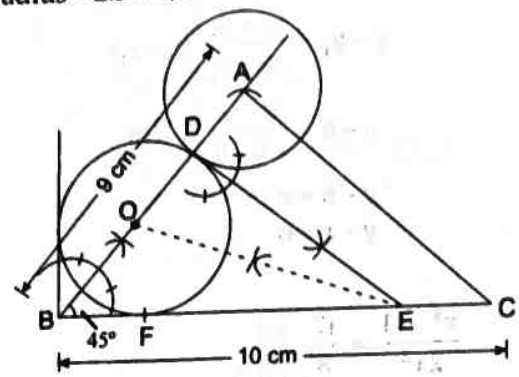
$$\Rightarrow \quad x^2 = \frac{2}{8}$$

$$x = \pm\frac{1}{2}$$

(ii) Steps of construction :

1. Take BC = 10 cm.
2. Make ∠ABC = 45° and with centre B, cut the arc BA = 9 cm.
3. Join AC, so ABC is the required triangle.

4. With A as centre and radius = 2.5 cm, draw a circle. It will pass through D.




5. Draw perpendicular from D which cuts BC at E.
6. Draw the angle bisector of BED which cut BD at O.
7. Taking radius = OD, draw a circle which touches the first circle at D and also touches the line BC at F.
8. This is the required circle. The radius OD = 2.7 cm.

(iii) Given, Distance = 400 km.

Car A travels $x$ km/litre.

Car B travels $(x + 5)$ km/litre.

(a) Number of litre used by car A $= \dfrac{\text{Distance}}{\text{Mileage of car A}}$

$$= \frac{400}{x} \text{ litre}$$ Ans.

Number of litre used by car B $= \dfrac{\text{Distance}}{\text{Mileage of car B}}$

$$= \frac{400}{x+5} \text{ litre.}$$

(b) Car A uses 4 litre more than car B

$$\therefore \quad \frac{400}{x} - \frac{400}{x+5} = 4$$

$$\Rightarrow \quad 400(x+5) - 400x = 4x(x+5)$$

$$\Rightarrow \quad 400x + 2000 - 400x = 4x^2 + 20x$$

$$\Rightarrow \quad 4x^2 + 20x - 2000 = 0$$

$$\Rightarrow \quad 4(x^2 + 5x - 500) = 0$$

$$\Rightarrow \quad x^2 + 25x - 20x - 500 = 0$$

$$\Rightarrow \quad x(x+25) - 20(x+25) = 0$$

$$\Rightarrow \quad (x+25)(x-20) = 0$$

$$\therefore \quad x = -25$$ (not acceptable)

or $\quad x = 20$

Number of litre of petrol used by car B

$$= \frac{400}{20+5} = \frac{400}{25} = 16$$ Ans.

# 2 Sample Paper

## Mathematics

## Answers

### Section-A

**Answer 1.**

(i) (c) ₹1300

**Explanation :**

Monthly deposit (P) = ₹ 2,500

Time Period ($n$) = 1 year = 12 months

Rate ($r$) = 8% p.a.

since, we know

$$I = P \times \frac{n(n+1)}{2\times 12} \times \frac{r}{100}$$

$$= 2500 \times \frac{12(13)}{2\times 12} \times \frac{8}{100}$$

$$= ₹\ 1,300$$

(ii) (c) $\frac{2}{3}, 4$

**Explanation :**

$$3x^2 - 14x + 8 = 0$$

$$\Rightarrow \quad 3x^2 - 12x - 2x + 8 = 0$$

$$\Rightarrow \quad 3x(x-4) - 2(x-4) = 0$$

$$\Rightarrow \quad (3x-2)(x-4) = 0$$

$$\Rightarrow \quad 3x - 2 = 0, \text{ or } x - 4 = 0$$

$$\Rightarrow \quad x = \frac{2}{3} \text{ or } x = 4$$

(iii) (d) 16

**Explanation :**

Let $f(x) = 3x^3 - x^2 - px - 4$ ...(i)

Since, $(x+2)$ is a factor of $f(x)$, $f(-2) = 0$

$$\Rightarrow \quad 3(-2)^3 - (-2)^2 - p(-2) - 4 = 0$$

$$\Rightarrow \quad -24 - 4 + 2p - 4 = 0$$

$$\Rightarrow \quad 2p = 32$$

$$\Rightarrow \quad p = 16$$

(iv) (a) 6

**Explanation :**

By comparing elements of equal matrices. we get,

$$x = 6$$

(v) (a) Both the statements are true.

**Explanation :**

We have 2, 7, 12,.....

$$\text{first term } (a) = 2$$
$$\text{common difference}(d) = 7 - 2 = 5$$
$$n = 10$$

$n$th term of an A.P. is

$$a_n = a + (n-1)\,d$$

10th term of an A.P. is

$$a_{10} = 2 + (10-1) \times 5 = 2 + 45$$

$\Rightarrow$ $$a_{10} = 47$$

(vi) (b) Quadratic equation

(vii) (a) $\Delta PQR \sim \Delta CAB$

**Explanation :**

$$\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$$

$\Rightarrow$ $$\frac{PQ}{CA} = \frac{QR}{AB} = \frac{RP}{BC}$$

$\therefore$ $\Delta PQR \sim \Delta CAB$ [By SSS similarity axiom]

(viii) (c) Both (A) and (R) are true and R is the correct explanation of (A).

**Explanation :**

Given, Diameter $= 2r = 7$ cm

$$r = \frac{7}{2} \text{ cm}$$

Height (h) = 16 cm

Total surface area of cylinder $= 2\pi r\,(h + r)$

$$= 2 \times \frac{22}{7} \times \frac{7}{2}\left(16 + \frac{7}{2}\right)$$

$$= 22 \times \frac{39}{2} = 429 \text{ cm}^2$$

(ix) (b) (A) is false, (R) is true

**Explanation :**

$$(4a + 5b)\,(4c - 5d) = (4a - 5b)\,(4c + 5d)$$

$\Rightarrow$ $$\frac{4a + 5b}{4a - 5b} = \frac{4c + 5d}{4c - 5d}$$

Applying componendo and dividendo, we get

$$\frac{8a}{10b} = \frac{8c}{10d}$$

$\Rightarrow$ $$\frac{a}{b} = \frac{c}{d}$$

$\therefore$ $a$, $b$, $c$ and $d$ are in proportion. Therefore, Assertion is false.

(x) (a) $ax^2 + bx + c < 0$

**Explanation :**

In $ax^2 + bx + c < 0$, the highest power of variable $x$ is 2. So, it is quadratic inequality.

(xi) (c) 1 : 4

**Explanation :**

Let the ratio be $k : 1$.

Hence by section formula,

$$x = \frac{mx_2 + nx_1}{m+n}$$

Given, $x_1 = -1, y_1 = 3, x_2 = 4, y_2 = 2, m = K$ and $n = 1$ on $y$-Axis, $x = 0$

$$\frac{k \times 4 + 1 \times (-1)}{k+1} = 0$$

(as $x$-coordinate on the $y$-axis is zero)

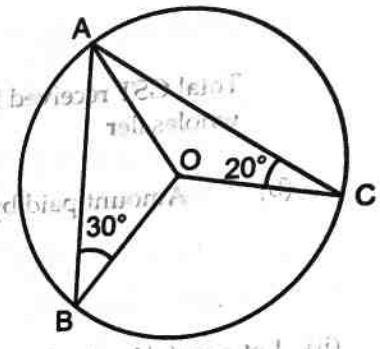
$$4k - 1 = 0$$

*i.e.*, $k = \frac{1}{4}$

$\Rightarrow$ $\therefore$ Ratio is 1 : 4.

(xii) (a) 100°

**Explanation :**




OA = OB (Radii of the same circle)

Therefore, $\Delta OAB$ is an isosceles triangle.

Hence, $\angle OBA = \angle OAB = 30°$

Similarly, $\Delta OAC$ is an isosceles triangle.

Hence, $\angle OCA = \angle OAC = 20°$

Hence, $\angle BAC = \angle BAO + \angle CAO$

$\Rightarrow$ $\angle BAC = 30° + 20° = 50°$

Hence, $\angle BOC = 2\angle BAC = 2 \times 50° = 100°$

(Angle subtended by an arc at the centre is twice the angle subtended at any point on the remaining part of the circle.)

(xiii) (b) 7·03

**Explanation :**

| $x$ | $f$ | $d = x - A$ | $fd$ |
|---|---|---|---|
| 9 | 3 | 2 | 6 |
| 8 | 11 | 1 | 11 |
| Let A = 7 | 14 | 0 | 0 |
| 6 | 8 | −1 | −8 |
| 5 | 4 | −2 | −8 |
| | $\Sigma f = 40$ | | $\Sigma fd = 1$ |

Now, $$\text{Mean value} = A + \frac{\Sigma fd}{\Sigma f} = 7 + \frac{1}{40}$$

$$= 7 + 0.025 = 7.025 \text{ or } 7.03.$$

(xiv) (d) $\frac{1}{13}$

**Explanation :**

Total Number of possible outcomes $n(S) = 52$

Number of favourable outcomes $n(E) = 4$

$\therefore$ Probability of drawing a Jack $= \frac{n(E)}{n(S)} = \frac{4}{52} = \frac{1}{13}$

(xv) (d) 0

**Explanation :**

The possible outcomes are {(1, 1), (1, 2), (1, 3), ... (6, 6)}

Total Number of possible outcomes = 36

∵ The maximum number as sum is 6 + 6 = 12

Hence, there is no favourable outcome.

$$P(\text{getting sum more than } 12) = \frac{0}{36} = 0.$$

**Answer 2.**

(i) (a) GST paid by the manufacturer = 8% of 15,000

$$= \frac{8}{100} \times 15{,}000 = ₹\ 1{,}200$$

GST paid by the wholesaler = 8% of 1,200

$$= \frac{8}{100} \times 1{,}200 = ₹\ 96$$

Total GST received by the state government on the sale of machine from the manufacturer and the wholesaler

$$= ₹\ (1{,}200 + 96) = ₹\ 1{,}296$$ **Ans.**

(b) Amount paid by the consumer = ₹ (15,000 + 1,200 + 1,800) + GST @ 8%

$$= ₹\left(18{,}000 + \frac{8}{100} \times 18{,}000\right)$$

$$= ₹\ (18{,}000 + 1{,}440) = ₹\ 19{,}440$$ **Ans.**

(ii) Let $a$ and $d$ be the first term and common difference of A.P.

Then by $T_n = a + (n-1)d$

Given $T_5 = 4 \Rightarrow a + 4d = 4$ ...(1)

and $T_9 = -12 \Rightarrow a + 8d = -12$ ...(2)

Solving equations (1) and (2), we get

$$-4d = 16$$

$$\Rightarrow \quad d = -4$$

Put this value in equation (1)

$$a + 4 \times (-4) = 4$$

$$a - 16 = 4$$

$$a = 20$$

∴ (a) First term $a = 20$

(b) Common difference $d = -4$

(c) ∵ Sum of $n$ terms $= \frac{n}{2}[2a + (n-1)d]$

∴ Sum of 16 terms $= \frac{16}{2}[2 \times 20 + 15 \times (-4)]$

$$= 8\,[40 - 60]$$

$$= 8 \times (-20) = -160$$

(iii) (a) $\angle BOC = 180° - 80° = 100°$ (∵ AC is a straight line)

$\angle BEC = \frac{1}{2}\angle BOC$ (∵ Angle at centre is twice the angle in remaining segment)

$$\angle BEC = \frac{1}{2} \times 100° = 50°$$ **Ans.**

(b) $\because$ CD || BE

$\angle ECD = \angle BEC = 50°$ (Alternate angle)

$\angle AOB = 80°$ (given)

$\angle BCA = \frac{1}{2}\angle AOB$

$= \frac{1}{2} \times 80° = 40°$ ($\because$ Angle at centre is twice the angle in remaining segment)

Now, $\angle BCD = \angle BCA + \angle ACE + \angle ECD$

$= 40° + 20° + 50°$

$= 110°$

$\angle BED = 180° - \angle BCD$ ($\because$ cyclic quadrilateral)

$= 180° - 110° = 70°$

(c) $\angle CED = \angle BED - \angle BEC$

$= 70° - 50° = 20°$

**Answer 3.**

(i) Let R = External radius = 9 cm

$h$ = Length of pipe = 14 cm

$r$ = Internal radius

V = Volume of pipe = 1408 cm$^3$.

$V = \pi h (R^2 - r^2)$

Now, $1408 = \frac{22}{7} \times 14 (9^2 - r^2)$

$\Rightarrow$ $1408 = 44 (81 - r^2)$

$\Rightarrow$ $32 = 81 - r^2$

$\Rightarrow$ $r^2 = 81 - 32$

$\Rightarrow$ $r^2 = 49$

$\Rightarrow$ $r = 7$ cm [$\because$ radius can't be negative]

$\Rightarrow$ Ans.

Therefore, thickness of pipe is $R - r = 9 - 7 = 2$ cm.

(ii) (a) The line $L_3$ which is parallel to $L_1$

So, its slope $m$ is the same as slope of $L_1$

Here, equation of $L_1$ is

$x - y = 1$

$y = x - 1$

$m = 1$

So, slope of $L_3$ is 1 and intercept (C) = 3.

Now, equation of the line $L_3$

$y = mx + C$

$y = x + 3$

$x - y + 3 = 0$

(b) The equation of $L_3$ is $x - y + 3 = 0$ and $L_2$ is $x + y = 5$

$x - y + 3 = 0$ ...(i)

$x + y - 5 = 0$ ...(ii)

From equations (i) and (ii)

$$x - y + 3 = 0$$
$$x + y - 5 = 0$$
$$2x - 2 = 0$$
$$x = 1$$

Thus, the coordinates of P are (1, 4).

Hence, $k = 1$

(c) Since the line $L_2$ meets $x$-axis at point R

Then, $x + y = 5$

Put

$$y = 0$$
$$x + 0 = 5$$
$$x = 5$$

Hence, coordinates of R are (5, 0).

Now, using section formula,

$$Q = \left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n}\right)$$

Here, let PQ : QR = $k : 1$

and $P(x_1, y_1) = (1, 4)$, $Q(x, y) = (3, 2)$, $R(x_2, y_2) = (5, 0)$

So,
$$(3, 2) = \left(\frac{k \times 5 + 1 \times 1}{k+1}, \frac{k \times 0 + 1 \times 4}{k+1}\right)$$

For $x$ – coordinates

$$\frac{5k+1}{k+1} = 3$$

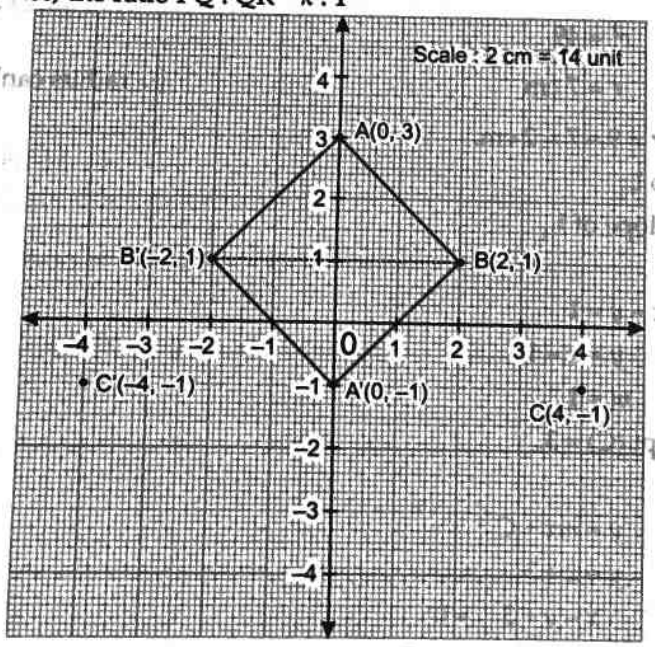
$\Rightarrow$ $5k + 1 = 3k + 3$

$\Rightarrow$ $5k - 3k = 3 - 1$

$$k = 1$$

Hence, the ratio PQ : QR = $k : 1$

(iii)




(b) B' (– 2, 1), C'(–4, –1)

(d) A'(0, –1)

(e) Rhombus as its diagonal bisects as 90° and all form sides are equal.

## Section-B

**Answer 4.**

(i) Given,

Printed Price = ₹ 18,000

Discount = 20% for shop-owner,

Discount = 10% for consumer

GST = 8%

Discount for shop-owner = 20% of 18,000

$= \frac{20 \times 18000}{100}$

= ₹ 3600

Cost for shop–owner = ₹ 18000 – ₹ 3600

= ₹ 14400

Cost for consumer = ₹ 18000 – 10% of ₹ 18000

$= ₹\ 18000 - ₹\ \frac{10 \times 18000}{100} = ₹\ 18000 - ₹\ 1800$

= ₹ 16,200

(a) ∴ GST paid by the shopkeeper = Tax on the value added by shopkeeper

= 8% of (16,200 – 14,400)

$= \frac{8}{100} \times 1800$

= ₹ 144 **Ans.**

(b) Tax charged by the consumer $= ₹\ 16200 \times \frac{8}{100} = ₹\ 1296$

Amount paid by consumer = ₹ (16200 + 1296)

= ₹ 17496. **Ans.**

(ii) Given equation is

$$x^2 + (p-3)x + p = 0$$

Here, $a = 1$, $b = p - 3$ and $c = p$

For real and equal roots,

$\Rightarrow \quad D = b^2 - 4ac = 0$

$\Rightarrow \quad (p-3)^2 - 4 \times 1 \times p = 0$

$\Rightarrow \quad p^2 - 6p + 9 - 4p = 0$

$\Rightarrow \quad p^2 - 10p + 9 = 0$

$\Rightarrow \quad p^2 - p - 9p + 9 = 0$

$\Rightarrow \quad p(p-1) - 9(p-1) = 0$

$\Rightarrow \quad (p-1)(p-9) = 0$

$\Rightarrow \quad p - 1 = 0$ or $p - 9 = 0$

$\Rightarrow \quad p = 1$ or $p = 9$ **Ans.**

(iii)

$$\frac{1}{\text{cosec A} - \cot A} - \frac{1}{\sin A} = \frac{1}{\sin A} - \frac{1}{\text{cosec A} + \cot A}$$

$$\text{L.H.S.} = \frac{1}{\text{cosec A} - \cot A} - \frac{1}{\sin A}$$

$$= \frac{1}{\text{cosec A} - \cot A} \times \frac{(\text{cosec A} + \cot A)}{(\text{cosec A} + \cot A)} - \frac{1}{\sin A}$$

$$= \frac{\text{cosec A} + \cot A}{\text{cosec}^2 A - \cot^2 A} - \text{cosec A}$$

$$= \text{cosec A} + \cot A - \text{cosec A} \qquad [\because \text{cosec}^2 A - \cot^2 A = 1]$$

$$= \cot A.$$

$$\text{R.H.S.} = \frac{1}{\sin A} - \frac{1}{\text{cosec A} + \cot A}$$

$$= \frac{1}{\sin A} - \frac{1}{\text{cosec A} + \cot A} \times \frac{(\text{cosec A} - \cot A)}{(\text{cosec A} - \cot A)}$$

$$= \text{cosec A} - \frac{\text{cosec A} - \cot A}{\text{cosec}^2 A - \cot^2 A}$$

$$= \text{cosec A} - (\text{cosec A} - \cot A) \qquad [\because \text{cosec}^2 A - \cot^2 A = 1]$$

$$= \text{cosec A} - \text{cosec A} + \cot A$$

$$= \cot A$$

$\therefore$ L.H.S. = R.H.S. **Hence Proved.**

**Answer 5.**

(i)

$$A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}, B = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$$

$\therefore$

$$BA = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} 2+2 & 4+1 \\ 1+4 & 2+2 \end{bmatrix} = \begin{bmatrix} 4 & 5 \\ 5 & 4 \end{bmatrix}$$

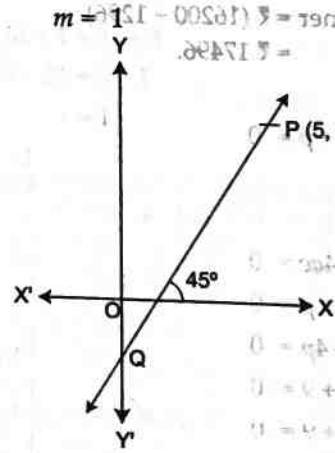
$\therefore$

$$A(BA) = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}\begin{bmatrix} 4 & 5 \\ 5 & 4 \end{bmatrix} = \begin{bmatrix} 4+10 & 5+8 \\ 8+5 & 10+4 \end{bmatrix} = \begin{bmatrix} 14 & 13 \\ 13 & 14 \end{bmatrix}.$$ **Ans.**

(ii) (a)

$m = \tan\theta = \tan 45°$

$m = 1$




(b) Equation of line PQ

$\Rightarrow \quad y - y_1 = m(x - x_1)$

$\Rightarrow \quad y - 3 = 1(x - 5)$

$\Rightarrow \quad y - 3 = x - 5$

$x - y - 2 = 0$

(c) Equation of PQ is

$x - y - 2 = 0$

Put $x = 0$ (coordinates of Q)

$-y - 2 = 0$

$\Rightarrow \quad y = -2$

So, coordinates of Q (0, –2).

(iii)

| Class interval | Frequency ($f_i$) | Mid value ($x_i$) | $u_i = \frac{x_i - A}{h}$; $h$ = [upper limit – lower limit] | $f_i \times u_i$ |
|---|---|---|---|---|
| 50 – 70 | 18 | 60 | –2 | –36 |
| 70 – 90 | 12 | 80 | –1 | –12 |
| 90 – 110 | 13 | 100 = A | 0 | 0 |
| 110 – 130 | 27 | 120 | 1 | 27 |
| 130 – 150 | 8 | 140 | 2 | 16 |
| 150 – 170 | 22 | 160 | 3 | 66 |
| | $\Sigma f_i = 100$ | | | $\Sigma(f_i \times u_i) = 61$ |

Thus,

$$A = 100, h = 20, \Sigma f_i = 100, \Sigma(f_i \times u_i) = 61$$

$$\text{Mean} = A + \left\{h \times \frac{\Sigma(f_i \times u_i)}{\Sigma f_i}\right\}$$

$$= 100 + \left\{20 \times \frac{61}{100}\right\}$$

$$= 100 + 12.2 = 112.2$$ **Ans.**

**Answer 6.**

(i) (a) In $\Delta$ PAM,

$\angle APM = \angle AMP$ ... (i)

$PA = AM$ (Given)

By alternate segment property of tangent

$\angle ABM = \angle AMP$

$\therefore \angle APM = \angle ABM$ [from (i) and (ii)]

$\therefore PM = MB$

*i.e.* $\Delta$ PMB is an isosceles. **Hence Proved.**

(b) By rectangle property of tangent and chord

$PM^2 = PA \times PB$

$\therefore MB^2 = PA \times PB$ [$\because PM = MB$] **Hence Proved.**

(ii) Consider,

$$\text{L.H.S.} = \frac{\cos^2\theta}{1-\tan\theta} + \frac{\sin^3\theta}{\sin\theta - \cos\theta}$$

$$= \frac{\cos^2\theta}{1-\frac{\sin\theta}{\cos\theta}} + \frac{\sin^3\theta}{\sin\theta - \cos\theta}$$

$$= \frac{\cos^3\theta}{\cos\theta - \sin\theta} + \frac{\sin^3\theta}{\sin\theta - \cos\theta}$$

$$= \frac{\cos^3\theta}{\cos\theta - \sin\theta} - \frac{\sin^3\theta}{\cos\theta - \sin\theta}$$

$$= \frac{\cos^3\theta - \sin^3\theta}{\cos\theta - \sin\theta}$$

$$= \frac{(\cos\theta - \sin\theta)(\cos^2\theta + \sin\theta\cos\theta + \sin^2\theta)}{\cos\theta - \sin\theta}$$

[$\because a^3 - b^3 = (a-b)(a^2 + b^2 + ab)$]

$= 1 + \sin\theta\cos\theta$ [$\because \sin^2\theta + \cos^2\theta = 1$]

$=$ R.H.S. **Hence Proved.**

(iii) Selling price of Hair oil = ₹1200 – ₹100 = ₹1100

GST @ 18% = ₹1100 × $\frac{18}{100}$ = ₹198

Selling price of cashew nuts = ₹600

GST @ 12% = ₹600 × $\frac{12}{100}$ = ₹72

(a) Total GST paid = ₹198 + ₹72 = ₹270

(b) Total Bill including GST = (S.P. + GST of Hair oil) + (SP + GST of cashew nuts)

= ₹(1100 + 198) + ₹(600 + 72)

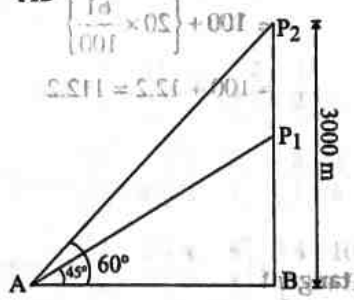
= ₹1298 + ₹672 = ₹1970 **Ans.**

**Answer 7.**

(i) Let $P_1$ and $P_2$ denote the positions of the two planes.

Then, in right angled $\Delta P_1AB$,

$$\frac{P_1B}{AB} = \tan 45° \Rightarrow P_1B = AB$$




In right angled $\Delta P_2AB$,

$$\frac{P_2B}{AB} = \tan 60° = \sqrt{3}$$

$$\Rightarrow \quad AB = \frac{P_2B}{\sqrt{3}}$$

$$= \frac{3,000}{\sqrt{3}} = 1,000\sqrt{3}$$

∴ Vertical distance between the two planes is

$$P_1P_2 = P_2B - P_1B = 3,000 - 1,000\sqrt{3}$$

$$= 1,000(3 - \sqrt{3}) \text{ m.}$$ **Ans.**

(ii)

| $x$ | $f$ | Cumulative Frequency |
|---|---|---|
| 1 | 3 | 3 |
| 2 | 5 | 8 |
| 3 | 9 | 17 |
| 4 | 15 | 32 |
| 5 | 20 | 52 |
| 6 | 16 | 68 |
| 7 | 10 | 78 |
| 8 | 2 | 80 |
| | | $n = 80$ |

(a) Lower quartile ($Q_1$) = The value of $\left(\frac{n}{4}\right)^{th}$ observation

$= \text{The value of } \left(\frac{80}{4}\right)^{th} \text{ observation}$

$= \text{The value of } 20^{th} \text{ observation}$

$Q_1 = 4.$ **Ans.**

(b) Upper quartile $(Q_3) = \text{The Value of } \left(\frac{3n}{4}\right)^{th}$ observation

$= \text{The value of } \left(\frac{3\times 80}{4}\right)^{th}$ observation

$= \text{The value of } 60^{th}$ observation

$Q_3 = 6.$ **Ans.**

$\therefore$ Inter quartile range $= Q_3 - Q_1$

$= 6 - 4 = 2.$ **Ans.**

(c) Semi-quartile range $= \frac{Q_3 - Q_1}{2}$

$= \frac{2}{2} = 1.$ **Ans.**

(d)

**Answer 8.**

(i) We have, $-\frac{2}{3} < -\frac{x}{3} + 2 \le \frac{2}{3}, x \in R$

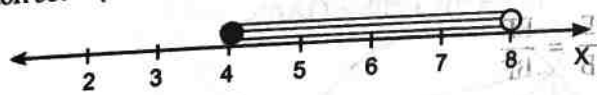
$\Rightarrow -\frac{2}{3}\times 3 < -\frac{x}{3}\times 3 + 2\times 3 \le \frac{2}{3}\times 3$

$\Rightarrow -2 < -x + 6 \le 2 \Rightarrow -2 - 6 < -x + 6 - 6 \le 2 - 6$

$\Rightarrow -8 < -x \le -4 \Rightarrow 8 > x \ge 4$

$\Rightarrow 4 \le x < 8$

$\therefore$ Solution set $= \{x : 4 \le x < 8, x \in R\}.$ **Ans.**




(ii) For cylinder, $r_1 = 18$ cm, $h_1 = 32$ cm

$\therefore$ Volume $= \pi r_1^2 h_1$

$= \frac{22}{7}\times(18)^2\times 32 \text{ cm}^3$

For cone, $h_2 = 24$ cm, $r_2 = ?$

(a) $\because$ Volume of cone = Volume of cylinder

$\frac{1}{3}\pi r_2^2 h_2 = \frac{22}{7}\times 18\times 18\times 32$

$\Rightarrow \frac{1}{3}\times\frac{22}{7}\times r_2^2\times 24 = \frac{22}{7}\times 18\times 18\times 32$

$\Rightarrow r_2^2 = \frac{\frac{22}{7}\times 18\times 18\times 32}{\frac{1}{3}\times\frac{22}{7}\times 24} = 1296$

$\Rightarrow r_2 = \sqrt{1296} = 36$ cm. **Ans.**

(b) Slant height $= \sqrt{r_2^2 + h_2^2} = \sqrt{36^2 + 24^2}$

$= \sqrt{1296 + 576} = \sqrt{1872} = 12\sqrt{13}$ cm. **Ans.**

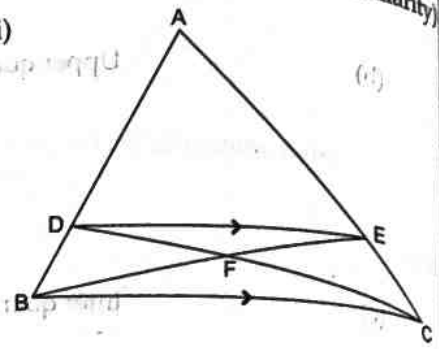
(iii) Given, DE ∥ BC In Δ ADE and Δ ABC

∴ $\angle ADE = \angle ABC$ (Corresponding angles)

and $\angle AED = \angle ACB$

∴ $\Delta ADE \sim \Delta ABC$ (By AA similarity)

∴ $\frac{AD}{AB} = \frac{DE}{BC} = \frac{AE}{AC}$ ...(i)




(a) Given, $\frac{AD}{DB} = \frac{3}{2}$

⇒ $2AD = 3DB$

⇒ $2AD = 3(AB - AD)$

⇒ $2AD = 3AB - 3AD$

⇒ $5AD = 3AB$

∴ $\frac{AD}{AB} = \frac{3}{5}$ Ans.

From equation (i),

$\frac{AD}{AB} = \frac{DE}{BC}$

⇒ $\frac{DE}{BC} = \frac{3}{5}$ Ans.

(b) DE ∥ BC

In Δ DEF and Δ CBF

∴ $\angle EDF = \angle FCB$

and $\angle DEF = \angle FBC$ (Alternate angles)

∴ $\Delta DEF \sim \Delta CBF$ (By AA similarity)

∴ $\frac{DE}{CB} = \frac{EF}{BF} = \frac{DF}{CF}$

⇒ $\frac{DE}{CB} = \frac{EF}{BF}$

⇒ $\frac{EF}{BF} = \frac{3}{5}$ Ans.

**Answer 9.**

(i) Here, Sample Space,

$S = \{2, 4, 6, 8, 10, 12, 14, 16, 18, 20\}$

∴ $n(S) = 10$

(a) Let A be the event of getting a prime number.

$A = \{2\}$

∴ $n(A) = 1$

∴ $P(A) = \frac{n(A)}{n(S)} = \frac{1}{10}$ Ans.

(b) Let B be the event of getting a number divisible by 4.

∴ $B = \{4, 8, 12, 16, 20\}$

∴ $n(B) = 5$

∴ $P(B) = \frac{n(B)}{n(S)} = \frac{5}{10} = \frac{1}{2}$ Ans.

(c) Let C be the event of getting a number which is multiple of 6.

∴ $C = \{6, 12, 18\}$

$n(C) = 3$

$\therefore \quad P(C) = \frac{n(C)}{n(S)} = \frac{3}{10}$ **Ans.**

(d) Let D be the event of getting an odd number.

$\therefore \quad D = \{\}$

$\therefore \quad n(D) = 0$

$\therefore \quad P(D) = \frac{n(D)}{n(S)} = \frac{0}{10} = 0$ **Ans.**

(ii) (a)

| Class | Frequency | Cumulative Frequency (*c.f*) |
|---|---|---|
| 120–130 | 6 | 6 |
| 130–140 | 29 | 35 |
| 140–150 | 34 | 69 |
| 150–160 | 22 | 91 |
| 160–170 | 12 | 103 |

(b) From the graph—The number of students whose height is less than 150 cm = 69

(c) The total number of students = 103

(d) From the graph–The modal height = 143 cm

(e) Mean height = average height = 145.5

Now, required different = Mean height – Modal height

= 145.5 – 143

= 2.5 cm **Ans.**

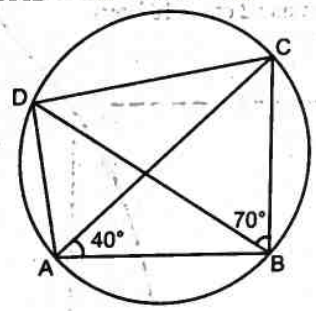
(iii) Given : $\angle CAB = 40°$, $\angle CBD = 70°$

Now, $\angle CAD = \angle CBD$ [Angles in same segment are equal]

$= 70°$

$\therefore \quad \angle BAD = \angle BAC + \angle CAD$

$\Rightarrow \quad \angle BAD = 40° + 70° = 110°$ ...(i)




Also, $\angle BAD + \angle BCD = 180°$ [Opposite angles of cyclic quadrilateral are supplementary]

$\Rightarrow \quad 110° + \angle BCD = 180°$ [Using (i)]

$\Rightarrow \quad \angle BCD = 180° - 110° = 70°.$ **Ans.**

**Answer 10.**

(i) Given, $a : b :: c : d$

$\Rightarrow \quad \frac{a}{b} = \frac{c}{d}$

$\Rightarrow \quad \frac{2a}{3b} = \frac{2c}{3d} \Rightarrow \frac{2a+3b}{2a-3b} = \frac{2c+3d}{2c-3d}$ [Using componendo and dividendo]

$\Rightarrow \quad (2a + 3b)(2c - 3d) = (2a - 3b)(2c + 3d).$ **Hence Proved.**

(ii)

| Height in cm | No. of Boys | c.f. |
|---|---|---|
| 135 – 140 | 4 | 4 |
| 140 – 145 | 8 | 12 |
| 145 – 150 | 20 | 32 |
| 150 – 155 | 14 | 46 |
| 155 – 160 | 7 | 53 |
| 160 – 165 | 6 | 59 |
| 165 – 170 | 1 | 60 |
| | $n = 60$ | |

(a) Median $= \frac{n}{2}$ th observation

$= \frac{60}{2}$ th observation

= 30th observation

= 150 cm (from ogive)

(b) Lower quartile $= \frac{n}{4}$ th observation

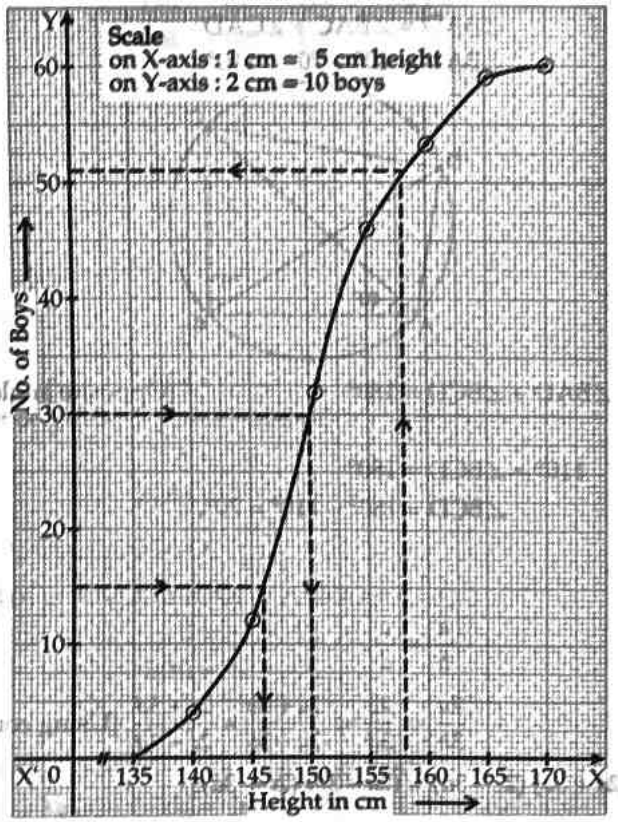
$= \frac{60}{4}$ th observation

= 15th observation

= 146 cm (from ogive)

(c) Number of boys whose height is less than 158 cm = 51.

∴ Number of tall boys = 60 – 51 = 9.



(iii) Let present age of man be $x$ and that of his son be $y$.

$$x - y = 25 \Rightarrow y = x - 25 \quad ...(i)$$

$\therefore$ 10 years back, man's age $= x - 10$

Son's age $= y - 10 = x - 25 - 10 = x - 35$ [Using (i)]

According to question

$$(x - 10)(x - 35) = 350$$

$$x^2 - 35x - 10x + 350 - 350 = 0$$

$$\Rightarrow x^2 - 45x = 0$$

$$\Rightarrow x(x - 45) = 0$$

$$\Rightarrow x = 0 \text{ or } x - 45 = 0$$

$$\Rightarrow x = 0 \text{ or } x = 45$$

$$\Rightarrow x = 45 \quad [\because x \text{ cannot be } 0]$$

$\therefore$ Man's age $= x = 45$ years

$\therefore$ Son's age $= x - 25 = 45 - 25 = 20$ years. **Ans.**

□□

# Specimen Question Paper

## Physics

Maximum Marks: 80
Time allowed: Two hours

### General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will not be allowed to write during first 15 minutes.*
*This time is to be spent in reading the question paper.*
***The time given at the head of this Paper is the time allowed for writing the answers.***
***Section A** is compulsory. Attempt **any four** questions from **Section B**.*
*The intended marks for questions or parts of questions are given in brackets []*

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options.** **[15]**
**(Do not copy the question, write the correct answers only.)**

(i) A moment of couple has a tendency to rotate the body in an **anticlockwise** direction. The moment of couple is taken as: **[Recall]**
(a) positive (b) negative (c) maximum (d) zero

(ii) The kinetic energy of a given body depends on the: **[Understanding]**
(a) position (c) momentum
(b) centre of gravity (d) displacement

(iii) During power production in a coal-based thermoelectric power plant, the correct sequence of energy conversions taking place is: **[Recall]**
(a) heat → mechanical → chemical (c) chemical → heat → light
(b) heat → mechanical → electrical (d) heat → chemical → electrical

(iv) Anita used a single movable pulley to lift a bucket of water from a well. She lubricates the pulley. Which of the following statements is true regarding the performance of the pulley used? **[Application]**
(a) Mechanical Advantage decreases and efficiency increases.
(b) Velocity Ratio increases and efficiency decreases.
(c) Mechanical Advantage remains unchanged and efficiency increases.
(d) Velocity Ratio remains unchanged and efficiency increases.

(v) Inside the prism, during the dispersion of white light, compared to blue, red light: **[Recall & Application]**
(a) slows down less and refracts more. (c) slows down more and refracts more.
(b) slows down more and refracts less. (d) slows down less and refracts less.

(vi) When objects are viewed through the rising heat of a campfire they appear to shimmer. The optical phenomenon responsible for this effect is: **[Recall]**
(a) refraction (c) scattering
(b) reflection (d) total internal reflection

(vii) A convex lens with a focal length of 12 cm has an object at a distance of 20 cm in front of the lens. A blurred image is obtained on the screen placed at a distance of 23 cm in front of the lens. In order to obtain a clear image, the screen has to be moved: **[Application]**

(a) towards the lens.
(b) away from the lens.
(c) to a position very far from the lens.
(d) either towards or away from the lens.

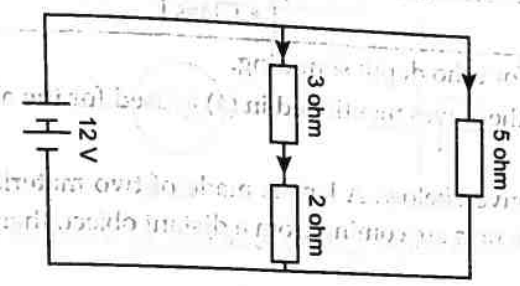
(viii) **Assertion (A):** Soldiers avoid firing at a target in foggy weather conditions.
**Reason (R):** In foggy weather, light gets scattered by tiny water droplets, reducing visibility. **[Understanding & Recall]**

(a) (A) is true but (R) is false.
(b) (A) is false but (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(ix) Two sound waves X and Y have the same amplitude and the same wave pattern but their frequencies are 60 Hz and 120 Hz respectively, then: **[Understanding]**

(a) X will be shriller and Y will be grave.
(b) X will be grave and Y will be shriller.
(c) X will differ in quality than Y.
(d) X is louder than Y.

(x) In the circuit given below, identify the correct relation between the currents flowing through the 2 Ω, 3 Ω, and 5 Ω resistors: **[Understanding & Recall]**




(a) current through 2 Ω > current through 3 Ω
(b) current through 5 Ω < current through 3 Ω
(c) current through 2 Ω = current through 5 Ω
(d) current through 5 Ω > current through 3 Ω

(xi) According to the old convention, the colour of the earth wire is: **[Recall]**

(a) black (b) green (c) yellow (d) red

(xii) For an ideal step up transformer: **[Application]**

(a) $\frac{\text{Voltage}_{\text{primary}}}{\text{Voltage}_{\text{secondary}}} > 1$
(b) $\frac{\text{Current}_{\text{primary}}}{\text{Current}_{\text{secondary}}} < 1$
(c) $\frac{\text{Number of turns}_{\text{primary}}}{\text{Number of turns}_{\text{secondary}}} = 1$
(d) $\frac{\text{Power}_{\text{primary}}}{\text{Power}_{\text{secondary}}} = 1$

(xiii) Heat capacity of a body is the: **[Recall]**

(a) energy needed to melt a body without change in its temperature.
(b) energy needed to raise the temperature of a body by 1°C.
(c) increase in volume of the body when its temperature increases by 1°C.
(d) total amount of internal energy that is constant.

(xiv) The amount of heat energy required to melt a given mass of a substance at its melting point, without any rise in its temperature is called the: **[Recall]**

(a) specific heat capacity.
(b) specific latent heat of fusion.
(c) latent heat of fusion.
(d) specific latent heat of freezing.

(xv) A nucleus of an atom consists of 146 neutrons and 95 protons. It decays after emitting an alpha particle. How many protons and neutrons are left in the nucleus after an alpha emission? **[Understanding]**

(a) protons = 93, neutrons = 142
(b) protons = 95, neutrons = 144
(c) protons = 93, neutrons = 144
(d) protons = 95, neutrons = 142

**Question 2.**

(i) Complete the following by choosing the correct answers from the bracket: [6]

(a) A _____ [*Class II/Class III*] lever will always have M.A. > 1.

(b) A boy uses a GPS device to locate his missing friend in a crowded area; the system primarily uses _____ [*ultraviolet waves / microwaves*] to track the location.

(c) Unit of specific heat capacity is _____. [$kg^2m^2s^{-2}K^{-1}$ / $m^2s^{-2}K^{-1}$]

(d) The threshold of hearing is _____. [*0 dB, 20 Hz*]

(e) Two copper wires can have different resistivity if they have different _____. [*lengths / temperatures*]

(f) The reaction responsible for the production of energy in the sun is _____. [*Nuclear Fusion / Nuclear Fission*] **[Recall & Understanding]**

(ii) Match the movement of the body part in **Column A** to the class of lever in **Column B.** [2]

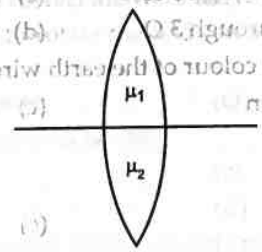
| Movement of the body part<br>Column A | Class of lever<br>Column B |
|---|---|
| (a) Nodding head | • Class III |
| (b) Lifting body weight on your toes | • Class II |
| | • Class I |

(iii) (a) Name the wave used for echo depth sounding. [2]

(b) Give one reason why the waves mentioned in (a) is used for the above purpose. **[Recall]**

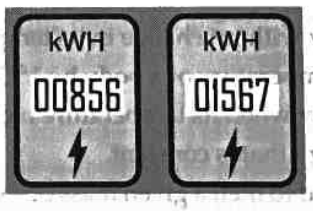
**Question 3.**

(i) (a) Refer to the diagram given below. A lens is made of two materials of different refractive indices ($\mu_1$, $\mu_2$) as shown. If the rays are coming from a distant object, then how many images will be seen? [2] **[Understanding]**




(b) A glass lens always forms a virtual, erect, and diminished image of an object kept in front of it. Identify the lens. **[Recall]**

(ii) The image given below displays kilowatt-hour meter readings recorded at two distinct points in time. [2]

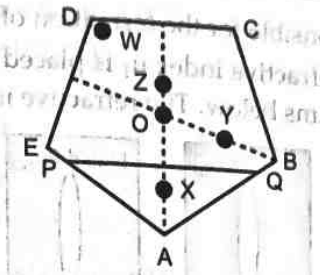



Assuming a **continuously running** 2000W air conditioner as the **sole** electrical device in use, calculate the time interval, **in hours**, between these two meter readings.

(iii) ABCDE is a regular pentagon with its centre of gravity at O. What will be the **most probable position** (W, X, Y, Z or O) of the new centre of gravity: [2]

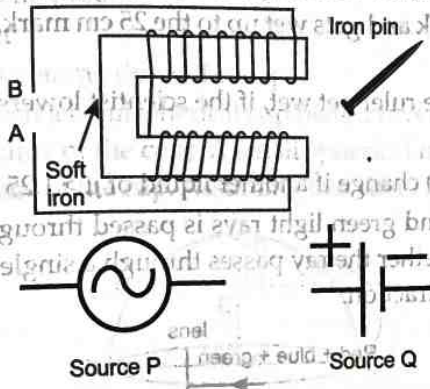
(a) if a piece of clay is attached at point A? **[Understanding]**

(b) if the pentagon is cut along the line PQ? (*Of the remaining part DCBQPE*) **[Recall]**




(iv) A solid of mass 60 g at 100°C is placed in 150 g of water at 20°C. The final steady temperature is 25°C. Calculate the heat capacity of the solid. **[2]**
[sp. heat capacity of water = 4.2 J $g^{-1}$ $K^{-1}$] **[Understanding & Evaluate]**

(v) The diagram given below shows a copper wire wound around a U-shape soft iron bar. An iron pin is brought near the arrangement. First Source P and then Source Q are connected across AB, each operating independently. **[2]**
**[Recall]**




(a) **State True or False:** Source P as well as Source Q, when connected across AB, can attract the iron pin.

(b) Justify your answer to (a) with a suitable reason.

(vi) (a) Name the radiation that is emitted during the decay of a nucleus that has the **highest** penetrating power. **[2] [Recall]**

(b) Does the emission of the above-mentioned radiation result in a change in the mass number? **[Understanding]**

(vii) Advanced optical sensors in air-to-air missiles use fiber optic cables to transmit light signals with minimal loss. This relies on a physical phenomenon that confines light within the fibers, making the system very dependable for guiding the missile precisely. **[3]**

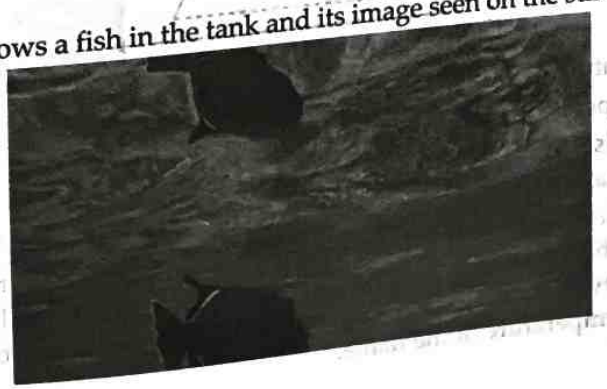
(a) Name the optical phenomenon that allows light signals to remain confined within the fiber optic cables during transmission. **[Application]**

(b) Explain the two main conditions necessary for this phenomenon to occur.

## Section-B (Attempt any four questions from this Section.)

**Question 4.**

(i) The diagram below shows a fish in the tank and its image seen on the surface of water. **[3]**



(a) Name the phenomenon responsible for the formation of this image. **[Understanding & Recall]**

(b) A double convex lens with refractive index $\mu_1$ is placed inside two liquids of refractive indices $\mu_2$ and $\mu_3$ as shown in the diagrams below. The refractive indices are such that $\mu_2 > \mu_1$ and $\mu_1 > \mu_3$.

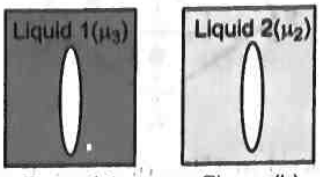



Figure (a) Figure (b)

How would a parallel incident beam of light refract when it comes out of the lens in each of the cases shown above?

(1) in Figure a.

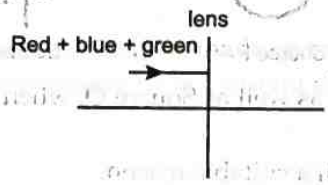
(2) in Figure b. **[Application]**

(ii) A scientist lowers a metallic ruler vertically into a transparent oil tank. The ruler touches an object placed at the bottom of the tank and gets wet up to the 25 cm mark. If the refractive index of the glycerin is 1.25: [3]

(a) up to which mark will the ruler get wet, if the scientist lowers it up to the image of the object? **[Evaluate]**

(b) how will this length in (a) change if another liquid of $\mu > 1.25$ is used? **[Understanding]**

(iii) (a) A mixture of red, blue, and green light rays is passed through a convex lens, as illustrated in the diagram below. State whether the ray passes through a single point or through different points on the principal axis after refraction. **[4] [Understanding]**




(b) Name the *invisible radiation* which is studied using the quartz prism. **[Recall]**

(c) State one use of the radiation mentioned by you in (b) above. **[Recall]**

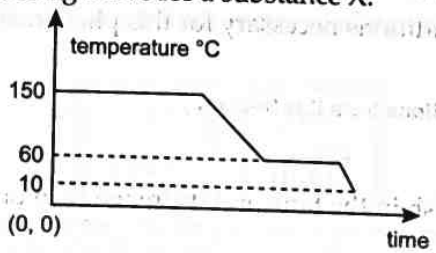
(d) Name one type of radiation with a wavelength greater than that of the radiation mentioned by you in (b) above. **[Recall]**

**Question 5.** (i) An object is placed at a distance of 24 cm in front of a convex lens of focal length 8 cm. [3]

(a) What is the nature of the image so formed?

(b) Calculate the distance of the image from the lens. **[Understanding & Evaluate]**

(ii) The diagram below shows a cooling curve for a substance X: [3]




(a) State the temperatures at which the substance condenses. **[Recall]**

(b) Mention the temperature range in which the substance is in its liquid state. **[Understanding]**

(c) **State True or False:** The amount of heat released when a substance is cooled by 10°C in its liquid state is greater than the heat released when it is cooled by the same amount in its solid state.

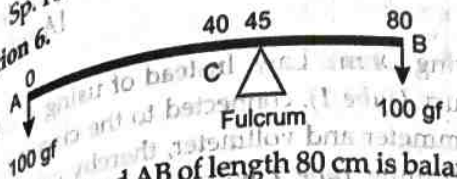
(iii) In an experiment to measure the temperature of the flame of a Bunsen burner, a lump of copper of mass 0.12 kg is heated on the flame for a long time. The copper then is quickly transferred into a beaker of negligible heat capacity containing 0.84 kg of water and the temperature of the water rose from 15 °C to 35 °C. Calculate the temperature of the flame. [4]

[Given sp. Heat capacity of copper = 0.4 $Jg^{-1}\,°C^{-1}$,
Sp. Heat capacity of water = 4.2 $Jg^{-1}\,°C^{-1}$.]

**[Understanding & Application]**

Question 6.

(i) **[3]**




A metal rod AB of length 80 cm is balanced at 45 cm from the end A with 100 gf weights suspended from the two ends.

(a) If this rod is cut at the centre C, then compare the weight of AC to the weight of BC. (*Use >, < or =*)

**[Understanding & Application]**

(b) Give a reason for your answer in (a).

(ii) For each of the following scenarios, state whether the work done by gravity is *positive, negative, or zero.*

**[3]**

(a) A person walks on a levelled road.

**[2]**

(b) A person climbs a ladder.

(c) A car in a neutral gear is coming down the slope.

**[Understanding & Recall]**

(iii) A, B, C and D are four points on a hemispherical cup placed inverted on the ground. Diameter BC = 360 cm and AE = R/3 (R is the radius of the cup). A small spherical mass 500 g at rest at the point A, slides down along the smooth surface of the cup. Assuming that there is no loss of energy, calculate its:

(a) Potential Energy at A relative to B.

(b) Speed at the point B (lowest point).

(c) Kinetic Energy at D ($g = 10\ ms^{-2}$).

**[Application & Evaluate]**

Question 7.

(i) A block and tackle system of pulleys has velocity ratio 4. **[3]**

(a) Draw a labelled diagram of the system indicating clearly, the direction of the load and effort.

**[Recall]**

(b) Calculate the potential energy gained by load of 100 kgf, lifted by this pulley to a height of 5 m. ($g = 10\ ms^{-2}$)

**[Understanding & Evaluate]**

(ii) A person standing in front of a cliff fires a gun and hears its echo after 3 s. *Speed of sound in air is 336 $ms^{-1}$.* **[3]**

(a) Calculate the distance of the person from the cliff.

(b) After moving a certain distance from the cliff, he fires the gun again and this time the echo is heard 1.5 s later than the first. Calculate the distance that the person has moved.

**[Understanding & Evaluate]**

(iii)

The above picture shows a mother pushing her daughter sitting on a swing. The swing is going through the positions A, B, C where A and C are extreme positions and B is the mean position. **[4]**

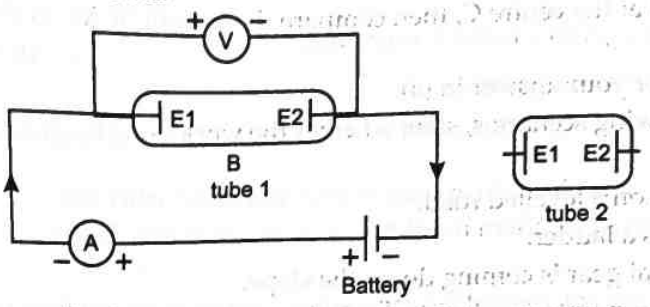
(a) Which is the right position *i.e.*, at A, B or C, for the mother to give a constant periodic push to the swing, every time in the forward direction, to increase the amplitude of the swing?

(b) Name the phenomenon involved in this.

(c) On the basis of this example, explain how this phenomenon helps to increase the amplitude of the swing. **[Application]**

**Question 8.**

(i) The circuit depicted in the figure is employed for studying Ohm's Law. Instead of using a standard resistor, a student opts for a glass tube **filled** with mercury (***tube 1***), connected to the circuit through two electrodes $E_1$ & $E_2$. He records the readings of the ammeter and voltmeter, thereby calculates the resistance. The student repeats the experiment by substituting ***tube 1*** with ***tube 2***, where the same amount of mercury **fills** the **tube 2**. [3]



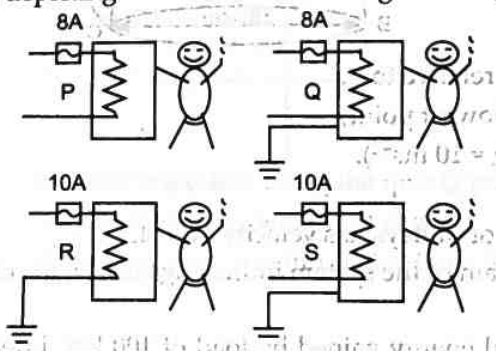

Neglecting internal resistance of the cell, use (> or < or =) to compare the following:

(a) Resistance in both cases.

(b) Voltmeter readings in both cases.

(c) Specific resistance in both cases. **[Understanding & Application]**

(ii) An appliance with a metal covering, rated at 2 kW, 220 V, is to be connected in a circuit. Given below are four diagrams (P, Q, R & S) depicting different circuit configurations, [3]




(a) Identify the safest circuit.

(b) Write two reasons, supported by mathematical calculations, where applicable, to justify your choice. **[Application & Evaluate]**

(iii) A nichrome wire **X** with length ($l$) & cross-sectional area (A) is connected to a 10 V source and another nichrome wire **Y** with length ($2l$) & cross-sectional area (A/2), is connected to a 20 V source. [4]

(a) Compare the resistances of wires **X** and **Y**. [Given that the resistivity of nichrome is ($\rho$).]

(b) Compare the electrical power consumed by each wire.

(c) Compare the masses of these wires. (Given that the density of nichrome is ***d***.)

(d) **State True or False:** Wire **X** and wire **Y** both show the same rise in temperature in the same time. **[Analyse & Evaluate]**

**Question 9.**

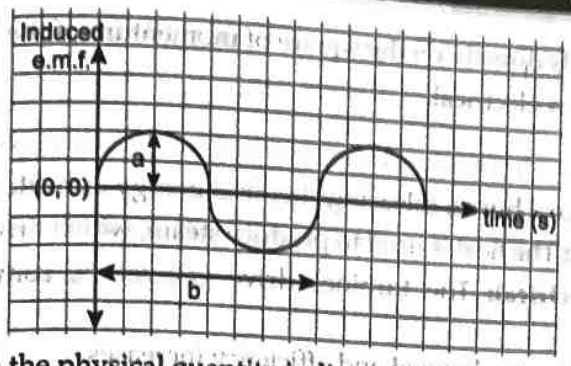
(i) Three bulbs of powers $P_1$, $P_2$ and $P_3$ ($P_1 < P_2 < P_3$) are connected in a certain way that $P_3$ glows brightest. [3]

(a) What type of connection exists between these bulbs?

(b) Compare the voltage across these bulbs. (*Use* >, < *or* =)

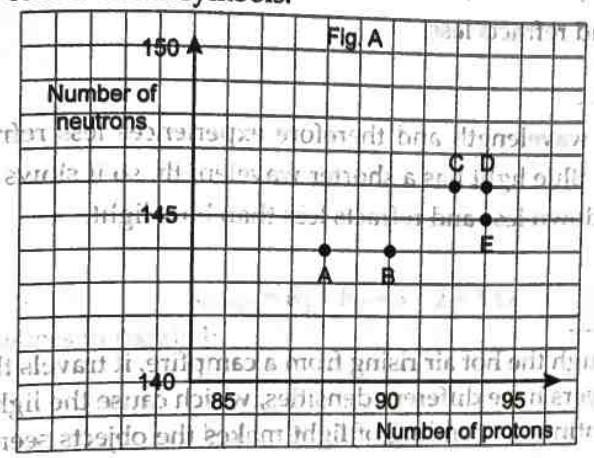
(c) Will the circuit still function if one of the bulbs is fused? **[Recall]**

(ii) The given diagram shows the output of an AC generator. If the speed of the generator coil is doubled, then: [3]




(a) What is the effect on the physical quantity indicated by 'a'?
(b) What is the effect on the physical quantity indicated as 'b'?
(c) Give reason for your answer in (b). **[Understanding]**

(iii) The graph (Fig. A) illustrates the correlation between the number of protons ($x$-axis) and the number of neutrons ($y$-axis) for elements A, B, C, D, and E in the periodic table. These elements are denoted by the letters rather than their conventional symbols. **[4]**




**[Understanding]**

(a) Identify the radioactive radiation emitted when element C decays into element E. Represent this using a nuclear reaction.
(b) What is the special name given to elements D and E?
(c) If element C transforms into element B by emitting a radioactive ray, how will this ray behave in an electric field

# Answers

## Section-A

**Answer 1.**

(i) (a) positive

**Explanation :**

In physics, a moment of a couple that causes a anticlockwise rotation is considered positive.

(ii) (c) momentum

**Explanation :**

$$\text{Kinetic Energy} = \frac{p^2}{2m}$$

Where $p$ = Momentum of the body
M = Mass of the body,that is constant

So kinetic energy depends directly on the square of momentum of the body.

(iii) (b) heat → mechanical → electrical

**Explanation :**

1. **Chemical to heat:** Coal burns, releasing chemical energy as heat.
2. **Heat to mechanical:** The heat is used to produce steam, which drives turbines (mechanical energy).
3. **Mechanical to electrical:** The turbines drive generators, converting mechanical energy into electrical energy.

(iv) (d) Velocity Ratio remains unchanged and efficiency increases.

**Explanation :**

A single movable pulley has a fixed velocity ratio. Lubricating the pulley reduces friction. Friction is a type of energy loss, so reducing it means less effort is wasted. As a result, the efficiency of the pulley increases. But the velocity ratio depends only on the type of pulley system, so it remains unchanged.

(v) (d) slows down less and refracts less

**Explanation :**

Red light has a longer wavelength and therefore experiences less refraction and less slowing down compared to blue light. Blue light has a shorter wavelength, so it slows down more and refracts more. Hence, red light slows down less and refracts less than blue light.

(vi) (a) refraction

**Explanation :**

When light passes through the hot air rising from a campfire, it travels through layers of air at different temperatures. These layers have different densities, which cause the light to bend or refract as it moves through them. This continuous bending of light makes the objects seen through the hot air appear to shimmer or shake.

(vii) (b) away from the lens

**Explanation :**

Given: Focal length ($f$) = 12 cm

Object distance ($u$) = – 20 cm (taken as negative)

Using lens formula,

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$$

$$\frac{1}{v} = \frac{u+f}{fu}$$

$$v = \frac{fu}{u+f}$$

$$v = \frac{12 \times (-20)}{-20+12}$$

$$v = \frac{-240}{-8}$$

$$v = 30 \text{ cm}$$

This means the clear image should be formed 30 cm from the lens. But the screen is currently at 23 cm, which is closer to the lens. So, to get a clear image, the screen must be moved away from the lens from 23 cm to 30 cm.

(viii) (c) Both (A) and (R) are true and (R) is the correct explanation of (A).

**Explanation :**

Soldiers avoid firing in foggy conditions because they cannot see the target clearly.

In fog, tiny water droplets scatter light, making it hard to see, this is called scattering of light. Since reduced visibility due to scattering is exactly why soldiers avoid firing.

(ix) (b) X will be grave and Y will be shriller

**Explanation :**

The frequency of a sound wave determines its pitch. A higher frequency corresponds to a higher pitch (shriller sound), and a lower frequency corresponds to a lower pitch (graver sound). Sound wave X has a frequency of 60 Hz, and sound wave Y has a frequency of 120 Hz. Since Y has a higher frequency than X, Y will sound shriller, and X will sound graver.

(x) (c) current through 2 Ω = current through 5 Ω

**Explanation :**

Given,

Votage $V = 12\ V$

Resistors $R_1 = 3\ \Omega$

$R_2 = 2\ \Omega$

$R_3 = 5\ \Omega$

$$R_{series} = R_1 + R_2 = 3 + 2 = 5\ \Omega$$

Use the formula for resistors in parallel:

$$\frac{1}{R_{eq}} = \frac{1}{5} + \frac{1}{5} = \frac{2}{5}$$

$$\Rightarrow R_{eq} = \frac{5}{2} = 2.5\ \Omega$$

Total current from the battery

$$I_{total} = \frac{V}{R_{eq}} = \frac{12}{2.5} = 4.8\ A$$

This total current splits equally between the two parallel branches (because both have the same resistance: 5 Ω)

Current in each branch

$$I_{branch} = \frac{4.8}{2} = 2.4\ A$$

So, current through 5 Ω resistor = 2.4 A

Current through 3 Ω and 2 Ω (series combination) = 2.4 A

(xi) (b) green

**Explanation :**

According to the old colour coding convention, it is stated that live wire is represented with red colour, the neutral wire is represented as black colour and the earth wire is represented as green colour.

(xii) (d) $\frac{Power_{primay}}{Power_{secondary}} = 1$

**Explanation :**

In an ideal step-up transformer:

- The voltage increases from primary to secondary.

- The current decreases in the secondary coil.
- But since there is no energy loss in an ideal transformer, the input power = output power

$$\text{Power}_{\text{primary}} = \text{Power}_{\text{secondary}} \Rightarrow \frac{P_p}{P_s} = 1$$

(xiii) (b) energy needed to raise the temperature of a body by 1°C

**Explanation :**

Heat capacity is defined as the amount of energy required to raise the temperature of a body by one degree celsius.

(xiv) (c) latent heat of fusion

**Explanation :**

Latent heat of fusion refers to the amount of heat energy required to change the state of a substance from solid to liquid at its melting point, without any change in temperature.

(xv) (c) protons = 93, neutrons = 144

**Explanation :**

An alpha particle consists of two protons and two neutrons. Emission of alpha particle reduces the number of protons by 2 and also the number of neutrons by 2. Hence, number of protons = 95 – 2 = 93 and number of neutrons = 146 – 2 = 144.

**Answer 2.**

(i) (a) Class II
(b) microwaves
(c) $m^2s^{-2}K^{-1}$
(d) 0 dB
(e) temperature
(f) Nuclear fusion

(ii) (a) Nodding head → Class I
(b) Lifting body weight on your toes → Class II

(iii) (a) Ultrasonic wave
(b) They can travel long distances without getting absorbed or deviated, or they can be confined to a narrow beam, making depth measurement accurate.

**Answer 3.**

(i) (a) According to the lens formula :

$$\frac{1}{f} = (\mu - 1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$$

Focal length is a function of refractive index, hence for two different refractive indices there will be two different focal lengths. Two different focal length implies two different images for same object. Hence 2 images will be formed.

(b) **Concave lens :** An object is placed in front of a lens between centre and the focus and forms a virtual, erect and diminished image.

(ii)

Energy consumed = 1567 kWh – 856 kWh = 711 kWh

Power of AC = 2000 W = 2 kW

$$\text{Time} = \frac{\text{Energy}}{\text{Power}} = \frac{711}{2} = 355.5 \text{ hours}$$

(iii) (a) X → Point A gains extra mass, so the centre of gravity shifts towards A. Hence, the new centre of gravity moves from O to X.

(b) Z → This removes mass near points A and B. So, the centre of gravity shifts away from that removed part, *i.e.*, towards Z.

(iv) Given:

Mass of solid ($m$) = 60 g

Fall in temperature of solid = (100 – 25) = 75°C

Rise in temperature of water = (25 – 20) = 5°C

Let specific heat capacity of solid be $c_s$.

Assuming that there is no loss of heat energy, by principle of mixtures,

Heat energy given by solid = Heat energy taken by water

$$mc_s\Delta t = mc\Delta t$$

$$60 \times c_s \times 75 = 150 \times 4.2 \times 5$$

$$4500 \times c_s = 3150$$

$$c_s = \frac{3150}{4500}$$

$$c_s = 0.7 \text{ J g}^{-1}\text{K}^{-1}$$

Specific heat capacity of the solid = $0.7 \text{ J g}^{-1} \text{ K}^{-1}$

Heat capacity of solid = mass ($m$) × Specific heat capacity

$= 60 \times 0.7 = 42 \text{ J K}^{-1}$

Hence, Heat capacity of solid = $42 \text{ J K}^{-1}$

(v) (a) True

(b) Both AC (Source P) and DC (Source Q) produce a magnetic field when current flows through the coil.

This magnetizes the soft iron bar and allows it to attract the iron pin.

(vi) (a) Gamma radiation has the highest penetrating power.

(b) No, because it does not involve the loss of any protons or neutrons, only energy is released.

(vii) (a) Total internal reflection

(b) Two conditions for total internal reflection to occur :

1. Light must travel from a denser medium to a rarer medium.
2. The angle of incidence in the denser medium must be greater than the critical angle.

## Section-B

**Answer 4.**

(i) (a) **Total internal reflection** → because when light from the fish hits the water surface at an angle greater than the critical angle and gets completely reflected back into the water.

(b) 1. Converge → Given, $\mu_1 > \mu_3$

The lens is in a rarer medium, so it behaves like a converging lens. The parallel light rays will converge after passing through the lens.

2. Diverge → Given, $\mu_2 > \mu_1$

The lens is in a denser medium, so it behaves like a diverging lens. The parallel light rays will diverge after passing through the lens.

(ii) (a) Given,

Actual depth = 25 cm

Refractive index $\mu = 1.25$

We use the formula:

$$\mu = \frac{\text{Real depth}}{\text{Apparent depth}} \Rightarrow \text{Apparent depth} = \frac{\text{Real depth}}{\mu}$$

$$\text{Apparent depth} = \frac{25}{1.25} = 20 \text{ cm}$$

(b) If a liquid with $\mu > 1.25$, as $\mu$ increases, apparent depth (length) decreases. So, the ruler will get wet less than 20 cm .

(iii) (a) Different points due to their different wavelengths.

(b) Ultraviolet radiations.

(c) 1. **Sterilisation and disinfection :** UV radiation is used to kill bacteria, viruses and other pathogens in water, air and on surface.

2. **Forensic Analysis :** UV light helps detect substances like blood, urine and other biological materials at crime scenes.

(d) Visible or infrared or infrared or micro wave or radiowaves.

**Answer 5.**

(i) (a) Real, inverted and diminished and between $f$ and $2f$ due to convex lens.

(b) Given $u = -24$ cm, $f = 8$ cm, by lens formula

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$\therefore \quad \frac{1}{v} - \frac{1}{-24} = \frac{1}{8}$$

(Identifying '$u$' and '$f$' with correct sign convention)

$$\frac{1}{v} = \frac{3-1}{24}$$

$$\therefore \quad v = 12 \text{ cm}$$

(ii) (a) 150°C → The substance condenses at 150°C, as shown by the flat region at that temperature (phase change from gas to liquid).

(b) 150°C to 60°C → The substance is in its liquid state from 150°C to 60°C, where its temperature decreases without a phase change.

(c) True → The specific heat capacity of a substance is greater in liquid state than in solid state. So, when cooled by the same temperature (*e.g.*, 10°C), a liquid releases more heat than the solid.

$Q = mc\Delta T$ (since $c_{liquid} > c_{solid}$)

(iii) Given,

Mass of copper, $m_1 = 0.12$ kg

Specific heat of copper, $c_1 = 0.4$ J/g °C = 400 J/kg °C

Mass of water, $m_2 = 0.84$ kg

Specific heat of water, $c_2 = 4.2$ J/g °C = 4200 J/kg °C

Rise in water temperature, $\Delta T_2 = 35°C - 15°C = 20°C$

Final temperature of both = 35°C

Let temperature of flame = T

Use Principle of Heat Exchange

Heat lost by copper = Heat gained by water

$$m_1c_1 (T - 35) = m_2c_2 (35 - 15)$$

$$0.12 \times 400 \times (T - 35) = 0.84 \times 4200 \times 20$$

$$48 (T - 35) = 70560$$

$$T - 35 = \frac{70560}{48} = 1470$$

$$T = 1470 + 35 = 1505°C$$

**Answer 6.**

(i) (a) Weight of AC < Weight of BC

(b) Even though equal weights (100 gf) are placed at both ends, the rod balances at 45 cm from A, not at the centre (40 cm). This means the torque (moment) on side A is greater than on side B, even though the weights are equal.

So, the rod itself must be heavier on side B, shifting the centre of gravity beyond 40 cm.

Hence, more weight is concentrated in part BC than in part AC.

(ii) (a) Work done by gravity depends on the vertical displacement, and here it is zero, the work done by gravity is zero.

(b) The displacement is upward (opposite to the direction of gravity), the work done by gravity is negative.

(c) The displacement is in the same direction as the force of gravity, the work done by gravity is positive.

(iii) Given,

$m = 500\ g = 0.5\ kg$

Diameter BC = 360 cm $\Rightarrow$ R = 180 cm = 1.8 m

$AE = \frac{R}{3} = 31.8 = 0.6\ m$

$g = 10\ m/s^2$

(a) At point A, the height above B = radius R = 1.8 m

$$PE = mgh = 0.5 \times 10 \times 1.8 = 9\ J$$

(b) Using conservation of energy,

$$\text{Loss in PE} = \text{Gain in KE}$$

$$\frac{1}{2}mv^2 = mgh$$

$$v^2 = 2gh = 2 \times 10 \times 1.8 = 36$$

$$v = 6\ m/s$$

(c) From diagram,

$$AE = \frac{R}{3} = 0.6\ m$$

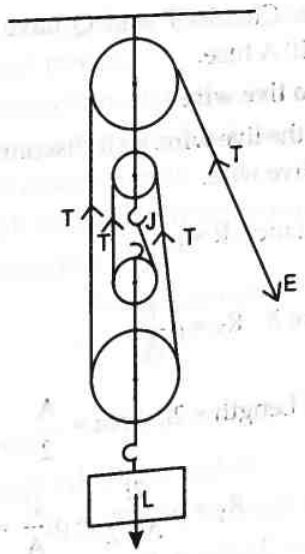
So, vertical height of D from ground $= R - \frac{R}{3} = \frac{2R}{3} = 1.2\ m$

So, loss in height from A to D = 1.8 – 1.2 = 0.6 m

$$KE = mgh = 0.5 \times 10 \times 0.6 = 3\ J$$

**Answer 7.**

(i)




(a) Pulleys drawn correctly with support.

Correct connection of tackle, Marking load, effort with correct direction and tension.

(b) Given: $m = 100\ kg,\ g = 10,\ h = 5\ m$

$U = mgh = 100 \times 10 \times 5$

$U = 5000\ J$

(ii) (a)
$$d = \frac{(s \times t)}{2}$$
$$\therefore \quad d = \frac{(336 \times 3)}{2}$$
$$d = 168 \times 3 = 504 \text{ m}$$

(b)
$$d = \frac{(s \times t)}{2}$$
$$\therefore \quad d = \frac{(336 \times 1.5)}{2}$$
$$= 168 \times 1.5 = 252 \text{ m away}$$

(iii) (a) The right position for the mother to give a constant periodic push to the swing every time in the forward direction to increase the amplitude of the swing is at position A.

(b) If, however, the frequency of the external force is equal to the natural frequency of the body, then the amplitude of the forced oscillations of the body becomes quite large. This phenomenon is called resonance.

(c) The natural frequency of the swing will match the frequency of the force applied by mother this will increase the amplitude.

**Answer 8.**

(i) (a) Resistance of the tube 2 < Resistance of the tube 1

(b) Tube 1 voltmeter reading = Tube 2 voltmeter reading because, same amount of mercury fills both tubes.

(c) The specific resistance in both the cases is the same.

(ii) (a) Circuit S

(b) **Reason 1: Correct current rating of fuse**

Appliance power rating = 2 kW = 2000 W

Voltage = 220 V

$$\text{Current} = \frac{\text{Power}}{\text{Voltage}} = \frac{2000}{220} \approx 9.09 \text{ A}$$

So, a 10 A fuse is appropriate. Circuits P and Q have 8 A fuse, which will blow unnecessarily. Circuits S and R have correct 10 A fuse.

**Reason 2: Fuse is connected to live wire**

For safety, the fuse must be in the live wire, so it disconnects power in case of fault. In Circuit S, the fuse is correctly placed in the live wire.

(iii) (a)
$$\text{Resistance, } R = \rho \frac{l}{A}$$
$$\text{For wire X : } R_X = \rho \frac{l}{A}$$
$$\text{For wire Y: Length} = 2l, \text{ Area} = \frac{A}{2}$$
$$R_Y = \rho \frac{2l}{A/2} = \rho \frac{4l}{A} = 4 R_X$$

So,
$$R_Y = 4 R_X,$$
$$R_X : R_Y = 1 : 4$$

(b) Power,
$$P = \frac{V^2}{R}$$

For wire X
$$P_X = \frac{10^2}{R_X} = \frac{100}{R_X}$$

For wire Y
$$P_Y = \frac{20^2}{4R_X} = \frac{400}{4R_X} = \frac{100}{R_X}$$

So,
$$P_X = P_Y,$$
$$P_X : P_Y = 1 : 1$$

(c)
$$\text{Mass} = \text{Volume} \times \text{Density}$$
$$= \text{Length} \times \text{Area} \times \text{Density}$$

For wire X,
$$m_X = d \cdot l \cdot A$$

For wire Y
$$m_Y = d \cdot 2l \cdot \frac{A}{2} = d \cdot l \cdot A$$

So,
$$m_X = m_Y,$$
$$m_X : m_Y = 1 : 1$$

(d) True
$$\text{Heat produced} = mc\Delta T$$

Also,
$$\text{Heat} = \text{Power} \times \text{Time} = P \times t$$

So, equating both
$$P \cdot t = m \cdot c \cdot \Delta T \Rightarrow \Delta T = \frac{P \cdot t}{m \cdot c}$$

From parts (b) and (c)
$P_X = P_Y$ and $m_X = m_Y$
Also, both wires are nichrome, so $c$ is the same.
So, for both wires,
$$\Delta T_X = \frac{P \cdot t}{m \cdot c} = \Delta T_Y$$

**Answer 9.**

(i) (a) Parallel → The bulbs must be connected in parallel, since all bulbs get the same voltage, and the brightest one ($P_3$) has the highest power.

(b) $V_1 = V_2 = V_3$ → In a parallel connection, all bulbs get the same voltage.

(c) Yes → The circuit will still function if one bulb is fused, because in a parallel connection, each bulb has an independent path to the power supply.

(ii) (a) The quantity 'a' represents peak voltage (maximum e.m.f.).
The induced e.m.f. in an AC generator
$$E = E_{max} \sin(\omega t)$$
Where,
$E_{max} \propto \omega$
$\omega = 2\pi f$, and $f \propto$ speed of rotation
So, if speed is doubled, frequency $f$ doubles, and so:
$$E_{max} \propto \omega \Rightarrow \text{'a' (peak e.m.f.) doubles.}$$

(b) The quantity 'b' represents the time period of the AC wave. So, 'b' becomes half.

(c) The time period (T) is inversely proportional to the frequency ($f$).
$$T = \frac{1}{f}$$

Doubling the speed of rotation doubles the frequency, so the time period becomes half.

(iii) (a) Beta ($\beta^-$) particle : ${}^{238}_{92}C \rightarrow {}^{238}_{93}E + {}^{0}_{-1}\beta$

Element C has the same number of protons as element E, but more neutrons. This indicates beta ($\beta^-$) decay, where a neutron changes into a proton.

(b) Isotopes → Elements D and E have the same number of protons but different number of neutrons.

(c) The ray (alpha particle) will bend towards the negative plate in an electric field.

If C transforms into B by emitting a radioactive ray, and the number of protons decreases, this indicates alpha ($\alpha$) decay. Alpha particles are positively charged, so they will bend towards the negative plate in an electric field.

□□

# 1 Sample Paper

## Physics

## Questions

### Section-A (Attempt all questions from this section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**
**(Do not copy the question, write the correct answers only.)**

(i) Choose the incorrect statement : **[Understanding]**
(a) Dispersion of white light occurs at the first surface of prism
(b) Deviation of light occurs at both the surface of prism
(c) The prism produce colours
(d) The prism splits the various colours present in the light incident on it.

(ii) Work done by effort is : **[Recall]**
(a) Effort × load
(b) Load × distance moved by effort
(c) Effort × distance moved by effort
(d) None of these

(iii) If the work done by a heart is 2J per beat. The power of the heart if it beat 70 times in 1 minute (approx.) : **[Application]**
(a) 2 J/sec
(b) 4 J/sec
(c) 5 J/sec
(d) 6 J/sec

(iv) Which of the following is not an example of the phenomenon of scattering of light? **[Recall]**
(a) Rainbow formation
(b) Sky appears blue
(c) Sky appears reddish in the evening sky
(d) Colour of the water in deep seas and oceans

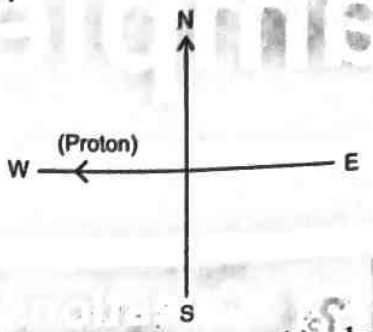
(v) The force which is not a real force : **[Recall]**
(a) Force of tension
(b) Centripetal force
(c) Centrifugal force
(d) Gravitational force

(vi) Safe limit of level of sound for hearing is : **[Recall]**
(a) 20 to 100 dB
(b) 40 to 120 dB
(c) 50 to 100 dB
(d) 0 to 80 dB

(vii) The slope of the graph showing the variation of potential difference V on X-axis and current I on Y axis gives : **[Understanding]**
(a) Resistivity
(b) Inductance
(c) Resistance
(d) Conductance

(viii) **Assertion:** The resistivity of a substance does not depend on the nature of the substance.
**Reason:** The resistivity of a substance is a characteristic property of the material. **[Understanding & Recall]**
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not the correct explanation of (A).
(c) Assertion is false but reason is true.
(d) Assertion is true but reason is false.

(ix) A positively charged alpha particle projected towards west is deflected towards north by magnetic field. The direction of magnetic field is : **[Recall & Application]**



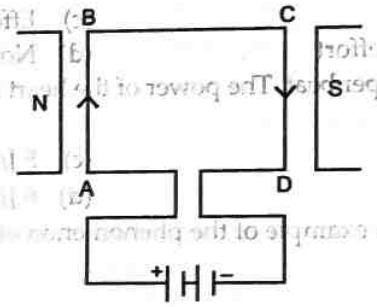

(a) towards south
(b) towards east
(c) downward
(d) upward

(x) When amplitude of sound wave decreases, its: **[Understanding]**
(a) Pitch decreases
(b) Loudness decreases
(c) Pitch increases
(d) Loudness increases

(xi) Which of the following substances has the largest specific heat ? **[Recall]**
(a) Turpentine (b) Kerosene (c) Water (d) Glycerine

(xii) Which of the following is mass independent quantity? **[Recall]**
(a) Specific heat capacity
(b) Heat capacity
(c) Weight
(d) Both (a) and (c)

(xiii) A rectangular coil ABCD is placed between the pole pieces of a horse-shoe magnet as shown in figure: **[Application]**




Choose the incorrect option from the following :
(a) Current in the coil is in direction DCBA
(b) On arm BC no force acts
(c) On arm CD, force is outwards perpendicular to the plane of the coil.
(d) None of these

(xiv) A beaker had 100 g of water at temperature 90°C. Another 600 g of water at temperature 20°C is poured into the beaker later on. After mixing, the temperature of the water will be : **[Analysis & Application]**
(a) 45°C (b) 20°C (c) 30°C (d) 50°C

(xv) The amount of heat energy contained in a body depends upon which of the following: **[Understanding & Recall]**
(a) Mass of the body.
(b) Temperature of the body.
(c) Material properties of the body.
(d) All of these

**Question 2.**

(i) Complete the following by choosing the correct answers from the bracket: **[Recall & Understanding]**
(a) Torque is a ..... [vector/scaler/tensor] quantity.
(b) Energy can neither be created nor destroyed is the .....[ law of conservation/ law of mass/ law of momentum] of energy.
(c) Refractive index is the ratio of sine of angle of incidence to sine of angle of refraction. This law is called the .....[energy/snell/torque] law.
(d) High tension wires have low..... [resistance/current/voltage].

(e) An element having atomic number greater than 82 exhibits .....[no radioactivity/artificial radioactivity/natural radioactivity]. But an element with an atomic number less than 82 exhibits ..... [Unstability, stability]

(ii) Match the action in Column A with the reason in Column B that explains how center of gravity is maintained:

| Body Movement Column A | Purpose / Reason Column B |
|---|---|
| (a) Bending forward while going uphill | • To shift body weight behind the vertical axis of motion |
| (b) Bending backward while coming downhill | • To keep the center of gravity between the feet |
| | • To prevent the body from toppling forward |

(iii) (a) How is the emf across primary and secondary coil of a transformer related with the number of turns of coils in them ?

(b) On which type of current do transformers work? **[Recall]**

**Question 3.**

(i) A body of mass 60 kg has a momentum of 3000 kg $ms^{-1}$. Calculate : **[Understanding & Evaluate]**

(a) the kinetic energy of the body.

(b) the velocity of the body.

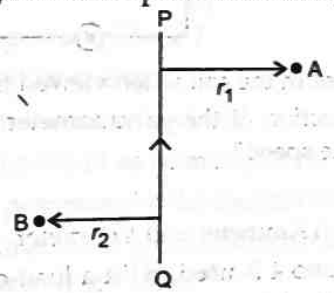
(ii) (a) Draw a neat diagram of a single movable pulley.

(b) Why is a fixed pulley used in the above system ?

(c) Why is this pulley system superior than single fixed pulley system ? **[Application]**

(iii) A current carrying conductor PQ lies in the plane of the paper as shown in figure.

(a) Find the direction of the magnetic fields produced at the points A and B.

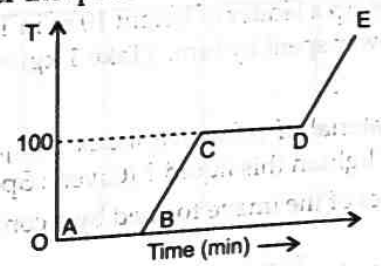



(b) If $r_1 > r_2$, then where will the strength of the magnetic field be larger? **[Application]**

(iv) (a) What do you understand by shriller sound ? **[Recall]**

(b) How does loudness of sound is affected by amplitude? **[Understanding]**

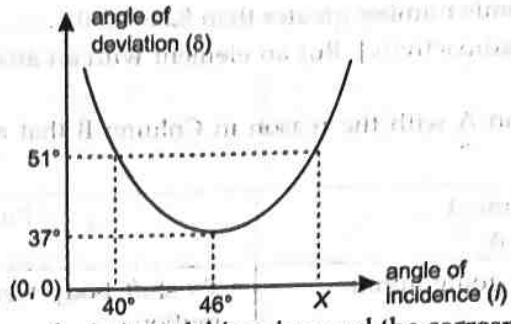
(v) The diagram given below shows a plot of temperature vs time, showing the changes in the state of ice on heating (not to scale). Answer the questions as follows.




(a) What does the region AB in graph signifies? **[Recall]**

(b) State True or false : In the graph, the region BC is known as vaporisation. Justify your answer with a suitable reason.

(vi) The diagram (not drawn to the scale) below shows the graphical relation between angle of deviation and angle of incidence, when light passes through a triangular prism of angle 62° of a certain glass material.




(a) State the angle of minimum deviation of this prism and the corresponding angle of incidence. [Recall]

(b) Calculate the value of X. [Understanding]

(vii) What do you understand by the following terms? [Recall]

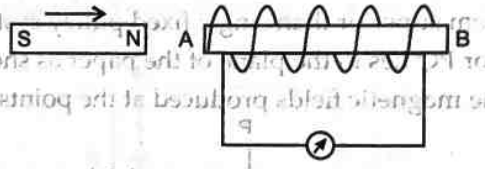
(a) Nucleus,

(b) Nucleons.

## Section-B (Attempt any four questions)

**Question 4.**

(i) The diagram shows a coil connected to a galvanometer G. The galvanometer shows a deflection to the right when north pole of a powerful magnet is moved to the right as shown.




(a) What is the direction of current in the coil when viewed from end A? [Recall]

(b) What is the direction of deflection of the galvanometer when both the coil and the magnet are moved to the right at the same speed? [Understanding]

(c) What is a Galvanometer? [Recall]

(d) Write four differences between Ammeter and Voltmeter. [Recall]

(ii) A pulley system with a velocity ratio 4 is used to lift a load of 300 kgf to a vertical height of 10 m by applying an effort of 100 kgf downwards.

(a) Draw the arrangement of pulley showing the load (L), effort (E) and tension (T) in each strand. [Application]

(b) Find the efficiency of the pulley system and the work done by the effort. [Understanding & Call]

(iii) (a) State two differences between energy and power. [Recall]

(b) Amit weighing 60 kgf climbs up a ladder of height 10 m in 15 minutes. Calculate the increase in his potential energy and the power spent by him. (Take 1 kgf = 10 N.) [Understanding]

**Question 5.**

(i) (a) An object, made from a material of refractive index 1.8, just 'disappears' when put in a certain liquid. What is the speed of light in this liquid ? (Given : Speed of light in air = $3 \times 10^8$ ms$^{-1}$)

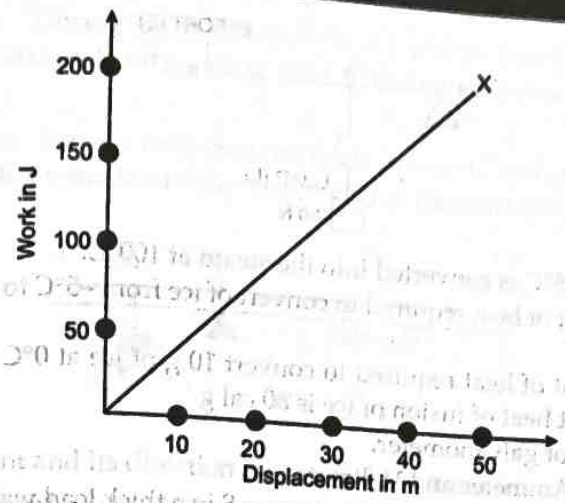
(b) Name any two characteristics of the image formed by a convex lens when an object is kept at its 2F point. [Understanding & Evaluate]

(ii) A fish, floating in a tank of water, views a bird, sitting on a branch of tree.

(a) Does the bird appear to be higher or lower than its actual position to the fish ? [Understanding]

(b) Also state the relation between the apparent and real heights of the bird and the refractive index of water with respect to air. [Recall]

(iii) The given figure depicts the graph of work done vs. displacement under a constant force of 10N.




(a) What is the work done when the displacement is 10 meters?

(b) Using the graph, determine the force applied if the work done at 20 m displacement is 200 J.

(c) State True or False : The slope of the Work vs. Displacement graph gives the magnitude of the applied force. Justify your answer with a suitable reason.

**Question 6.**

(i) Figure below shows three different modes of vibration of a string :

(a) (b) (c)

(a) Which of the vibration is of largest amplitude ? **[Recall]**

(b) Which of the vibration is of least frequency ? **[Recall]**

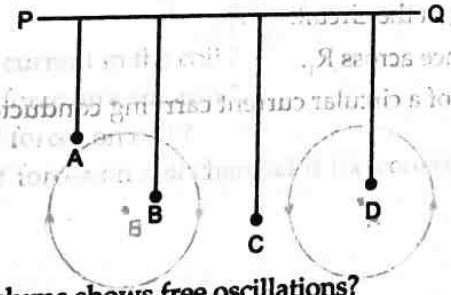
(c) What is the ratio of frequency between (a) and (c) ? **[Application & Evaluate]**

(ii) A coconut of mass 450g falls from the top of an 80 m high tree.

(a) Calculate the potential energy possessed by the coconut when it is at the top of the tree.

(b) Without calculation, state the kinetic energy with which it strikes the ground and state the principle involved to arrive at the answer in i). $g = 10\ ms^{-2}$ **[Understanding & Application]**

(iii) Four simple pendulums A, B, C, and D with light bobs are suspended from a horizontal rubber string as shown in figure. The system is stretched between two fixed points P and Q. The lengths of pendulums B and D are equal. The length of pendulum A is shorter whereas the length of pendulum C is longer than the pendulum B and D. On displacing the bob of pendulum D to one side and then on releasing, the system is set into oscillations.




(a) Which of the four pendulums shows free oscillations?

(b) Which of the four pendulums shows forced oscillation?

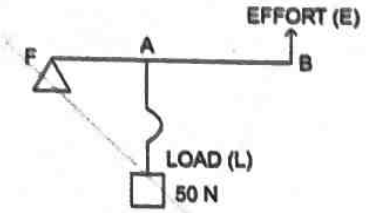
(c) Which point in the above figure shows the resonance? **[Understanding & Recall]**

**Question 7.**

(i) The diagram below shows a lever in use.

(a) To which class of lever does it belong?

(b) If FA = 40 cm, AB = 60 cm, then find the mechanical advantage of the lever.




(ii) In process 10 g of ice at –5°C is converted into the steam at 100°C.

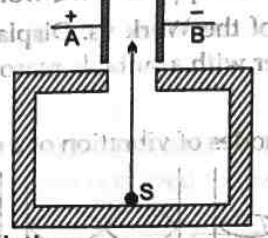
(a) Calculate the amount of heat required to convert of ice from –5°C to 0°C, if specific heat of ice is 0.5 cal $g^{-1}$ $°C^{-1}$

(b) Calculate the amount of heat required to convert 10 g of ice at 0°C into 10 g of water at the same temperature, if latent heat of fusion of ice is 80 cal $g^{-1}$. **[Understanding & Evaluate]**

(c) Write the definition of galvanometer. **[Recall]**

(d) Difference between Ammeter and Voltmeter. **[Recall]**

(iii) The diagram given below shows a radioactive source S in a thick lead walled container having a narrow opening. The radiations pass through an electric field between the plates A and B. **[Application]**



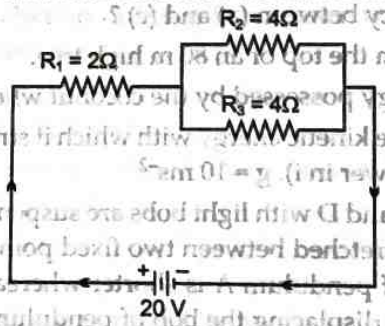

(a) Show the paths of α, β and γ radiation.

(b) Why source S is kept in a thick walled container with a narrow opening?

(c) Which radiation deflected the most?

**Question 8.**

(i) The circuit diagram shown below is formed out of the combination of three resistors $R_1$, $R_2$ and $R_3$.

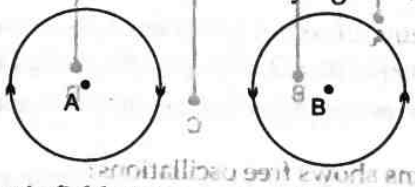



(a) Find total resistance of the circuit.

(b) Find total current flowing in the circuit.

(c) Find the potential difference across $R_1$. **[Understanding & Application]**

(ii) The diagram shows two cases of a circular current carrying conductor. **[Understanding & Evaluation]**




(a) Find the direction of magnetic field at the centre of both the conductors.

(b) Find the magnetic pole towards the reader side (your side) in both the conductors A and B.

(iii) A nucleus $_{92}U^{235}$ emits an alpha particle and transforms into Thorium. **[Understanding & Recall]**

(a) What will be the mass number of Thorium?

(b) What will be the atomic number of Thorium?

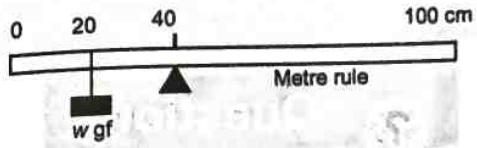
(c) Write the nuclear reaction involved in the emission of this particle.

(d) State True or False : During alpha decay, both the atomic number and the mass number of the original nucleus decrease. Justify your answer with a suitable reason .

**Question 9.**

(i) The diagram given below shows a uniform meter rule of weight 100 gf being balanced on a knife edge placed at the 40 cm mark, by suspending a weight $w$ gf at the mark 20 cm, find:

**[Understanding & Evaluate]**

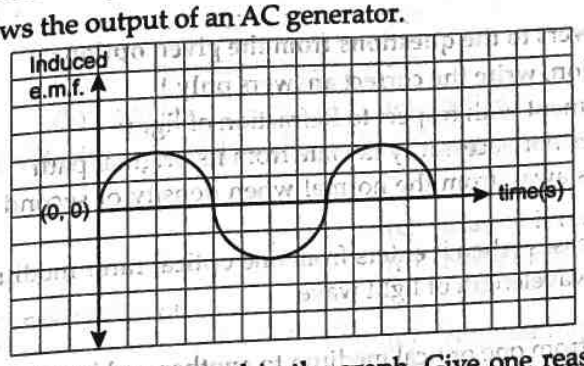



(a) the value of $w$.

(b) the resultant moment and its direction if the weight $w$ is moved to the mark 30 cm.

(c) the position of another weight of 50 gf to balance the rule in part (b)

(ii) The given diagram shows the output of an AC generator.

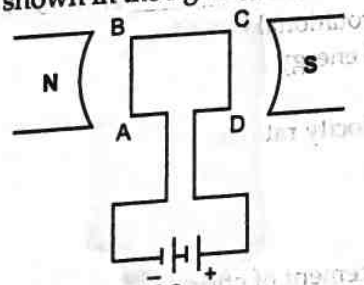



(a) Identify the type of current produced in the graph. Give one reason based on the shape of the graph.

(b) At which points on the graph is the induced e.m.f. zero? Explain why this happens

(c) If the number of turns in the generator coil is increased, how will the amplitude of the graph change? Justify your answer.

(iii) A rectangular coil ABCD having a battery connected at its ends A and D is placed between the pole pieces of a horse-shoe magnet as shown in the figure:




**[Understanding & Application]**

(a) What is the direction of current in the coil ?

(b) What is the direction of force on each arm ?

(c) (i) What is the effect of forces on coil ?

(ii) How is the effect of forces on coil changed if the connections at the terminals of battery are interchanged ?

**[Understanding & Recall]**

□□

# 2 Sample Paper

## Physics

## Questions

### Section-A (Attempt all questions from this section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**
**(Do not copy the question, write the correct answers only.)**

(i) Choose the correct statement with respect to Refraction of light: **[Understanding]**
(a) The ray of light does not necessarily deviate from its original path
(b) The light ray bends away from the normal when density of second medium is less than the first medium
(c) Speed of light decreases when it enters from one optical rarer medium to another denser medium due to decrease in wavelength of light wave
(d) All of the above

(ii) When a light ray enters from one optical medium to another and bends towards the normal then : **[Understanding]**
(a) Angle of incidence is less than angle of refraction
(b) It is travelling from optically denser medium to optically rarer medium
(c) It is travelling from optically rarer medium to a optically denser medium
(d) Speed of light remains unchanged

(iii) Two basic forms of mechanical energy are : **[Recall]**
(a) Elastic potential and vibrational kinetic
(b) Gravitational potential and rotational kinetic
(c) Kinetic energy and potential energy
(d) None of the above

(iv) In case of cranes and hoist the velocity ratio is : **[Understanding]**
(a) Number of movable pulleys
(b) 2 number of pulleys
(c) Total number of pulleys
(d) Displacement of load/displacement of effort

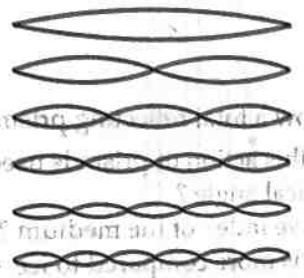
(v) Select the correct reason why diamond appears to sparkle in the dark : **[Analysis & Application]**
(a) It has a low critical angle of 24°
(b) Due to the light getting entrapped inside the diamond as a result of successive total internal reflections.
(c) Due to refraction of light
(d) Both (a) and (b)

(vi) In damped vibration: **[Recall]**
(a) Total energy of the oscillator decreases with time
(b) Total energy of the oscillator increases with time
(c) Total energy of the oscillator does not change with time
(d) Total energy of the oscillator first decreases then increases with time

(vii) 12.5 kilocalorie is equivalent to _____. **[Recall]**
(a) 52300 Joule (b) 5230 Joule (c) 23500 Joule (d) 32500 Joule

(viii) **Assertion:** The resistance of superconductor are zero.
**Reason:** The superconductors are used for the transmission of electric power.
(a) Both (A) and (R) are true and (R) is the correct explanation of (A). **[Understanding & Recall]**
(b) Both (A) and (R) are true and (R) is not the correct explanation of (A).
(c) Assertion is false but reason is true.
(d) Assertion is true but reason is false.

(ix) The frequency of the topmost wave is 100 Hz. What is the frequency of the bottom most wave? **[Understanding & Recall]**



(a) 100 Hz (b) 400 Hz (c) 500 Hz (d) 600 Hz

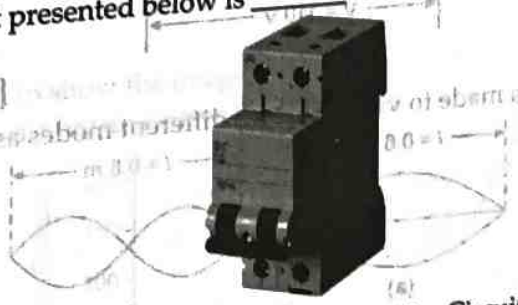
(x) Which type of lever has velocity ratio and mechanical advantage always less than one? **[Recall & Application]**
(a) Class III lever (c) Class II lever
(b) Class I lever (d) None of the above

(xi) Lenz's law is based on conservation of: **[Recall]**
(a) Mass (c) Angular momentum
(b) Current (d) Energy

(xii) How does the melting point of wax change as pressure rises? **[Recall]**
(a) Melting point increases. (c) Melting point remains unchanged.
(b) Melting point decreases. (d) Cannot be said.

(xiii) During which of the following processes heat energy is absorbed by the substance? **[Recall]**
(a) Melting (b) Freezing (c) Boiling (d) Both (a) and (c)

(xiv) Name of the instrument presented below is _____. **[Application]**



(a) Fuse (b) Earthling (c) Circuit Breaker (d) Switch

(xv) Which instrument is used to measure current in an electric circuit? **[Application]**
(a) Ammeter (b) Potentiometer (c) Voltmeter (d) Tachometer

**Question 2.**

(i) Complete the following by choosing the correct answers from the bracket: **[Recall & Understanding]**
(a) In anticlockwise direction of the torque is considered .....[negative /positive] and in clockwise direction is considered ..... [positive / negative].
(b) Effort × load arm = load × effort arm call this result as the principle of.....[momentum/ levers/ energy].
(c) Critical angle is the angle of .....[refraction/ incidence/emergence] .
(d) The sound takes minimum time to travel from one place to another.....[ at night/ during summer/ during winter].
(e) 1mA is equal to .....[$10^{-3}/10^{-6}/10^{3}$] ampere.

(ii) Match the situation in Column A with the correct reason in Column B:

| Situation Column A | Reason Column B |
|---|---|
| (a) A coolie carries a load and walks on a flat platform | • Work is done by gravitational force |
| (b) A ball falls freely under gravity | • Positive work is done as force and displacement are same |
| | • No work is done as force is perpendicular to displacement |

[Recall]

(iii) Arrange α, β and γ rays in ascending order with respect to their:
(a) Penetrating power
(b) Ionising power.

**Question 3.**

(i) Show with the help of a diagram how a total reflecting prism can be used to turn a ray of light through 90°. Name an instrument in which this action of prism is used. [Application]

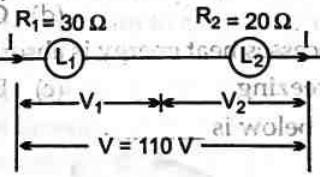
(ii) (a) What is meant by the term critical angle ? [Recall]
(b) How is it related to the refractive index of the medium ? [Understanding]

(iii) (a) Specific heat capacity of water is more compared to ice. Correct or Wrong? Why? [Understanding]
(b) State the principle of Calorimetry. [Recall]

(iv) (a) Write two differences between a chemical change and a nuclear change. [Recall]
(b) Mention the beneficial and harmful effects of radiations.

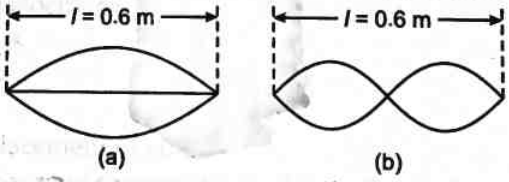
(v) Carbon has an isotope $^{14}_{6}C$.
(a) How many protons and neutrons does it contain? [Recall]
(b) After decaying a particle, the daughter element becomes, say $^{14}_{7}X$. What is that decaying particle? Write down the equation of the changes. [Understanding]

(vi) Two lamps of resistance 30 Ω and 20 Ω respectively are connected in series in a 110 V circuit. Calculate
(a) the total resistance in the circuit
(b) the current in the circuit, and
(c) State True or false : The voltage drop across $L_1$ and $L_2$ are 66 V and 44 V respectively . Justify your answer with a suitable reason.




[Understanding & Evaluate]

(vii) A 0.6 m long stretched wire is made to vibrate in two different modes as shown in figure (a) and (b).

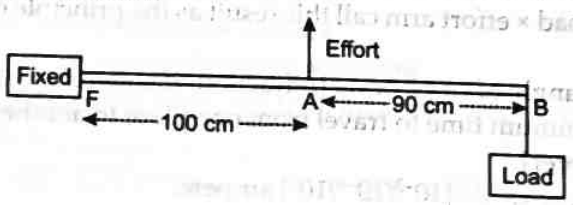



(a) If the frequency of the note produced in (b) is *n*, what is the frequency in case (a).
(b) In which case (a) or (b), is the note louder? Give reasons.
(c) In which case is the pitch higher? Give reason.

## Section-B (Attempt any four questions)

**Question 4.**

(i) The diagram shows the use of a lever.



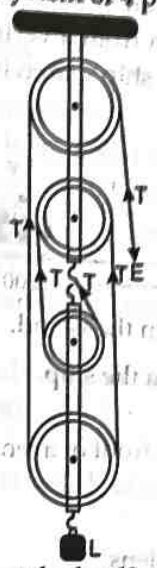
(a) State the principle of moments as applied to the above lever. **[Understanding & Recall]**

(b) Which class of lever is this ? Give an example of this class of lever. **[Application]**

(ii) (a) A boy uses a single fixed pulley to lift a load of 50 kgf to some height. Another boy uses a single movable pulley to lift the same load to the same height. Compare the effort applied by them. Give a reason to support your Answer. **[Understanding ]**

(b) How does uniform circular motion differ from uniform linear motion ? **[Recall]**

(iii) Draw a diagram showing a block and tackle system of 4 pulleys.




(a) State, how many strands of tackle support the load? **[Understanding]**

(b) Draw arrows to represent tension in each strand. **[Recall]**

(c) Find the mechanical advantage of the system, stating the assumptions made. **[Recall]**

(d) If load is pulled up by a distance 1 m, how much does the effort end move? **[Recall]**

**Question 5.**

(i) A certain sound has a frequency of 256 Hz and a wavelength of 1.3 m.

(a) Calculate the speed with which this sound travels.

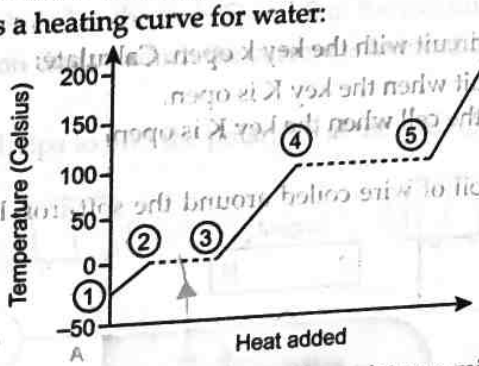
(b) What difference would be felt by a listener between the above sound and another sound travelling at the same speed, but of wavelength 2.6 m ? **[Understanding & Evaluate]**

(ii) A lens forms an upright and diminished image of an object when the object is placed at the focal point of the given lens. **[Recall]**

(a) Name the lens. **[Understanding]**

(b) Draw a ray diagram to show the image formation.

(iii) The diagram below shows a heating curve for water:




(a) Between which two numbered points does water exist as a mixture of solid and liquid?

(b) What does the horizontal segment between points 4 and 5 represent? Also what remains constant during this stage?

(c) State True or False : Temperature continues to increase during the boiling process of water. Justify your answer with a suitable reason. **[Understanding & Recall]**

**Question 6.**

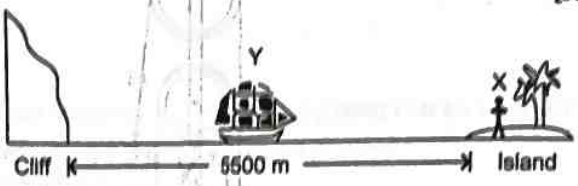
(i) Name the factor that determines :

(a) Loudness of the sound heard.

(b) Quality of the note.
(c) Pitch of the note.

(ii) (a) What are damped vibrations ? **[Recall]**
(b) Give one example of damped vibrations. **[Recall]**
(c) A man standing in front of a vertical cliff fires a gun. He hears an echo after 3 s. On moving close to the cliff by 82.5 m, he fires again. This time he hears the echo after 2.5 s. Calculate the speed of sound, distance and initial position of man from the cliff. **[Application & Evaluate]**

(iii) An observer X is on an island 5500 m from a vertical cliff on the shore. A ship Y is anchored between the island and the cliff. A blast on the ship's siren is heard twice by X, the interval being 5 s. [Velocity of sound = 330 $ms^{-1}$] **[Application & Application]**



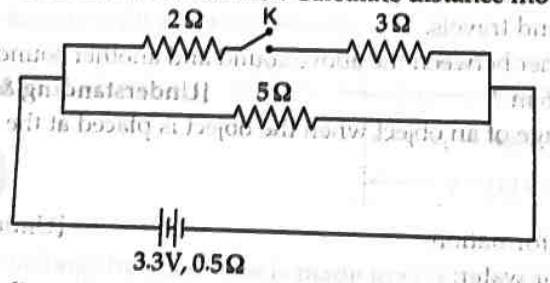

(a) Find the distance of the ship from the island.
(b) Find the distance of the cliff from the ship.

**Question 7.**

(i) An object of height 20 cm is placed in front of a lens at a distance of 50 cm. Its virtual, diminished image is formed at a distance of 15 cm.
(a) Identify the type of the lens.
(b) Calculate the focal length of the lens.

(ii) A person standing in front of a cliff fires a gun and hears its echo after 3s. If the speed of sound in air is 336 $ms^{-1}$.
(a) Calculate the distance of the person from the cliff.
(b) After moving a certain distance from the cliff he fires the gun again and this time the echo is heard 1.5 s later than the first. Calculate distance moved by the person.

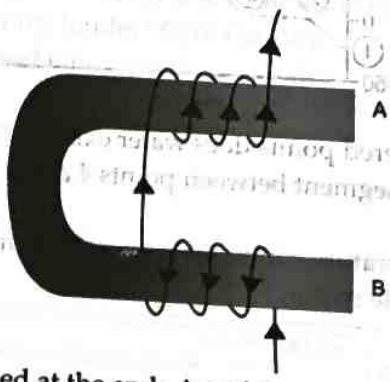
(iii)




The diagram above shows a circuit with the key k open. Calculate: **[Understanding & Recall]**
(a) the resistance of the circuit when the key K is open.
(b) the current drawn from the cell when the key K is open.

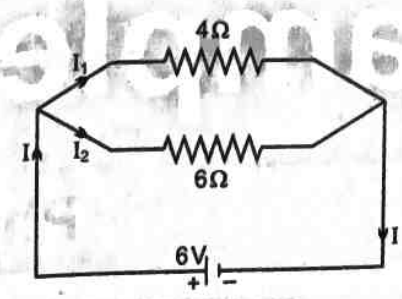
**Question 8.**

(i) The current flowing in the coil of wire coiled around the soft iron horse shoe core is depicted in the diagram above.




(a) State the polarities developed at the ends A and B.
(b) State ways to increase magnetic field strength. **[Understanding & Recall]**

(ii) Two 4 Ω and 6 Ω resistors are connected in parallel. The circuit is powered by a 6 V battery with very low resistance: **[Understanding & Evaluate]**




(a) What is the equivalent resistance of the circuit?

(b) What is the current flowing through the battery and 4 Ω resistor?

(iii) A metal with a mass of 400 g has a heat capacity of 200 J $K^{-1}$. **[Understanding & Application]**

(a) How much heat energy does it take to raise the temperature by 5°C?

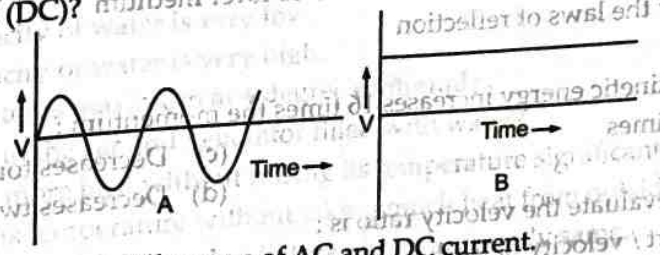
(b) What is the metal's specific heat capacity?

(c) Is it possible for a pure substance, the particular latent heat of fusion to be the same as the latent heat of melting?

(d) State True or False : Heat capacity depends only on the mass of a substance and not on its material. Justify your answer with a suitable reason.

**Question 9.**

(i) (a) Consider the following graphs and write which one represents alternating (AC) and which one represents direct (DC)? **[Understanding & Recall]**




(b) Write any two significant differences of AC and DC current.

(c) Which of these two (AC or DC) is the more dangerous?

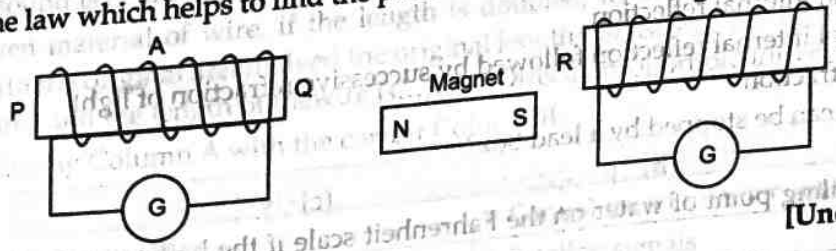
(ii) A boy standing in front of a wall at a distance of 17 m produce 10 claps per second. He notices that the sound of his clapping coincides with the echo. Echo is heard only once when clapping is stopped. Calculate the speed of sound. **[Understanding & Evaluate]**

(iii) The diagram below shows a magnet placed between two coils A and B. The magnet is moved along the axis towards coil B.

(a) State the polarities induced at the ends Q and R of the coil due to the motion of the magnet.

(b) Name the phenomenon due to which the current is induced in the coils. **[Understanding & Application]**

(c) Name the law which helps to find the polarities at the ends Q and R.




**[Understanding & Recall]**

□□

# 3 Sample Paper

## Physics [Unsolved]

## Questions

### Section-A (Attempt all questions from this section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**
**(Do not copy the question, write the correct answers only.)**

(i) Choose the correct statement with respect to Total Internal Reflection : **[Understanding]**
(a) The ray of light travels at an angle greater than critical angle
(b) The ray of light travels from denser medium to rarer medium
(c) It does not obey the laws of reflection
(d) Both (a) and (b)

(ii) For a given mass if kinetic energy increases 16 times the momentum : **[Understanding]**
(a) Increases four times
(b) Increases twice
(c) Decreases four times
(d) Decreases twice

(iii) The relationship to evaluate the velocity ratio is : **[Recall]**
(a) Velocity of effort / velocity of load
(b) Displacement of effort / displacement of load
(c) Mechanical advantage / efficiency
(d) All of the above

(iv) State which of the following statements are true. **[Recall]**
(a) Efficiency of an ideal machine is equal to one
(b) Efficiency of a practical machine is less than one
(c) Efficiency is always expressed in fraction
(d) Both (a) and (b)

(v) Select the correct reason for the cause that is responsible for mirage in deserts : **[Recall]**
(a) It has a low critical angle
(b) Due to total internal reflection
(c) Due to total internal reflection followed by successive refraction of light
(d) Due to diffraction

(vi) Which particle can be stopped by a lead box? **[Recall]**
(a) $\alpha$ (b) $\beta$ (c) $\gamma$ (d) All of these

(vii) What is the boiling point of water on the Fahrenheit scale if the boiling point of water on the Celsius scale is 5 °C? **[Understanding & Recall]**
(a) –11° F (b) 27° F (c) –27° F (d) 41° F

(viii) **Assertion:** It is advantageous to transmit electric power at high voltage.
**Reason:** High voltage implies high current. **[Understanding & Recall]**
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not the correct explanation of (A).
(c) Assertion is false but reason is true.
(d) Assertion is true but reason is false.

(iv) Which of the following substance has highest specific heat capacity? **[Recall]**
(a) Hydrogen (b) Water (c) Lead (d) Copper

(v) Heat produced in a transmission wire is independent of: **[Application]**
(a) The material of the wire
(b) The amount of current that flows through it
(c) The direction of current flow
(d) The resistance of the wire

(vi) Which of the following statement is correct? **[Understanding]**
(a) During absorption of latent heat by a body, the temperature of the body changes
(b) During absorption of sensible heat by a body, the temperature of the body do not change
(c) During absorption of latent heat by a body, the temperature of the body remain constant
(d) In an isothermal process pressure is constant everywhere

(vii) Emission of alpha (α) particle is alternatively referred as the emission of: **[Recall]**
(a) Helium (c) Sodium
(b) Hydrogen (d) Radium

(viii) What is the energy required to raise the temperature of 5 kg of water from 10 K to 50 K? [Specific heat capacity of water is 4184 $J \cdot kg^{-1} \cdot K^{-1}$.] **[Application]**
(a) 836.8 J (b) 836.8 kJ (c) 242.4 kJ (d) 242.4 J

(xiv) Why are hot water bottles used for fomentation? **[Recall & Application]**
(a) Internal energy of water is very low.
(b) Specific heat capacity of water is very low.
(c) Specific heat capacity of water is very high.
(d) Density of the water is maximum at 4 degree centigrade.

(xv) Why are the radiators in the car and generator filled with water? **[Analysis & Application]**
(a) Water can extract more heat without raising its temperature significantly.
(b) Water can lower its temperature without taking much heat from outside.
(c) Specific heat capacity of water and radiators of cars are nearly same.
(d) None of the above.

**Question 2.**

(i) Complete the following by choosing the correct answers from the bracket: **[Recall & Understanding]**
(a) The total energy of a system remains .....[constant/variable/zero].
(b) The lever that has MA equal to, less than and greater than one is .....[ Class I/ Class II/ Class III].
(c) The emergent ray and incident ray should be equally inclined to the refracting surfaces of a prism in ..... [minimum deviation condition/ maximum deviation position/ equal deviation position].
(d) The .....[minimum/maximum/constant] time for replacted sound to reach after the original sound is heard to hear on eacho is 0.1 second.
(e) For a given material of wire, if the length is doubled, its area of cross section is ..... [one-fourth the original area/halved the original length/decreases]. The relation between the cross-sectioal area and the length of thewire is..... [Directly proportional/inversely proportional.]

(ii) Match the following Column A with the correct Column B:

| Column A | Column B |
|---|---|
| (a) Light Wave | • Cannot travel in outer space |
| (b) Sound Wave | • Satellite signals |
| | • Can travel in vacuum |

(iii) (a) What is the formula for centripetal force? **[Recall]**
(b) In which direction does the centrifugal force act?

**Question 3.**

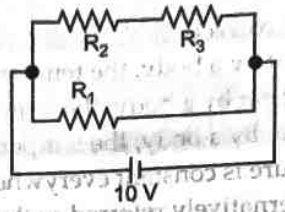
(i) A nucleus of an atom X has a mass number 48 and atomic number 18. **[Understanding]**
(a) What is the number of neutrons in the nucleus? Write the symbol of atom X.

(b) If four proton are lost from the atom X, what will be the symbol of the daughter nucleus Y? [Recall]

(ii) In 30 seconds, a 5 kilowatt electric geyser elevates the temperature of 1 kg of water from 278 K to 328 K. What is the amount of energy supplied by the heater? [Understanding & Evaluate]

(iii) Consider the given figure:

Given: $R_3 = R_2 = 4$ Ohm and $R_1 = 8$ Ohm




(a) What is the equivalent resistance of the circuit?

(b) What is the current flowing through the battery?

(c) State True or false : If all the resistors are connected in series, then current flowing through the battery is 0.625 A. Justify your answer with a suitable reason.

(iv) What should be the angle between force and displacement to get : [Recall]

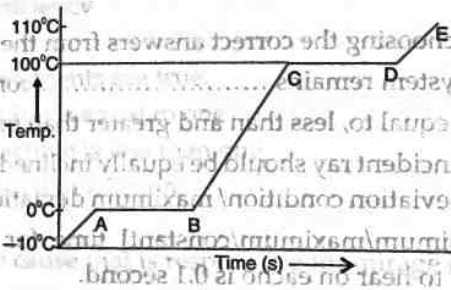
(a) maximum work ?

(b) zero work ?

(v) (a) The refractive index of water with respect to air is $\frac{4}{3}$. What is the refractive index of air with respect to water ? [Understanding]

(b) A ray of light is incident as a normal ray on the surface of separation of two different mediums. What is the value of the angle of incidence in this case ? [Recall]

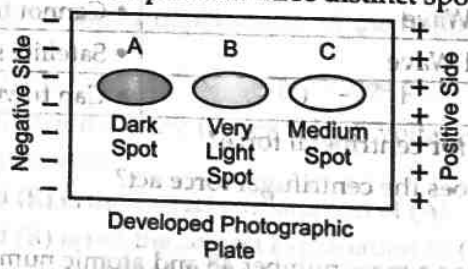
(vi) A piece of ice is heated at a constant rate. The variation of temperature with heat input is shown in the graph below:




(a) What is being represented by AB and CD? [Recall]

(b) What conclusion can you draw regarding the nature of ice from the above graph? [Understanding]

(vii) Radioactive radiations were allowed to fall on a photographic plate, placed in an electric field for few seconds. The photographic plate was developed and three distinct spots (A, B and C) were visible.




Identify the radiations, responsible for each spot with reasons. [Application]

## Section-B (Attempt any four questions)

**Question 4.**

(i) The diagram below shows a fish in the tank and its image seen in the surface of water.

(a) Name the phenomenon responsible for the formation of this image. **[Understanding & Recall]**

(b) A double convex lens with refractive index $\mu_1$, inside two liquids of refractive indices $\mu_2$, and $\mu_3$, are shown in the diagrams below.

The refractive indices are such that $\mu_2 > \mu_1$ and $\mu_1 > \mu_1$.

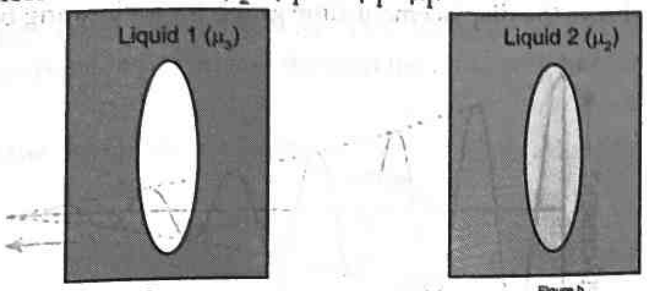



Figure a Figure b

How would a parallel incident beam of light refract when it comes out of the lens in each of the cases shown above?

(1) in figure (a).

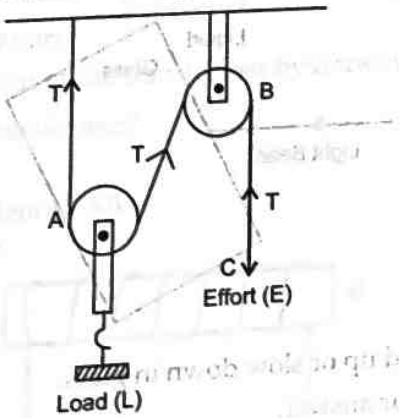
(2) in figure (b). **[Application]**

(ii) An atomic nucleus A is composed of 84 protons and 128 neutrons. The nucleus A emits an a particle and is transformed into a nucleus B.

(a) What is the composition of B?

(b) Does the composition of C change if it emits gamma radiations? **[Board Question]**

(iii) From the adjacent diagram, answer the following questions :




(a) What kind of pulleys are A and B ? **[Recall]**

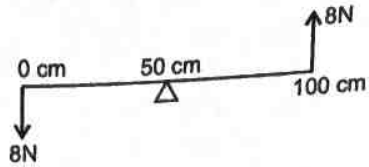
(b) State the purpose of pulley B. **[Recall]**

(c) What effort has to be applied at C to raise a load (L) of 40 kgf ? **[Understanding]**
(Neglect the weight of pulley A and friction.)

(d) Give the Relation between velocity Ratio, Mechanical Advantage and efficiency. **[Recall]**

**Question 5.**

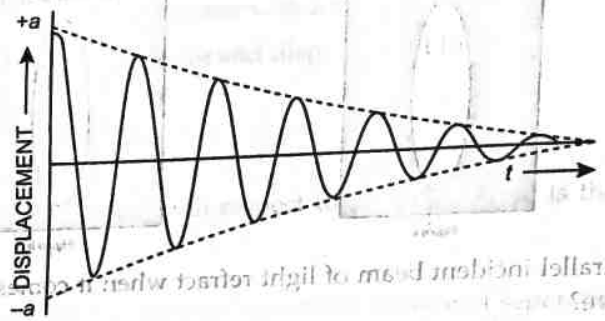
(i) Two forces each of 8 N act vertically upwards and downwards respectively on the two ends of a uniform metre rule which is placed at its mid-point as shown in the diagram. Determine the magnitude of the resultant moment of these forces about the mid-point. **[Understanding & Evaluate]**




(ii) (a) A man having a box on his head, climbs up a slope and another man having an identical box walks the same distance on a levelled road. Who does more work against the force of gravity and why? **[Understanding]**

(b) A ray of light travels from water to air. Show its behaviour when : (a) $i < i_c$ (b) $i = i_c$ (c) $i > i_c$ by means of a ray diagram. **[Recall]**

(iii) The diagram below shows the displacement-time graph for a vibrating body.



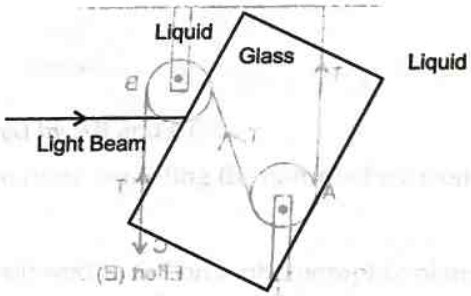

(a) What will happen to the vibrations of the body after some time?

(b) Why is the amplitude of the wave gradually decreasing?

(c) State True or False : The type of vibrations produced by the vibrating body in above figure is damped vibrations. Justify your answer with a suitable reason.

**Question 6.**

(i) The diagram given below shows the path of a ray of light through a rectangular glass block placed in a liquid of uniform density.




(a) (i) Does the light speed up or slow down in glass.

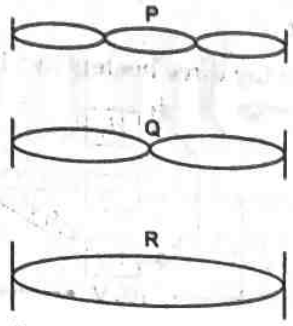
(ii) Give reason for your answer.

(b) What is the angular deviation of the emergent ray from the glass block with respect to the incident ray?

(c) State two conditions under which the light ray moving from liquid to glass passes straight without bending.

(d) Will the glass be visible when the ray passes undeviated?

(ii) The adjacent diagram shows three different modes of vibrations P, Q and R of the same string.




(a) Which vibration will produce a louder sound and why ?

(b) The sound of which string will have maximum shrillness ?

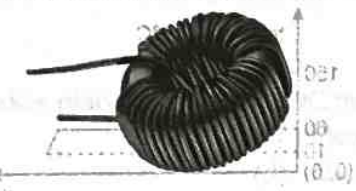
(c) State the ratio of wavelengths of P and R. **[Understanding & Recall]**

(iii) A person standing between two vertical cliffs hears two sounds one after 3 seconds and another after 6 second. Find the distance between the two cliffs if velocity of sound is 340 $ms^{-1}$. **[Understanding & Application]**

**Question 7.**

(i) (a) A current of 100 mA flows through a wire. The charge on an electron is $1.6 \times 10^{-19}$ C. Find the number of electrons passing per second through the cross-section of the conductor. **[Understanding & Evaluate]**

(b) Write the name of the device shown below. **[Recall]**



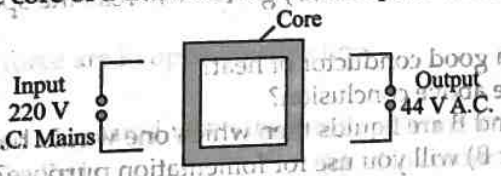
(ii) An electric bulb is rated as 100 W-220 V.

(a) What is the resistance of the filament?

(b) What is the safe current which can flow through the bulb?

(c) Is it safe to use 1 A current flow to this bulb? **[Understanding & Evaluate]**

(iii) The diagram below shows the core of a transformer and its input and output connections.




(a) State the material used for the core. **[Application]**

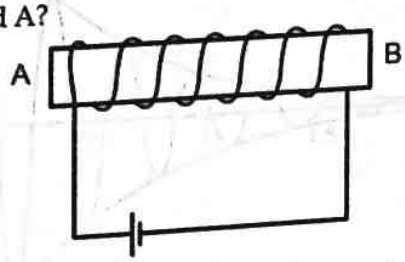
(b) Copy and complete the diagram of the transformer by drawing input and output coils.

(c) Which principles is used in transformer? **[Understanding & Application]**

**Question 8.**

(i) You have been provided with a solenoid AB.

(a) What is the polarity at end A?




(b) Give one advantage of an electromagnet over a permanent magnet.

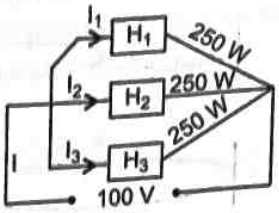
(c) Name the phenomenon due to which the current is induced in the coils.

(ii) Three 250 W heaters are connected in parallel to a 100 V supply. Calculate:

(a) Total current taken from the supply,

(b) The resistance of each heater.

(c) The energy supply in kWh to the three heaters in 5 hour.




(iii) (a) Define Quality of a sound.

(b) Present two differences between Music and Noise.

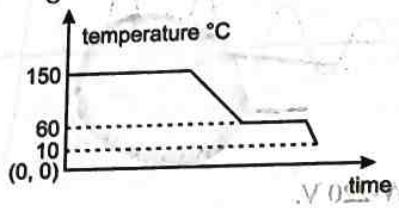
(c) When a tuning fork is allowed to vibrate in the air, what type of vibration does it produce? **[Understanding & Recall]**

(d) State True or False : When devices are connected in parallel, the total power consumption is the sum of the power ratings of each device. Justify your answer with a suitable reason.

**Question 9.**

(i) 40 g of ice at 0°C is used to bring down the temperature of a certain mass of water at 60°C to 10°C. Find the mass of water used. **[Understanding & Evaluate]**
(Specific heat capacity of water = 4200 J $kg^{-1}$ $°C^{-1}$, Specific latent heat of fusion of ice = 336 × $10^3$ J $kg^{-1}$)

(ii) The diagram below shows a cooling curve for a substance:




(a) State the temperatures at which the substance condenses and solidifies respectively.

(b) The temperature range in which the substance is in liquid state.

(c) Why do we prefer ice to ice-cold water for cooling a drink? **[Understanding & Recall]**

(iii) Specific heat capacity of substance A is 4.2 J $g^{-1}$ $K^{-1}$ whereas the specific heat capacity of substance B is 0.4 J $g^{-1}$ $K^{-1}$.

(a) Which of the two is a good conductor of heat?

(b) How is one led to the above conclusion? **[Understanding & Application]**

(c) (i) If substance A and B are liquids then which one would be more useful in car radiators ?

(ii) Which one (A or B) will you use for fomentation purpose? **[Understanding & Recall]**

□□

# 4 Sample Paper

## Physics [Unsolved]

### Questions

**Section-A** (Attempt all questions from this section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**
**(Do not copy the question, write the correct answers only.)**

(i) Choose the correct statement with respect to force : **[Recall]**
(a) The CGS unit of momentum of force is Newton × meter
(b) The turning effect on a body by a force depends on momentum of force.
(c) 1 gf × cm = 980 dyne cm
(d) 1 kgf × m = $10^7$ dyne cm

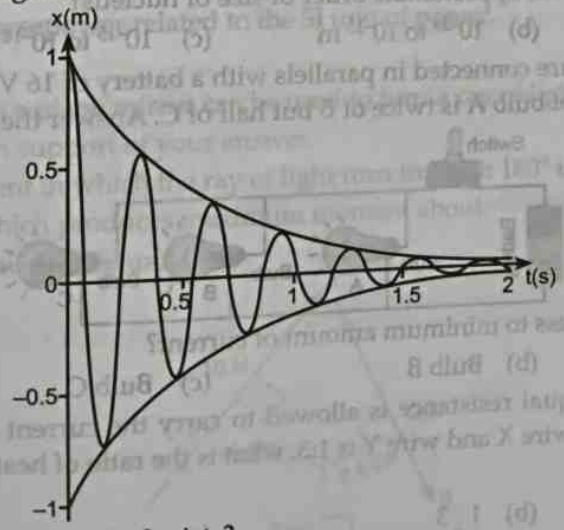
(ii) Which type of energy conversion takes place in an electric DC motor? **[Recall]**
(a) Electrical to kinetic energy
(b) Electrical to rotational energy
(c) Electrical to potential energy
(d) Electrical to rotational kinetic energy

(iii) On what factors does the Mechanical advantage of the first class lever depend? **[Understanding]**
(a) On the placement of fulcrum
(b) On the position of load
(c) On the position of effort
(d) On the position of both fulcrum and load

(iv) Work is positive when : **[Recall]**
(a) Displacement and force are in same direction
(b) When $\theta = 90°$
(c) When displacement and force are in opposite direction
(d) $\theta = 180°$

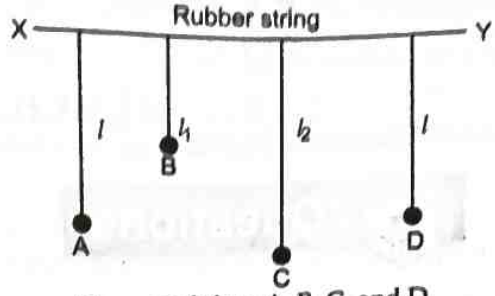
(v) Which colour of sky would have appeared when there is no atmosphere? **[Understanding]**
(a) Blue (b) Red (c) No colour (d) Black

(vi) Consider the following figure: **[Analysis & Application]**




What kind of vibration the picture depicts?
(a) Forced (b) Free (c) Damped (d) Both (a) and (c)

(vii) Four pendulums A, B, C, and D are suspended from a piece of rubber string XY, as shown in figure. Pendulums A and D have same lengths of $l$. Pendulums B and C have lengths of $l_1$ and $l_2$, respectively. **[Application]**




Four pendulum A, B, C, and D

Which of the following will experience resonance when pendulum A is brought into vibration by setting its bob to one side normal to the length of XY ?

(a) B (b) C (c) D (d) Both (b) and (c)

(viii) **Assertion:** SONAR is used underwater.

**Reason:** SONAR uses ultrasonic waves to measure the distance, direction and speed of underwater objects.

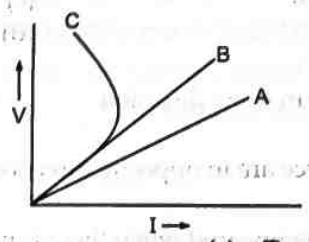
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(b) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(c) Assertion is false but reason is true.

(d) Assertion is true but reason is false. **[Understanding & Recall]**

(ix) Which of the following trend in V-I graph will never be obtained when two resistors of resistance 2 Ω and 6 Ω are connected in parallel? **[Understanding & Recall]**



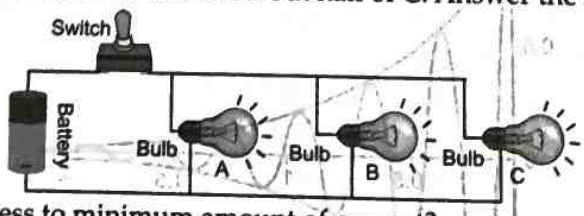

(a) Trend A (c) Trend B

(b) Trend C (d) Both trend A and B

(x) Which of the following is the approximate order of size of nucleus? **[Recall]**

(a) $10^{-15}$ to $10^{-9}$ m (b) $10^{-24}$ to $10^{-15}$ m (c) $10^{-15}$ to $10^{-14}$ m (d) $10^{-25}$ to $10^{-9}$ m

(xi) Three bulbs, A, B, and C are connected in parallels with a battery of 16 V and a switch, as shown in the figure below. Resistance of bulb A is twice of B but half of C. Answer the following questions.




Which bulb will have access to minimum amount of current? **[Application]**

(a) Bulb A (b) Bulb B (c) Bulb C (d) None of these

(xii) Two wires X and Y of equal resistance is allowed to carry the current for equal time. If the ratio of current passing through wire X and wire Y is 1:3, what is the ratio of heat produced ($H_X$:$H_Y$) by them? **[Understanding]**

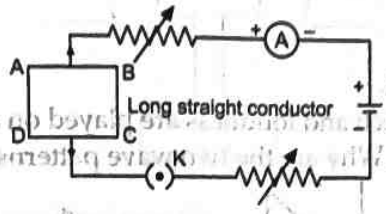
(a) 1 : 9 (b) 1 : 3 (c) 3 : 1 (d) 9 : 1

(xiii) In electric lamp, electrical energy changes into which of type/types of energy? **[Recall]**

(a) Mechanical energy and light energy
(b) Light energy and heat energy
(c) Heat energy and chemical energy
(d) Chemical energy and nuclear energy

(xiv) What is nucleons?
(a) Electrons that are orbiting nearest to the nucleus.
(b) Electrons that are orbiting farthest to the nucleus.
(c) Combination of neutrons and protons.
(d) A newly discovered particles. **[Recall]**

(xv) In the following picture the magnetic field line over a horizontal plane ABCD will be : **[Recall & Application]**




(a) Elliptical in shape
(b) Concentric circle
(c) Straight lines
(d) Concentric at the centre elliptical as to away

**Question 2.**

(i) Complete the following by choosing the correct answers from the bracket: **[Recall & Understanding]**
(a) Huge trailer trucks have their steering wheel of .....(least/large/small] diameter.
(b) Kinetic energy of a body is independent of .....[force applied/time for which force is applied/ elasticity of the body]
(c) Greater the effort arm, .....[lesser/larger/zero] the force multiplication.
(d) In new colour code of wiring .....[black/brown/yellow]colour for live wire.
(e) The specific heat of mercury is .....$JKg^{-1}K^{-1}$, [143, 139] which means that amount of specific heat is required to .....[raise, decrease] the temperature of 1 kg of mercury by 1 K or 1°C.

(ii) Match the optical component in Column A with its corresponding function in Column B.

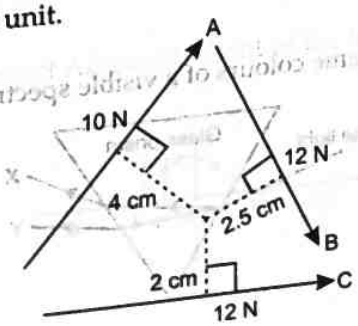
| Optical Component Column A | Function Column B |
|---|---|
| (a) Convex lens | • Forms real and inverted images |
| (b) Concave mirror | • Bends light, showing deviation |
| | • Converges light rays to a point |

(iii) (a) State and defined SI unit of power . **[Recall]**
(b) How is the unit horsepower related to the SI unit of power.

**Question 3.**

(i) What device other than a plane mirror can be used to turn a ray of light through 90° ? **[Recall]**
(a) Draw a diagram in support of your answer. **[Recall]**
(b) Name an instrument in which the ray of light turn through 180° is used. **[Understanding]**

(ii) (a) Name the force which produces maximum moment about.
(b) Calculate this moment in SI unit.



(iii) What change occur in the nucleus of a radioactive element when it emit : **[Recall]**

(a) an alpha particle (b) a beta particle (c) gamma radiations

(iv) In the nuclear reaction given below, a nucleus X changes to another nucleus Y:

$$_{88}X^{226} \longrightarrow Y + \alpha + \text{Energy}$$

(a) What are the atomic and mass number of Y ? **[Understanding]**

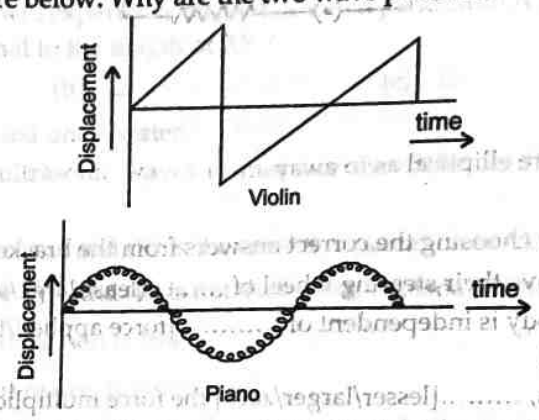
(b) What is the effect on the motion of the α-particle when it passes through a region containing a magnetic field ? **[Recall]**

(v) The temperature of a lead piece of mass 400 g rises from 20°C to 50°C when 1560 J of heat is supplied to it. Calculate: **[Understanding & Evaluate]**

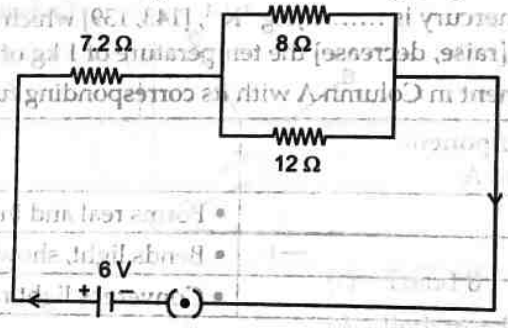
(a) Heat capacity of lead piece

(b) Specific heat capacity of lead.

(vi) Two musical notes of the same pitch and loudness are played on a violin and a piano. Their wave forms are as shown in the figure below. Why are the two wave patterns different? **[Application]**




(vii) Three resistors are connected to a 6 V battery as shown in the figure given below:




Calculate:

(a) the equivalent resistance of the circuit.

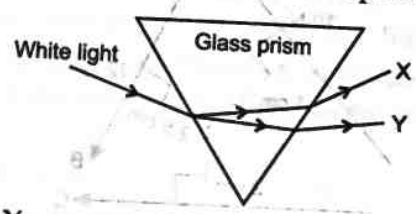
(b) total current in the circuit.

(c) State True or false : The potential difference across the 7.2 Ω resistor is 3.6 V. Justify your answer with a suitable reason. **[Application]**

## Section-B (Attempt any four questions)

**Question 4.**

(i) The diagram below shows the extreme colours of a visible spectrum (X and Y).



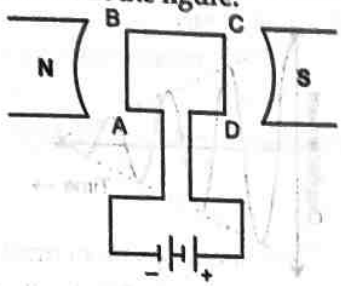

(a) Identify the colours X and Y. **[Application]**

(b) Which colour has greater speed in vacuum? [Understanding & Recall]

(ii) (a) What is the relationship between M.A. and V.R. for :
An ideal machine [Recall]

(b) Name a simple machine which can be used.
(1) to multiply force and (2) change the direction of force applied. [Understanding]

(iii) A rectangular coil ABCD having a battery connected at its ends A and D is placed between the pole pieces of a horse-shoe magnet as shown in the figure:




(a) What is the direction of current in the coil? [Recall]

(b) What is the direction of force on each arm? [Recall]

(c) What is the effect of forces on coil? [Recall]

(d) How is the effect of forces on coil changed if the connections at the terminals of battery are interchanged? [Understanding]

**Question 5.**

(i) A girl of mass 40 kg runs a height of 80 staris, each 25 cm high with a load of 20 kgf on her head in 25s. [Understanding & Evaluate]
If $g = 10\ ms^{-2}$, find:

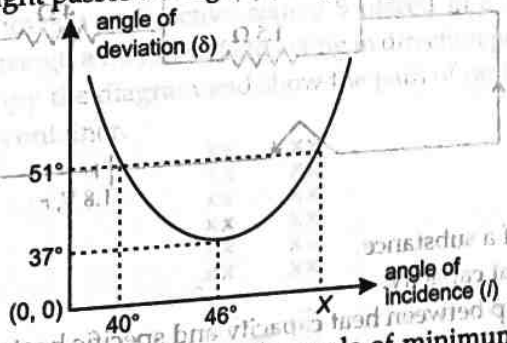
(a) Gravitational force acting on the girl.

(b) Work done by her.

(ii) (a) How is the refractive index of water related to the real depth and the apparent depth of a column of water ? [Recall]

(b) With the help of a diagram, show that the apparent depth of an object, such as a coin, in water is less than its real depth. [Understanding]

(iii) The diagram (not drawn to the scale) below shows the graphical relation between angle of deviation and angle of incidence, when light passes through a triangular prism of angle 62° of a certain glass material.



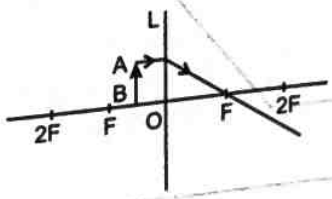

(a) State True or False : Difference between the angle of minimum deviation of this prism and the corresponding angle of incidence is 9°.

(b) Justify your answer to (a) with a suitable reason.

(c) Calculate the value of X.

**Question 6.**

(i) The diagram below shows an object AB kept in front of the lens. The path of one ray coming from the object is shown.



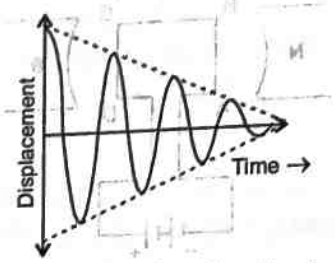

[Understanding & Recall]

(a) Name the lens L.

(b) Redraw and complete the ray diagram showing the formation of the image.
(c) In which optical instrument is this kind of image formed?

(ii) The rear-view mirror of a motor bike starts vibrating violently at some particular speed of the motor bike. **[Understanding & Application]**
(a) What is the name of the phenomenon taking place ?
(b) Why does this happen ?

(iii) The diagram shows the displacement-time graph for a vibrating body.



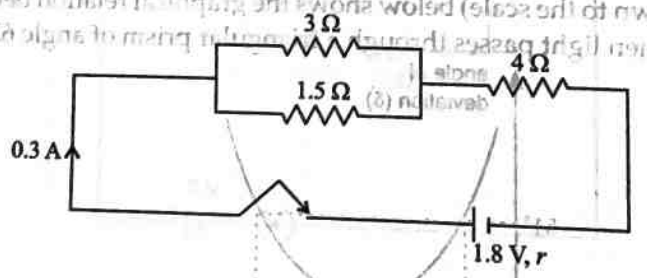

(a) Name the type of vibrations produced by the vibrating body. **[Recall]**
(b) Give one example of a body producing such vibrations. **[Recall]**
(c) Why is the amplitude of the wave gradually decreasing ? **[Application & Evaluate]**

**Question 7.**

(i) (a) What is the meaning of the statement 'the power rating of an appliance is 60W, 220V.'? **[Understanding & Evaluate]**
(b) In which wire is the fuse connected in a circuit? **[Recall]**

(ii) (a) What are superconductors?
(b) Calculate the current drawn by an appliance rated 110 W, 220 V when connected across 220 V supply.
(c) Name a substance whose resistance decreases with the increase in temperature. **[Application]**

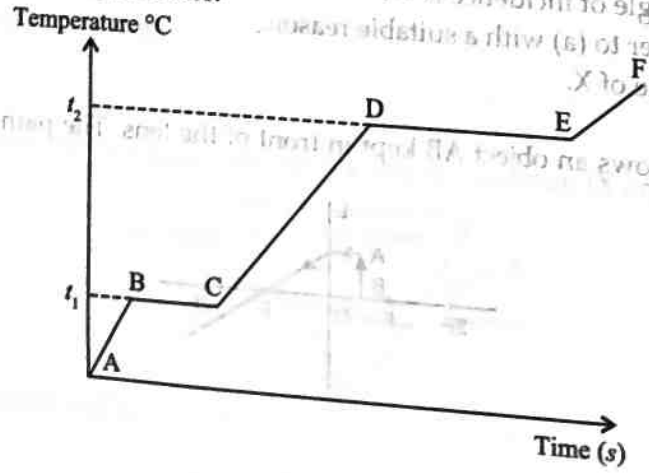
(iii) The diagram above shows three resistors connected across a cell of e.m.f. 1.8 V and internal resistance *r*. Calculate : **[Understanding & Evaluate]**
(a) Current through 3 Ω resistor.
(b) The internal resistance *r*.




**Question 8.**

(i) (a) Define heat capacity of a substance.
(b) Write the SI unit of heat capacity.
(c) What is the relationship between heat capacity and specific heat capacity of a substance ?

(ii) The diagram below shows the change of phases of a substance on a temperature vs time graph on heating the substance at a constant rate. **[Understanding & Recall]**



(a) Why is the slope of CD less than slope of AB ?

(b) What is the boiling and melting point of the substance ? **[Understanding & Evaluate]**

(ii) A copper calorimeter of mass 50 g contains 100 g of water at 20°C. A metallic piece of mass 250 g is heated to 100°C and is then dropped into the calorimeter. The contents of the calorimeter are well stirred and its final highest temperature is recorded to be 28°C. If the specific heat capacity of water is 4.2 J/g°C and of copper is 0.4 J/g°C, find: (a) the heat gained by water, (b) the heat gained by calorimeter, (c) total heat supplied by the metal piece, and (d) State True or False : The specific heat capacity of metal is 0.195 J/g °C . Justify your answer with a suitable reason. **[Understanding & Application]**

**Question 9.**

(i) A certain nucleus X has a mass number 14 and atomic number 6. The nucleus X changes to $^{14}_{7}Y$ after the loss of a particle.

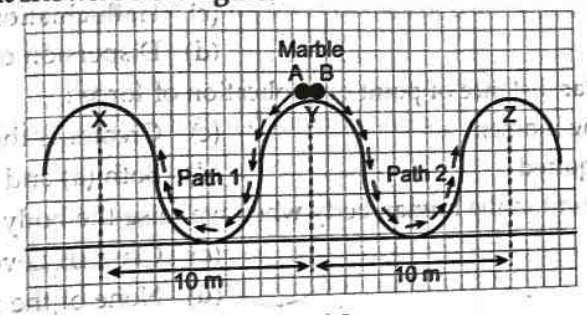
(a) Name the particle emitted. **[Understanding & Application]**

(b) Represent this change in the form of an equation.

(c) A radioactive substance is oxidised. What change would you expect to take place in the nature of its radioactivity ? **[Understanding & Recall]**

Give a reason for your answer.

(ii) Two identical marbles A and B are rolled down along Path 1 and Path 2 respectively. Path 1 is frictionless and Path 2 is rough that shown below figure.

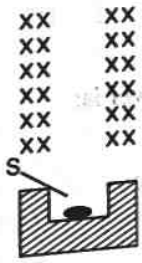



(a) Which marble will surely reach the next peak?

(b) Along which path/s the mechanical energy will be conserved?

(c) Along which path/s is the law of conservation of energy obeyed?

(iii) The figure given below shows a radioactive source S placed in a thick walled lead container. The radiations given off pass through a magnetic field acting in direction perpendicular to the plane of paper inwards as shown by X. Copy the diagram and show the path of radiations. Explain why the source is kept in a thick-walled lead container. **[Understanding & Evaluate]**

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# 5 Sample Paper

## Physics [Unsolved]

## Questions

### Section-A (Attempt all questions from this section)

**Question 1.**

**Choose the correct answers to the questions from the given options :**

**(Do not copy the question, write the correct answers only.)**

(i) Optical illusion seen in deserts is called as : **[Recall]**

(a) Mirage
(b) Looming
(c) Hallucination
(d) Dispersion of light

(ii) Greater the perpendicular distance of point of application of force : **[Understanding]**

(a) Larger is the turning moment
(b) Less is the force required
(c) Greater is the force required
(d) Both (a) and (b)

(iii) Which type of lever present in the human body when we raise the body weight on our toes? **[Recall]**

(a) Class I lever
(b) Class II Lever
(c) Class III Lever
(d) None of the above

(iv) For a practical machine : **[Recall & Appliction]**

(a) Work output is less than work input
(b) Efficiency of a practical machine is less than one
(c) Power output is less than power input
(d) All of the above

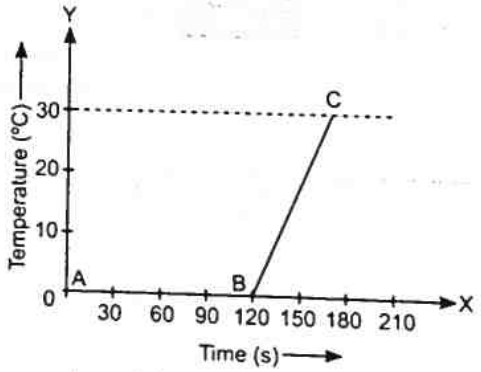
(v) The blue colour of the sky is due to : **[Understanding]**

(a) Tyndall effect
(b) Dispersion
(c) Atmospheric refraction
(d) Scattering of light

(vi) The radiation with maximum ionising power is: **[Recall]**

(a) α (b) β (c) γ (d) X-radiation

(vii) Consider the following heating curve of ice: **[Understanding & Recall]**




Which of the following is the portion of the latent heat of melting of ice?

(a) Part AB
(b) Part BC
(c) Part AC
(d) Only point A and C

(viii) **Assertion:** Copper is used to make calorimeter rather than other metals.
**Reason:** Copper has high specific heat capacity. **[Understanding & Recall]**
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not the correct explanation of (A).
(c) Assertion is false but reason is true.
(d) Assertion is true but reason is false.

(ix) Which of the following substances contracts on melting? **[Recall]**
(a) Ice (b) Lead (c) Wax (d) Both (b) and (c)

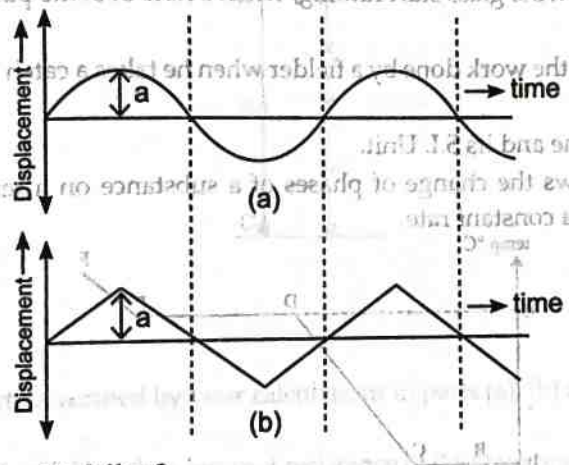
(x) Which of the following is correct ascending order of speed of the given particles? **[Recall]**
(a) $\alpha < \beta < \gamma$ (b) $\gamma < \beta < \alpha$ (c) $\beta < \alpha < \gamma$ (d) $\beta < \gamma < \alpha$

(xi) A radioactive nucleus emits a certain type of radiation. A particle with the same mass as before but an increased atomic number of one is emitted. Determine the particle's identity. **[Understanding]**
(a) Alpha (b) Beta (c) Gamma (d) Delta

(xii) AC Generator works on the principle of..... .
(a) Lenz's law (b) Faraday law of electromagnetic induction (c) Lorentz law of electromagnetic (d) None of these

(xiii) If the supply voltage is 220 V and the total power of the appliances in the circuit is 440 W, what should the fuse's current rating be? **[Application]**
(a) 1 A (b) 2 A (c) 4 A (d) 6 A

(xiv) Consider the following two figures of two different waves. **[Analysis & Application]**




How figure (a) and figure (b) differs?
(a) They differ in waveform (c) They differ in frequency
(b) They differ in amplitude (d) They are identical graphs

(xv) Which of the following is correct? **[Recall]**
(a) Radiation can cause diarrhoea, loss of hair, nausea.
(b) Radiation can cause leukemia and cancer.
(c) Radiation can cause Genetic disorders.
(d) All of the above.

**Question 2.**

(i) Complete the following by choosing the correct answers from the bracket: **[Recall & Understanding]**
(a) The weight of an object lies at the.....[Centre of mass/Centre of gravity/Geometric centre always] .
(b) A coolie, carrying a load on his head and moving on a frictionless horizontal platform, does ..... [maximum/minimum/zero] work
(c) In the block and tackle system of pulleys, the velocity ratio is .....[less than/more than/equal to] the total number of pulleys.
(d) If the strength of current flowing through a wire is increased, the strength of magnetic field produced by it.....[increases/decreases/remains unchanged]

(e) (1) The process in which solid gets converted into gas without going through the intermediate liquid phase is called .....[evaporation/condensation/sublimation].

(2) The boiling point of a liquid .....(increases, decreases] with increase in pressure.

(ii) Match the stage of heating in Column A with the corresponding process in Column B:

| Stage of Heating Column A | Process Involved Column B |
|---|---|
| (a) Ice at 0°C converting to water | • Boiling (Phase change) |
| (b) Water at 100°C converting to steam | • Temperature rises without phase change |
| | • Melting (Phase change) |

(iii) How is the refractive index of a material related to

(a) Real and apparent depth

(b) Velocity of light in vacuum or air and velocity of light in a given medium? **[Recall]**

**Question 3.**

(i) An object of height 20 cm is placed in front of a lens at a distance of 50 cm. Its virtual, diminished image is formed at a distance of 15 cm. **[Understanding & Evaluate]**

(a) Identify the type of the lens.

(b) Calculate the focal length of the lens.

(ii) State any two factors affecting lateral displacement. **[Recall]**

(iii) (a) Define e.m.f and terminal voltage? **[Recall]**

(b) Why is the filament of an electric bulb coiled? **[Understanding]**

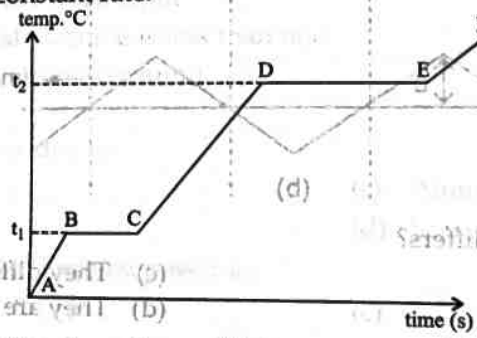
(iv) (a) What is resonance? **[Recall]**

(b) Explain why does a wine glass start rattling, when a note of some particular frequency is struck by a piano? **[Understanding]**

(v) (a) Explain briefly why the work done by a fielder when he takes a catch in a cricket match, is negative. **[Understanding]**

(b) Define the work done and its S.I. Unit. **[Recall]**

(vi) The diagram below shows the change of phases of a substance on a temperature vs. time graph on heating the substance at a constant rate. **[Application]**




(a) Why is the slope of CD less than slope of AB?

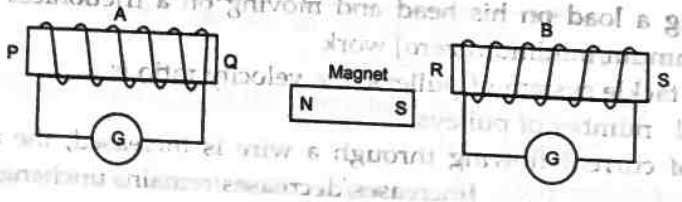
(b) What is the boiling and melting point of the substance?

(vii) The diagram below shows a magnet placed between two coils A and B. The magnet is moved along the axis towards coil B. **[Application]**

(a) State the polarities induced at the ends Q and R of the coil due to the motion of the magnet.

(b) Name the phenomenon due to which the current is induced in the coils.

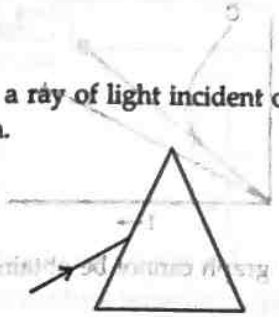
(c) State True or false : The law which helps to find the polarities at the ends Q and R by Lenz's Law. Justify your answer with a suitable reason.



## Section-B (Attempt any four questions)

**Question 4.**

(i) (a) The diagram alongside shows a ray of light incident on an equilateral glass prism placed at the position of minimum deviation.



Copy the diagram and complete it to show the path of the refracted ray and the emergent ray. **[Understanding & Recall]**

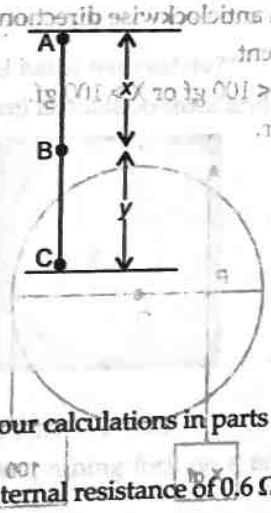
(b) How are the angle of incidence and angle of emergence related to each other in this position of the prism ? **[Application]**

(ii) A stone of mass $m$ is rotated in a circular path with a uniform speed by tying a strong string with the help of your hand. Answer the following questions :

(a) Is the stone moving with uniform or variable velocity ? **[Understanding]**

(b) Is the stone moving with uniform acceleration ? In which direction does the acceleration act ? **[Recall]**

(iii) An object of mass '$m$' is allowed to fall freely from point A as shown in the figure. Calculate the total mechanical energy of the object at :




(a) Point A **[Recall]**

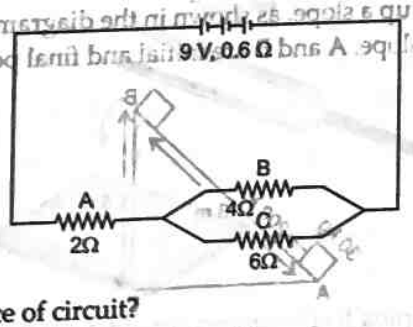
(b) Point B **[Recall]**

(c) Point C **[Recall]**

(d) State the law which is verified by your calculations in parts (a), (b) and (c). **[Understanding]**

**Question 5.**

(i) A battery with an e.m.f. of 9 V and an internal resistance of 0.6 Ω is connected to three resistors A, B, and C in the diagram below. **[Understanding & Evaluate]**




(a) What is the total resistance of circuit?

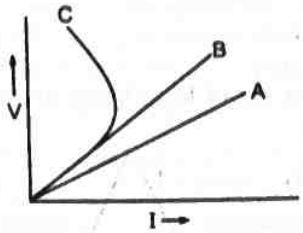
(b) What is the current flowing through resistor A?

(ii) An erect, magnified and virtual image is formed, when an object is placed between the optical centre and principal focus of a lens.

(a) Name the lens, **[Recall]**

(b) Draw a ray diagram to show the formation of the image with the above stated characteristics. **[Understanding]**

(iii) Consider the figure below and answer the following questions:




(a) State which trend from the V–I graph cannot be obtained when two resistors of 2 Ω and 6 Ω are connected in parallel.

(b) If Trend A appears when 2 Ω and 6 Ω resistors are connected in parallel, identify the expected trend when the same resistors are connected in series.

(c) State True or False : A steeper slope in the V–I graph represents a lower resistance. Justify your answer with a suitable reason.

**Question 6.**

(i) A boy tunes a radio channel to a radio station 93.5 MHz.

(a) Name and define the scientific wave phenomenon involved in tuning the radio channel.

(b) Now, what is the frequency of the channel?

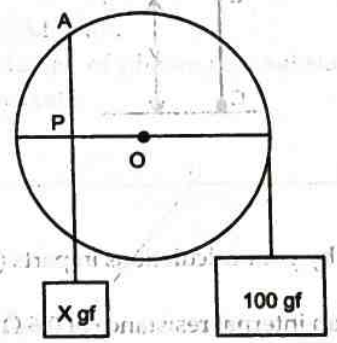
(c) Convert this frequency into S.I. unit. **[Understanding & Recall]**

(ii) The adjacent diagram shows a wheel of diameter 40 cm fixed on a wall capable of rotating around its centre O. If the wheel rotates in an anticlockwise direction, then:

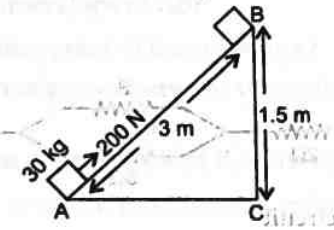
(a) Calculate the clockwise moment. **[Application & Evaluate]**

(b) State whether X = 100 gf or X < 100 gf or X > 100 gf. **[Recall]**

(c) Give a reason for your answer. **[Recall]**




(iii) A block of mass 30 kg is pulled up a slope, as shown in the diagram with a constant speed, by applying a force of 200 N parallel to the slope. A and B are initial and final positions of block.



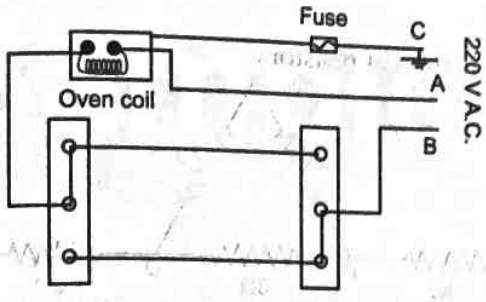

(a) Calculate the work done by force in moving the block from A to B.

(b) Calculate P.E. gained by block. **[Understanding & Application]**

[Take $g = 10\ ms^{-2}$]

**Question 7.**

(i) Purvi's friend Tim wants to connect a fuse to his oven. He wants to control the oven from two different locations. Shown below is his circuit diagram.




(a) Which one of the two, A or B should be a live wire? **[Application]**

(b) In the event of an overload, will the fuse serve its purpose?

(c) What is the meaning of the statement that the bulb is rated 600W, 220 V?

(ii) (a) Define specific heat capacity with example. **[Recall]**

(b) Specific heat capacity of element is 10 J $kg^{-1}$ $K^{-1}$. The temperature of a material raised by 20 degrees when 200 Joules of heat were given to it. What is the substance's mass?

**[Understanding & Evaluate]**

(iii) (a) To melt 1 kg of ice, how much heat energy is required? [Specific latent heat of ice = 336 J $g^{-1}$].

(b) Define isotone and give an example

**Question 8.**

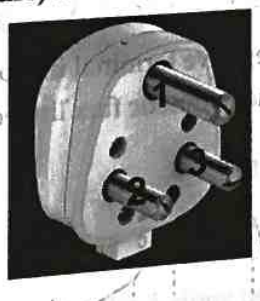
(i) In the centre of an evacuated spherical vessel, a radioactive sample is placed.

(a) Name the radiations which are safe and unsafe.

(b) Suggest two ways for more safety.

(c) Is it true that evacuating the vessel helps with safety? **[Understanding & Application]**

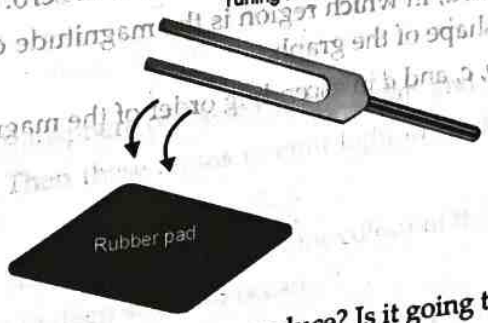
(ii) (a) Why the earth pin (shown in figure) is made so thick and long?



(b) What is 'short circuit'? **[Understanding & Recall]**

(c) What is the colour code of Neutral wire in India?

(iii) Consider rubbing the stem of a vibrating tuning fork on a table surface, as represented in the figure below: **[Understanding & Application]**




(a) What type of vibrations will the table top produce? Is it going to make a sound?

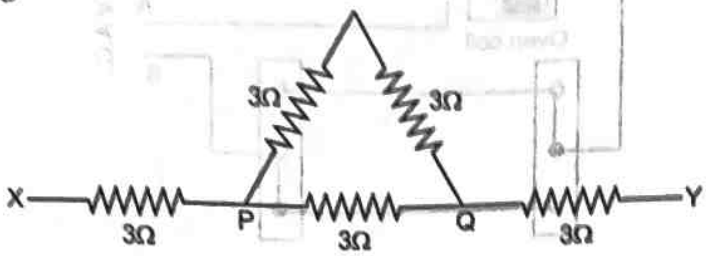
(b) Under what conditions does it produce resonance?

(c) Write three key characteristics that are able to distinguish two different sounds.

(d) State True or False : A vibrating tuning fork placed on a table surface produces a louder sound because the table starts vibrating with the same frequency. Justify your answer with a suitable reason.

**Question 9.**

(i) Consider the following combination of resistors:

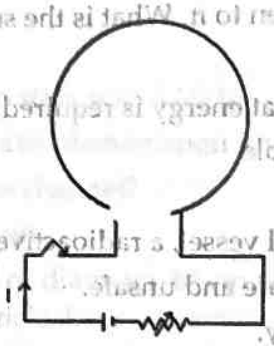



(a) What is the effective resistance across PQ?

(b) What is the equivalent resistance across XY?

(c) If a 10 V battery is connected across terminal XY, what will be the flow of current through the battery? **[Understanding & Evaluate]**

(ii) The diagram below shows a loop of wire carrying current I: **[Understanding & Recall]**

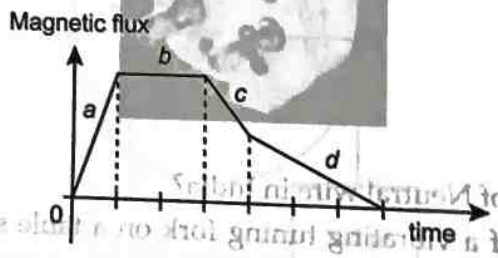


(a) What is the magnetic polarity of the loop that faces us?

(b) With respect to the diagram how can we increase the strength of the magnetic field produced by this loop?

(c) How to show the positive and negative terminal in a battery.

(iii) A graph between the magnitude of the magnetic flux linked with a closed loop and time is given in the figure.




(a) Identify the region in the graph where the induced emf is zero. Give a reason for your answer.

(b) Between regions *a*, *c*, and *d*, in which region is the magnitude of induced emf the highest? Justify your answer using the shape of the graph.

(c) Arrange the regions *a*, *b*, *c*, and *d* in ascending order of the magnitude of induced emf in the loop.

□□

# 1 Sample Paper

## Physics

## Answers

### Section-A

**Answer 1.**

(i) (c) The prism produce colours

**Explanation :**

A prism does not produce colours on its own. It splits the white light into its constitutent colours (spectrum) due to dispersion. The colours are already present in the white light.

(ii) (c) Effort × distance moved by effort

**Explanation :**

Work done by the effort is the amount of work done by the force applied to move the object over a certain distance.

(iii) (a) 2 J/sec

**Explanation :**

$$P = \frac{\text{Work done}}{\text{sec}}$$

= Work done per beat × no. of beat in 1 sec

$$= 2J \times \frac{70}{60} = 2.33 \text{ J/sec}$$

(iv) (a) Rainbow formation

**Explanation :**

When sunlight enters the atmosphere of the earth, the atoms and molecules of different gases present in the air absorb the light. Then these atoms re-emit light in all directions. This process is known as Scattering of light.

Some of the applications of scattering of light are Blue colour of the sky,reddish colour of the sky in the evening and colour of water in deep seas and oceans.

But Rainbow formation is due to dispersion of light and not by scattering of light.

(v) (c) Centrifugal force

**Explanation :**

It is an apparent force that feels like it pushes objects outward when they are in a rotating system or circular path, but it does not lie as a real force.

(vi) (d) 0 to 80 dB

**Explanation :**

Safe limit of level of sound for having is 0 to 80 dB. Beyond the sound level of 120 dB can cause permanent damage to ears.

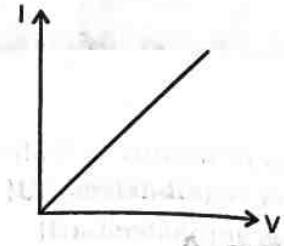
(vii) (d) Conductance

**Explanation :**

According to Ohm's law,

$$\frac{V}{I} = R$$

$\therefore$ Slope of given graph is $= \frac{I}{V} = \frac{1}{R}$




(viii) (c) Assertion is false but reason is true.

**Explanation :**

Resistance, $R = \frac{\rho l}{A}$

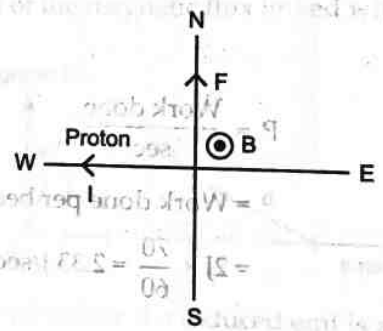
Here, ρ is a constant which is called resistivity or specific resistance and depends on the nature of the substance and is its characteristic property.

So, assertion is false and reason is true.

(ix) (d) upward

**Explanation :**

The direction of motion of proton is the direction of current I. The direction of force F on the proton is towards north (as the proton is deflected towards north). Applying Fleming's left hand rule, the direction of magnetic field (B) is upwards.




(x) (b) Loudness decreases

**Explanation :**

Amplitude and Loudness are directly proportional to each other, when the amplitude of sound decreases, the Loudness also decreases.

(xi) (c) Water

**Explanation :**

Water has the largest specific heat *i.e.*, 1 cal $g^{-1}$ °$C^{-1}$.

(xii) (a) Specific heat capacity

**Explanation :**

Weight $W = mg$, which is mass dependent. Specific heat capacity is a property of the body's material that is independent of its mass, whereas heat capacity is dependent on both the substance and the mass of the body.

(xiii) (a) Current in the coil is in direction DCBA

**Explanation :**

From figure, the current in the coil is flowing in direction ABCD. Using Fleming's left hand rule, in the arm AB, the force is inward at right angle to the plane of the coil. On the arm BC, no force acts. On the arm CD, the force is outward perpendicular to the plane of the coil. On the arm DA, no force acts.

(xiv) (c) 30°C

**Explanation :**

Let the temperature of water after mixing is T.

Heat lost = Heat gained

$$100(90 - T) = 600\,(T - 20)$$

$$9000 - 100\,T = 600\,T - 12000$$

$$700\,T = 21000$$

$$T = 30°C$$

∴

(xv) (d) All of these

**Explanation :**

The amount of heat energy contained in a body varies material substance to substance. Heat energy contained in a body depends upon mass, temperature, material properties of the body.

**Answer 2.**

(i) (a) vector

(b) law of conservation

(c) snell

(d) resistance

(e) natural radioactivity, unstability

(ii) (a) Bending forward while going uphill → To keep the center of gravity between the feet

(b) Bending backward while coming downhill → To prevent the body from toppling forward

(iii) (a) Emf and the number of turns of the coil are directly proportional.

(b) Alternating Current (AC).

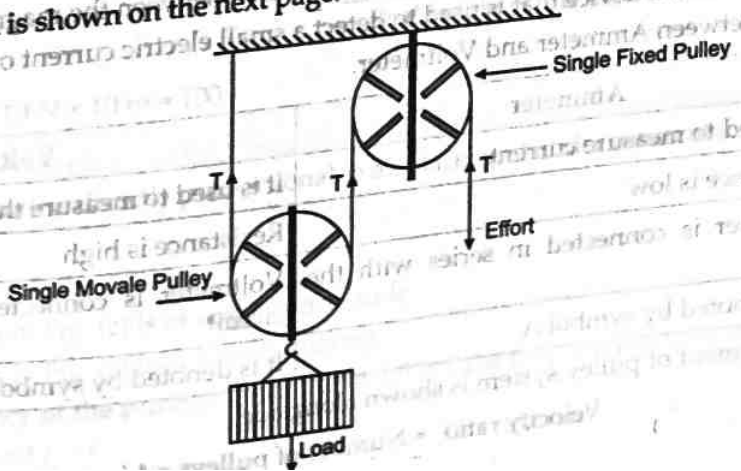
**Answer 3.**

(i) Given : Mass ($m$) = 60 kg, Momentum ($p$) = 3000 kg ms$^{-1}$

(a) Kinetic energy (K) = $\frac{p^2}{2m} = \frac{3000 \times 3000}{2 \times 60}$ J = 75000 J = $7.5 \times 10^4$ J

(b) Velocity ($v$) = $\frac{p}{m} = \frac{3000}{60} = 50$ ms$^{-1}$.

(ii) (a) The diagram is shown on the next page:



(b) The fixed pulley is used to change the direction of effort.

(c) This pulley system is superior than a single fixed pulley because its mechanical advantage is almost double than that of a single fixed pulley.

(iii) (a) Magnetic field produced at A is into the plane of the paper whereas at B, it is outward to the plane of the paper.

(b) Magnetic field at any point due to a straight current carrying conductor is inversely proportional to the distance of the point from the conductor. As $r_1 > r_2$, thus magnetic field at B will be larger as compared to that at point A.

(iv) (a) Sound of higher pitch is called shriller sound. The pitch of the sound depends upon frequency of sound. The sound which have higher frequency of vibrations have higher pitch.

(b) Loudness of sound is proportional to the square of amplitude of the vibrations producing the sound. When the amplitude of vibration is large, the sound produced is loud when the amplitude is small, the sound produced is feeble.

(v) (a) For the region AB, there is no change in temperature till the whole ice melts. In this process, the heat is being continuously supplied but the temperature of ice and water does not change. Here, the heat supplied is used in changing the state from solid (ice) to liquid (water). The process of change of state from solid to liquid is called melting.

(b) True : After the whole ice is converted into water in the region AB, if we continue heating, the temperature of the water begins to rise till it reaches at 100°C, where it again becomes steady. For the portion of the graph BC, the heat supplied is used to change water from liquid state to vapour or gaseous state. The change of state from liquid to vapour or gas, is called vaporisation.

(vi) (a) Angle of minimum deviation $\delta_m = 37°$.

Angle of incidence corresponding to minimum deviation $i_m = 46°$.

(b) For deviation

$\delta_1 = 51°$, we get

$$\delta_1 = i_1 + i_2 - A$$

$$51 = 40 \times (X) - 62$$

$$X = 51 + 22 = 73°$$

(vii) (a) **Nucleus:** The central core of an atom is called nucleus. The nucleus contains protons and neutrons.

(b) **Nucleons:** Neutrons and protons are collectively called nucleons.

## Section-B

**Answer 4.**

(i) (a) The current appears anti-clockwise when viewed from end A because end A will form a north pole.

(b) No deflection is observed as there is no relative motion between the magnet and coil.

(c) A galvanometer is a device that is used to detect a small electric current or measure its magnitude.

(d) Difference between Ammeter and Voltmeter.

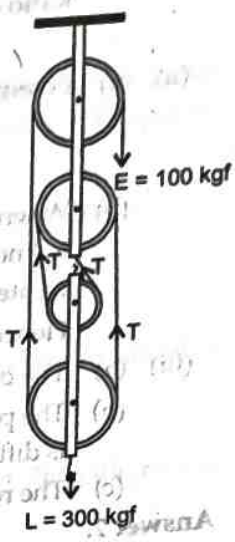
| S. No. | Ammeter | Voltmeter |
|---|---|---|
| 1 | It is used to measure current | It is used to measure the volt across two points. |
| 2 | Resistence is low | Resistance is high |
| 3 | Ammeter is connected in series with the circuit | Voltmeter is connected in parallel with the circuit |
| 4 | It is denoted by symbol A | It is denoted by symbol V |

(ii) (a) The arrangement of pulley system is shown alongside.

(b)

Velocity ratio = Number of pulleys = 4

$$\text{Mechanical advantage} = \frac{\text{Load}}{\text{Effort}} = \frac{300 \text{ kgf}}{100 \text{ kgf}} = 3$$




$$\text{Efficiency} = \frac{\text{Mechanical advantage}}{\text{Velocity ratio}}$$

$$= \frac{3}{4} = 0.75 \text{ (or 75\%)}$$

$$\text{Efficiency} = \frac{\text{Output work (Work done by load)}}{\text{Input work (Work done by effort)}}$$

$$\therefore \quad \frac{3}{4} = \frac{300 \text{ kgf} \times 10 \text{ m}}{W_{effort}}$$

$$\therefore \quad W_{effort} = 400 \text{ kgf} \times 10 \text{ m}$$

$$= (400 \times 10) \text{ N} \times 10 \text{ m} = 4 \times 10^4 \text{ J.}$$

(iii) (a) (1) Energy is the capacity of doing work, while power is the rate of doing work.

(2) Energy does not depend on the time in which the work is done, while the power depends on the time in which the work is done.

(b) Given : W = 60 kgf = 60 × 10 N = 600 N, $h$ = 10 m, $t$ = 15 min = 15 × 60 s = 900 s

Increase in potential energy = $mgh$ = W × $h$ = 600 × 10 = 6000 J

$$\text{Power spent} = \frac{\text{Work done}}{\text{Time}} = \frac{6000 \text{ J}}{900 \text{ s}}$$

$$= 6.67 \text{ W}$$

**Answer 5.**

(i) (a) Since the object just disappears in the liquid, the refractive index of the liquid equals that of the object, *i.e.*, 1.8.

$$\therefore \quad 1.8 = \frac{\text{Speed of light in air}}{\text{Speed of light in liquid}}$$

$$\therefore \quad \text{Speed of light in liquid} = \frac{3 \times 10^8}{1.8} \text{ ms}^{-1} = 1.67 \times 10^8 \text{ ms}^{-1}$$

(b) (1) The image is formed at the 2F point on the other side of the lens.

(2) The image has the same size as the object.

(ii) (a) The bird appears to be higher than its actual position.

(b) We have refractive index of water w.r.t. air

$$= \frac{\text{Apparent height of the bird}}{\text{Real height of the bird}}$$

(iii) (a) Work done = 10 N × 10 m = 100 J

(b) Force = Work / Displacement = 200 J / 20 m = 10 N

(c) True : Since work is directly proportional to displacement under constant force, the slope represents the force.

**Answer 6.**

(i) (a) The vibration in Fig. (c) is of largest amplitude.

(b) The vibration in Fig. (c) is of least frequency.

(c) If the frequency of the principal note in Fig. (c) is $f$, the frequency of note in Fig. (a) is $3f$.

Thus, $f_1 = 3f$ and $f_c = f$

Ratio of frequency between (a) and (c) is

$$f_a : f_c = 3 : 1$$

(ii) (a) Potential Energy

$$= mgh$$
$$= 0.450 \times 10 \times 80$$
$$= 360\ J$$

(b) When coconut strikes the ground, its potential energy is converted to kinetic energy. This principle is known as conservation of energy. According to conservation of energy "Energy is neither be created nor be destroyed, It can be transform from one type to another."

Hence, kinetic energy with which it strikes the ground is 360J.

(iii) (a) The oscillations of pendulum D are free oscillations.

(b) The pendulums A and C having different lengths are made to oscillate with the frequency of D which is different from their natural frequency, hence the oscillations of A and C are forced oscillations.

(c) The resonance is represent by pendulum D in figure.

**Answer 7.**

(i) (a) Class II lever.

(b) Given : FA = 40 cm, AB = 60 cm

∴ FB = (40 + 60) cm = 100 cm

We know, Load × Load arm = Effort × Effort arm

and

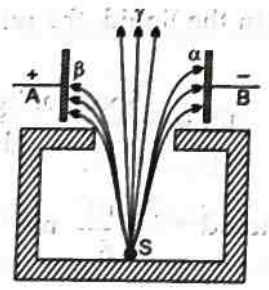
$$M.A. = \frac{\text{Load}}{\text{Effort}} = \frac{\text{Effort arm (FB)}}{\text{Load arm (FA)}}$$

$$= \frac{100}{40} = 2.5.$$

(ii) (a) $\Delta Q = Sm\Delta T = 0.5 \times 10 \times 5 = 25$ cal

(b) $\Delta Q = mL = 10 \times 80 = 800$ cal

(iii) (a)




(b) The radioactive substance S is kept in thick lead container with a very narrow opening to stop the radiations coming out from other directions because they may cause biological damage.

(c) β radiations deflected the most.

**Answer 8.**

(i) (a) For $R_2$ and $R_3$,

$$\frac{1}{R} = \frac{1}{R_2} + \frac{1}{R_3}$$

Or

$$R' = \frac{R_2R_3}{R_2+R_3} = \frac{4\times4}{4+4} = 2\ \Omega$$

Total resistance of the circuit, $R = R_1 + R'$

$$= 2 + 2 = 4\ \Omega$$

(b) Total current flowing through the circuit, $I = \frac{V}{R}$

∴

$$I = \frac{20}{4} = 5\ A$$

(c) Potential difference across $R_1$, $V = IR_1 = 5 \times 2$
$= 10$ V

(ii) (a) The direction of magnetic field for A will be downwards and perpendicular to the plane of the paper. The direction of magnetic field for B will be upwards and perpendicular to the plane of the paper.

(b) For A, it is South pole.
For B, it is North pole.

(iii) (a) Mass number of Thorium = 235 – 4 = 231

(b) Atomic number of Thorium = 92 – 2 = 90

(c) ${}_{92}U^{235} - {}_{2}He^{4} + {}_{90}Th^{231}$

(d) True : An alpha particle has 2 protons and 2 neutrons, so its emission decreases the atomic number by 2 and the mass number by 4.

**Answer 9.**

(i) (a) The weight of rule 100 gf will act at the mid-point of rule *i.e.*, at the mark 50 cm since the rule is uniform.

Taking moment about the knife edge,

$$w \times (40 - 20) = 100 \times (50 - 40)$$

$$\therefore \quad w = \frac{100 \times 10}{20} = 50 \text{ gf}$$

(b)
$$\text{Resultant moment} = 50 \times (40 - 10) - 100 \times (50 - 40)$$
$$= 1500 - 1000$$
$$= 500 \text{ gf cm, (anticlockwise)}$$

It will rotate the meter rule anticlockwise.

(c) To balance the meter rule in part (b), a clockwise moment is required for which the weight 20 gf is to be kept on right side of knife edge at distance $x$ cm (say). Then

$$20 \times x = 500 \text{ or } x = 25 \text{ cm}$$

Thus, the weight 20 gf is to be suspended at the mark 40 + 25 = 65 cm.

(ii) (a) Alternating Current (AC): The graph shows a wave-like pattern with both positive and negative values, indicating the direction of current changes.

(b) Induced e.m.f. is zero at the points where the curve crosses the time axis (e.g., start, midpoint of each half-cycle). At these points, the rate of change of magnetic flux is zero.

(c) The amplitude will increase. According to Faraday's Law, induced e.m.f. $\propto$ number of turns in the coil. More turns = more flux linkage = greater e.m.f.

(iii) (a) The current in coil is in the direction DCBA.

(b) Using Fleming's left hand rule, force on arm AB is outward at right angles to the plane of coil. No force acts on arm BC. On the arm CD the force is inwards perpendicular to the plane of coil. No force acts on the arm DA.

(c) (i) The forces on the arm AB and CD form a couple and the coil rotates clockwise.

(ii) On interchanging the connections at the terminals of battery, the direction of current in the coil is reversed, and also the forces on the arms AB and CD get reversed. The coil now rotates anticlockwise.

□□

# 2 Sample Paper

## Physics

### Answers

## Section-A

**Answer 1.**

(i) (d) All of the above

**Explanation :**

(a) The ray of light does not necessarily deviate from its original path if it enters the medium perpendicularly.

(b) The light ray bends away from the normal when the density of the second medium is less than the first medium.

(c) The speed of light decreases when it enters from a rarer to a denser medium due to a decrease in the wave length of the light wave.

(ii) (c) it is travelling from optically rarer medium to a optically denser medium.

**Explanation :**

Speed of light decreases as it travels from rarer to denser medium.

(iii) (c) Kinetic energy and potential energy

**Explanation :**

Basic forms of mechanical energy are kinetic and potential energy.

(iv) (c) Total number of pulleys

**Explanation :**

Cranes and hoist are examples of block and tackle system of pulleys.

(v) (d) both (a) and (b)

**Explanation :**

Sparkling is because of entrapping of light due to large cut surfaces resulting in low critical angle.

(vi) (a) Total energy of the oscillator decreases with time

**Explanation :**

Vibrations are considered to be damped when the energy of a vibrating system is progressively dissipated by various resisting forces. The vibrations gradually decrease in frequency and after sometime the system returns to its equilibrium state. Thus in damped vibration, total energy of the oscillator decreases with time.

(vii) (a) 52300 Joule

**Explanation :**

We know, 1 cal = 4.184 Joule

Or 1 kcal = 4184 Joule

Thus 12.5 kcal = 4184 × 12.5 = 52300 Joule.

(d) assertion is true but reason is false.

**Explanation :**

A superconductor is a substance of zero resistance at a very low temperature.

So, assertion is true.

The superconductors are not in common use since it is very difficult to achieve. Such a low temperature.

So, reason is false.

(ix) (d) 600 Hz

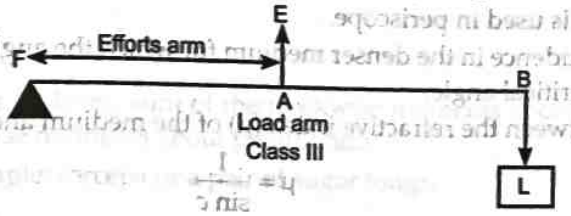
**Explanation :**

The topmost wave has frequency of 100 Hz, *i.e.*, fundamental frequency. Now, it can be seen that the bottom most wave is 5th overtone or 6th harmonic. Thus, the frequency of the bottom most wave will be $= 6 \times 100 = 600$ Hz.

(x) (a) Class III lever

**Explanation :**

The Mechanical Advantage and Velocity Ratio of Class III lever is always less than one because the load arm is greater than the effort arm. Hence it can be used as a speed gainer.




(xi) (d) Energy

**Explanation :**

The law of energy conservation is the foundation of Lenz's law. According to this rule, the induced current always tends to oppose the source that creates it.

(xii) (a) Melting point increases.

**Explanation :**

The melting point of materials that expand when melted, such as wax, lead, etc., increases on rising in pressure. In contrast, the melting point of substances that contract when melted, such as ice, decreases as the pressure rises.

(xiii) (d) Both (a) and (c)

**Explanation :**

The material absorbs heat energy during the melting and boiling processes. During freezing, however, the material releases heat energy.

(xiv) (c) Circuit Breaker

**Explanation :**

The instrument presented in the figure is called 'Circuit Breaker'.

(xv) (a) Ammeter

**Explanation :**

Ammeter is used to measure current in a circuit while voltmeter measures voltage difference.

**Answer 2.**

(i) (a) positive, negative
(b) levers
(c) incidence
(d) during winter
(e) $10^{-3}$

(ii) (a) A coolie carries a load and walks on a flat platform → No work is done as force is perpendicular to displacement

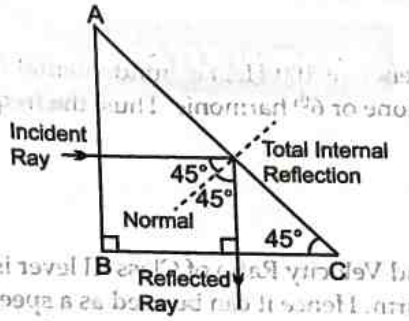
(b) A ball falls freely under gravity → Work is done by gravitational force.

(iii) (a) $\alpha < \beta < \gamma$

(b) $\gamma < \beta < \alpha$

**Answer 3.**

(i) The diagram showing the use of a total reflecting prism to turn a ray of light through 90° is given in the figure




This action of prism is used in periscope.

(ii) (a) The angle of incidence in the denser medium for which the angle of refraction in the rarer medium is 90° is called critical angle.

(b) The relation between the refractive index (μ) of the medium and critical angle (c) is

$$\mu = \frac{1}{\sin c}$$

(iii) (a) The statement is Correct. Specific heat capacity of water is 4184 $J \cdot kg^{-1} \cdot K^{-1}$ and for ice it is 2108 $J \cdot kg^{-1} \cdot K^{-1}$. So, Specific heat capacity of water is more compared to ice.

Ice has a covalent chemical structure, which makes it easier to break intermolecular bonds than water. As a result, ice has a lower specific heat capacity than water.

(b) According to the principle of Calorimetry, when a hot body is kept in contact with a cold body, heat energy is transferred from the hot body to the cold body until both bodies reach the same temperature. If no heat energy is lost to the surroundings, then Heat energy lost by the hot body is equal to the Heat energy gained by the cold body.

(iv) (a) Differences:

1. A chemical change occurs when orbital electrons change, whereas a nuclear change occurs when nucleons inside the nucleus change.
2. A nuclear change requires a significantly larger amount of energy than a chemical change.

(b) **Beneficial effects:** Radiations emitted during the decay process are used to treat such as cancer, tumor etc.

**Harmful effect:** Radiations has the potential to harm and cause permanent damage to living tissues.

(v) (a) The given isotope of carbon is $^{14}_{6}C$

Number of protons = 6

Number of neutrons = mass number – atomic number = 14 – 6 = 8.

(b) After decaying a particle, the daughter element became $^{14}_{7}X$. Means, the mass number remain the same but the atomic number is increased by 1. Thus it is a β-decay.

The equation is, $^{14}_{6}C \xrightarrow{-\beta} {}^{14}_{7}X$.

(vi) (a) Since the two lamps are connected in series, their total resistance R is given by:

$$R = R_1 + R_2$$
$$= 30\ \Omega + 20\ \Omega = 50\ \Omega.$$

(b) We have, V = 110 V, R = 50 Ω

∴ By Ohm's law, $I = \frac{V}{R} = \frac{110}{50}$ A = 2.2 A.

(c) We now have,

$$I = 2.2 \text{ A}$$

$$V_1 = IR_1 = 2.2 \times 30 \text{ V} = 66 \text{ V}$$

$\therefore$ Voltage drop across $L_1 = 66$ V

Similarly,

$$V_2 = IR_2 = 2.2 \times 20 = 44 \text{ V}$$

$\therefore$ Voltage drop across $L_2 = 44$ V.

vii) (a) The frequency of the note produced in (b) is 2 times that produced in (a). Since the frequency of the note in (b) is $n$, hence the frequency of note in (a) is $\frac{1}{2}n$ or $\frac{n}{2}$.

(b) The note in (a) is louder, the reason being its amplitude is greater than the amplitude of note represented in (b), as the loudness being directly proportional to amplitude.

(c) True : Pitch is directly proportional to the frequency of sound note. The frequency of note in figure (b) is more (double) than the frequency of note in (a). So the pitch of note (b) is higher than that of note (a).

## ection-B

swer 4.

(i) (a) In equilibrium position of lever, sum of the clockwise moments about the fulcrum is equal to the sum of the anticlockwise moments about the fulcrum.

(b) Lever of class III, example: forceps or a pair of sugar tongs.

(ii) (a) For single fixed pulley,

$$\text{Load (L)} = 50 \text{ kgf}$$

$$\text{Mechanical advantage (M.A.)} = 1$$

Since,

$$\text{M.A.} = \frac{\text{Load}}{\text{Effort}}$$

$\therefore$

$$\text{Effort } (E_1) \text{ applied} = \frac{\text{Load}}{\text{M.A.}} = \frac{50}{1} = 50 \text{ kgf}$$

For a single movable pulley,

$$L = 50 \text{ kgf}$$

$$\text{M.A.} = 2$$

$\therefore$

$$\text{Effort } (E_2) \text{ applied} = \frac{\text{Load}}{\text{M.A.}} = \frac{50}{2} = 25 \text{ kgf}$$

Ratio of effort applied, $E_1 : E_2 = 50 : 25 = 2 : 1$

(b) In uniform linear motion, the speed and velocity are constant and acceleration is zero, whereas in a uniform circular motion the velocity is variable (even though speed is uniform), so, it is an accelerated motion.

ii) The adjacent diagram shows a block and tackle system of 4 pulleys.

(a) Four strands of tackle support the load.

(b) The tension in each strand is shown by the arrow marked as T.

(c) If we neglect the friction of the pulleys and weight of the pulleys in the lower block, then :

$$L = 4T$$

and

$$E = T$$

$\therefore$

$$\text{M.A.} = \frac{L}{E} = \frac{4T}{T} = 4.$$

(d) If load is pulled up by a distance 1 m, the effort end moves by 4 m.

**Answer 5.**

(i) (a) For first sound, $f = 256$ Hz, $\lambda = 1.3$ m

$\therefore$ Speed, $v = f\lambda = 256 \times 1.3 = 332.8\ ms^{-1}$

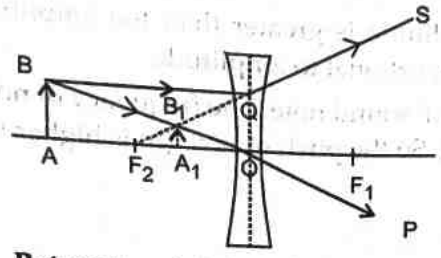
(b) For second sound, $v = 332.8\ ms^{-1}$, $\lambda = 2.6$ m

$\therefore$ Frequency, $f = \frac{v}{\lambda} = \frac{332.8}{2.6} = 128$ Hz

The frequency (*i.e.*, pitch) of first sound is 256 Hz which is twice that of the second sound (which is 128 Hz). Hence, to the listener, the first sound will be shriller than the second sound.

(ii) (a) Concave lens.

(b)




(iii) (a) **Between points 2 and 3:** From point 2 to 3, water is undergoing melting. At this stage, both ice and water coexist, and the temperature stays constant at 0°C until all the ice has melted.

(b) **Boiling or vaporization of water , constant:** Temperature Between points 4 and 5, water boils at 100°C. The temperature remains constant while heat energy is used to convert liquid water into steam (latent heat of vaporization). No rise in temperature occurs until the entire liquid has turned into gas.

(c) **False:** During boiling, added heat is not used to raise temperature but to overcome the attractive forces between particles. Hence, temperature remains constant throughout the boiling process until the phase change is complete.

**Answer 6.**

(i) (a) Amplitude

(b) Waveform

(c) Frequency

(ii) (a) The periodic vibrations of decreasing amplitude in the presence of resistive force are called damped vibrations.

(b) A tuning fork when stroked on a rubber pad, executes damped vibrations in air.

(c) Given: $t = 3$ s, $d = x$ m, $t_1 = 2.5$ s, $d_1 = (x - 82.5)$ m

Now,
$$v = \frac{2d}{t} = \frac{2x}{3} \quad ...(i)$$

and
$$v = \frac{2d_1}{t_1} = \frac{2x - 165}{2.5} \quad ...(ii)$$

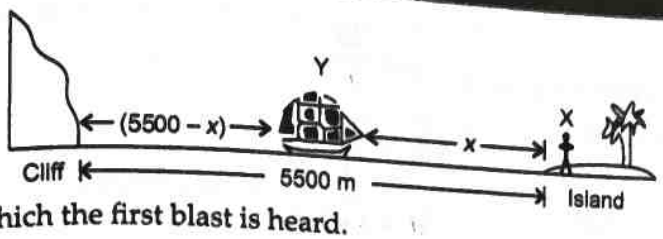
Comparing (i) and (ii), we get
$$\frac{2x}{3} = \frac{2x - 165}{2.5}$$

or
$$5x = 6x - 165 \times 3$$
$$x = 495 \text{ m}$$

Substituting this value in (i), we get
$$v = \frac{2 \times 495}{3} = 330\ ms^{-1}.$$

(iii) (a) Let distance between the observer X on island and the ship Y = $x$ m

$\therefore$ Distance between the ship Y and the cliff = $(5500 - x)$ m




Let $t_1$ be the time at which the first blast is heard.

$$t_1 = \frac{x}{v} = \frac{x}{330} \quad \ldots(i)$$

$\therefore$

$$\left(\because \text{Velocity} = \frac{\text{Distance}}{\text{Time}}\right)$$

Let $t_2$ be the time at which the second blast is heard *i.e.*, time taken for the sound to travel from the ship to the cliff and then back to the observer on the island.

$$t_2 = \frac{\text{Total distance travelled}}{\text{Velocity}}$$

$\therefore$

Total distance = Y to cliff + Cliff to the island

Total distance $= (5500 - x) + 5500$

$= (11000 - x)$

$$t_2 = \frac{11000 - x}{330}$$

$\therefore$

But $t_2 - t_1 = 5$ s

$\therefore$ Subtracting equation (i) from equation (ii), we get

$$\frac{11000 - x}{330} - \frac{x}{330} = 5$$

$$11000 - 2x = 5 \times 330$$

$\therefore$ $2x = 11000 - 1650$

$\therefore$ $= 9350$

$x = 4675$ m.

$\therefore$ Distance between the ship Y and the island = 4675 m.

(b) Distance between ship Y and the cliff

$= 5500 - x$

$= 5500 - 4675$

$x = 825$ m

$\therefore$ Distance of the ship from the island is 4675 m and the distance of the cliff from the ship is 825 m.

Answer 7.

(i) (a) As we know virtual, diminished image is formed, the given lens is concave lens.

(b) Given; $u = -50$ cm, $v = -15$ cm

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

$$= \frac{1}{-15} - \frac{1}{-50}$$

$$= \frac{-10+3}{150}$$

$$f = -\frac{150}{7}$$

$$= 21.42 \text{ cm}$$

(ii) (a) Speed of sound

$$v = \frac{2d}{t}$$

$$336 = \frac{2d}{3}$$

$$d = 3 \times 168$$
$$= 504 \text{ m}$$

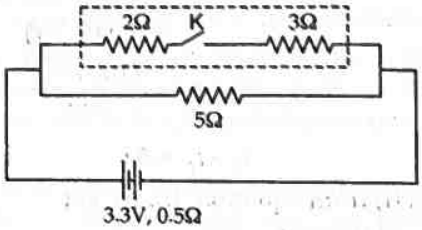
(b) Let $x$ be the distance travelled by the person.

$$v = \frac{2(d+x)}{t}$$

$$336 = \frac{2(d+x)}{(3+1.5)}$$

$$168 \times 4.5 = d + x$$
$$756 = 504 + x$$
$$x = 756 - 504 = 252 \text{ m}$$

(iii) (a) When the key k is open:




Resistance ($R_1$) of the circuit $= (5 + 0.5)\ \Omega$
$= 5.5\ \Omega$

(b) Current ($I_1$) drawn when key K is open:

$$I_1 = \frac{V}{R_1} = \frac{3.3}{5.5} A$$

$$= \frac{3}{5} A = 0.6 \text{ A}$$

**Answer 8.**

(i) (a) Using the Clock rule, looking at the face of the loop it can be said that end A will develop south pole and end B will develop north pole.

(b) The magnetic field may be increased by,
1. increasing the current strength in the coil,
2. increasing the number of turns in the coil.

(ii) (a) The resistances are connected in parallel fashion.

Thus the equivalent resistance, $\frac{1}{R_{eq}} = \frac{1}{4} + \frac{1}{6}$,

$$R_{eq} = \frac{12}{5} = 2.4\ \Omega.$$

(b) The current flowing through the battery is $I = \frac{V}{R_{eq}} = \frac{6}{2.4} = 2.5$ A.

As the resistances are connected in parallel, the voltage across each resistor will be same.

So the current through 4 Ω resistor is $= \frac{6}{4} = 1.5$ A.

(iii) (a) The heat energy required to raise the temperature by 5 °C is,

$$= \text{heat capacity} \times \text{temperature change}$$
$$= 200 \text{ J K}^{-1} \times 5 = 1000 \text{ J} = 10^3 \text{ J}.$$

(b)
$$\text{Specific heat capacity} = \frac{\text{Heat capacity}}{\text{Mass of the metal}}$$
$$= \frac{200}{0.4}$$
$$= 500 \text{ J kg}^{-1} \text{ K}^{-1}.$$

(c) The thermal energy necessary to melt a unit amount of ice at 0°C to water at 0°C without changing the temperature is known as the specific heat of melting of ice. The specific latent heat of fusion of ice, on the other hand, is the heat energy generated when a unit amount of water at 0°C freezes to ice at 0°C without a temperature change. Thus, for a pure substance latent heat of fusion is the same as the latent heat of melting.

(d) **False :** Heat capacity depends on both the mass and the specific heat of the material. Different substances with the same mass may have different heat capacities.

**Answer 9.**

(i) (a) From graph B it can be said that the direction of the current is not changing, thus it is direct current. On the other hand graph A shows the periodical change in direction of the current with time, thus it is alternating current.

(b) Differences between AC and DC:

1. In direct current (DC), the electric current only flows in one direction. In alternating current (AC), on the other hand, direction changes periodically.
2. Power consumption in AC is significantly less compared to DC.

(c) Alternating current is five times as harmful as direct current. The major cause of this harmful effect on the human body is the alternating current's frequency. Even a little voltage of around 25 volts may kill a human if the frequency of alternating current is approximately 60 Hz.

(ii) Let $d$ be the distance of wall from the boy.

To hear the echo, sound has to travel a distance

$$2d = 2 \times 17 = 34 \text{ m}.$$

Since 10 claps are produced in one second, therefore, each clap is produced after 1/10 s which is equal to the time taken for the echo to be heard,

*i.e.,*
$$t = \frac{1}{10} \text{ s} = 0.1 \text{ s}$$

Now, speed of sound,

$$v = \frac{\text{Distance travelled}}{\text{Time taken}} = \frac{34}{0.1}$$
$$= 340 \text{ ms}^{-1}.$$

(iii) (a) Polarity of Q is North pole and So polarity of R is south pole.

(b) Electromagnetic induction

(c) Lenz's law

□□

# Specimen Question Paper

## Chemistry

Maximum Marks: 80
Time allowed: Two hours

### General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will not be allowed to write during first 15 minutes.*
*This time is to be spent in reading the question paper.*
*The time given at the head of this Paper is the time allowed for writing the answers.*
*Section A is compulsory. Attempt any four questions from Section B.*
*The intended marks for questions or parts of questions are given in brackets []*

***Instruction for the Supervising Examiner***

*Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.*

## Questions

### Section-A (Attempt all questions from this Section.)

**Question 1.**

**Choose the correct answers to the questions from the given options.**
**(Do not copy the question, write the correct answers only.)** [15]

(i) Which of the following will dissociate in aqueous solution, to give a positive ion other than hydronium ion, and a negative ion other than hydroxyl ion?

(a) KOH
(b) dil. HCl
(c) NaCl
(d) $CH_3COOH$

**[Understanding & Application]**

(ii) A compound **P** is heated in a test tube with sodium hydroxide solution. A red litmus paper held at the mouth of the test tube turns blue.
Which of the following could compound **P** be?

(a) Zinc sulphate
(b) Copper sulphate
(c) Ferrous sulphate
(d) Ammonium sulphate

**[Understanding]**

(iii) **Assertion (A):** Aqueous solution of potassium chloride can conduct electricity.
**Reason (B):** Conduction of electric current is due to the presence of free ions.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

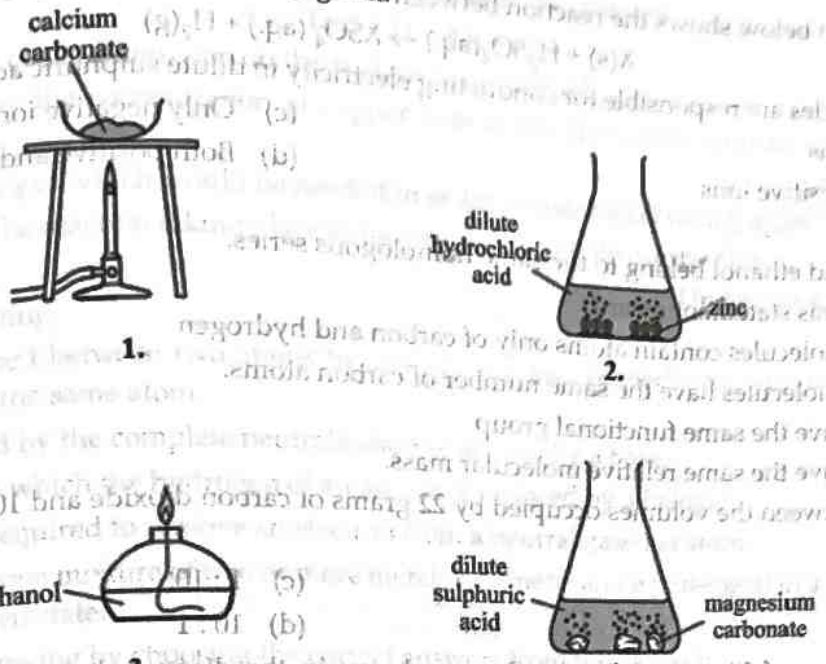
**[Understanding]**

(iv) Identify the ion that contain one lone pair of electrons.

(a) $OH^{-1}$
(b) $H_3O^+$
(c) $NH_4^+$
(d) $H^+$

**[Understanding & Application]**

(v) Four reactions are shown below in the diagram:




Which reactions produce water?

(a) 1 and 2 (b) 1 and 3 (c) 3 and 4 (d) 2 and 3

**[Understanding & Application]**

(vi) When compound **X** reacts with dilute sulphuric acid, it releases a gas that turns acidified potassium dichromate solution from orange to green. Which of the following could be compound **X**?

(a) Lead nitrate (c) Sodium chloride

(b) Copper carbonate (d) Potassium sulphite

**[Recall & Understanding]**

(vii) The volume occupied by 2 moles of a gas at STP is:

(a) 22.4L (b) 2.24L (c) 44.8L (d) 4.48L

**[Understanding]**

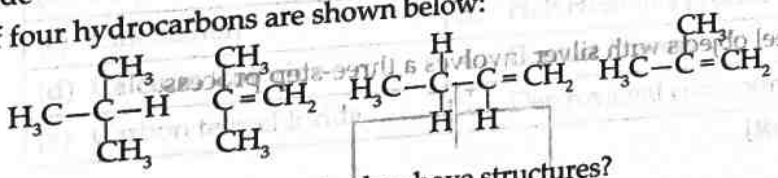
(viii) Identify from the following metal oxide which can react with an acid as well as an alkali:

(a) Silver oxide (c) Copper(II) oxide

(b) Calcium oxide (d) Aluminium oxide

**[Understanding]**

(ix) The structures of four hydrocarbons are shown below:



How many isomers of butene are shown in the above structures?

(a) 1 (b) 2 (c) 3 (d) 4

**[Analysis]**

(x) Which element amongst the following has the largest atomic radius?

(a) Al (b) S (c) Mg (d) Na

**[Understanding & Application]**

(xi) For which pH change is there the maximum increase in acidity?

| | Initial pH | Final pH |
|---|---|---|
| (a) | 1 | 3 |
| (b) | 2 | 6 |
| (c) | 3 | 1 |
| (d) | 6 | 2 |

**[Understanding & Application]**

(xii) The equation below shows the reaction between element 'X' and dilute sulphuric acid.

$$X(s) + H_2SO_4(aq.) \rightarrow XSO_4\ (aq.) + H_2(g)$$

Which particles are responsible for conducting electricity in dilute sulphuric acid and compound $XSO_4$?

(a) Electrons
(b) Only positive ions
(c) Only negative ions
(d) Both positive and negative ions

[Understanding]

(xiii) Methanol and ethanol belong to the same homologous series.
What does this statement mean?

(a) Their molecules contain atoms only of carbon and hydrogen.
(b) Their molecules have the same number of carbon atoms.
(c) They have the same functional group.
(d) They have the same relative molecular mass.

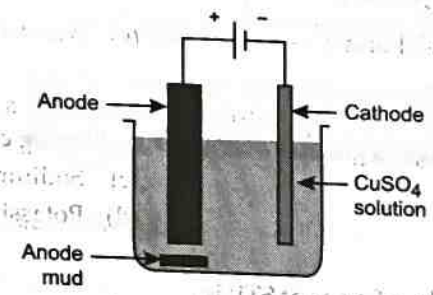
[Understanding]

(xiv) The ratio between the volumes occupied by 22 grams of carbon dioxide and 10 grams of hydrogen gas is:

(a) 2.2 : 1
(b) 1 : 2.2
(c) 1 : 10
(d) 10 : 1

[Application]

(xv) In the process of Electrorefining of Copper shown in the diagram below, which of the following statements is correct?

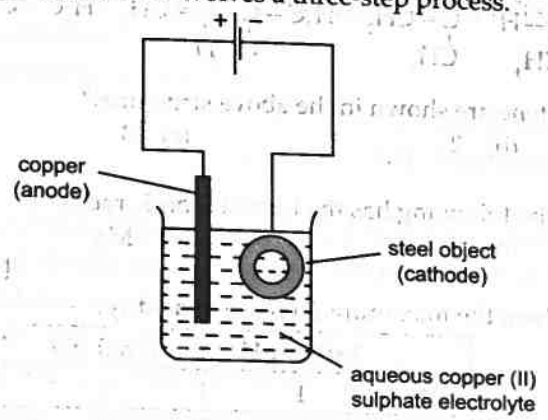



(a) The anode is made of pure Copper.
(b) The cathode is made of impure Copper.
(c) Copper is deposited at the anode.
(d) Copper ions from the anode move to the cathode and get deposited as pure Copper.

[Understanding]

**Question 2.**

(i) Electroplating steel objects with silver involves a three-step process. [5]




step 1 A coating of copper is applied to the object.
step 2 A coating of nickel is applied to the object.
step 3 The coating of silver is applied to the object.

(a) A diagram of the apparatus used for step 1 is shown.

1. The chemical process taking place on the surface of the object is

$$Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$$

What is the observation seen on the surface of the object?

2. Explain why the concentration of copper ions in the electrolyte remains constant throughout step1.

(b) Give two changes which would be needed in order to coat nickel onto the object in step 2.

(c) Write down the reaction taking place at the positive electrode during step 3.

**[Understanding & Application]**

**[5]**

(ii) Identify the following:

(a) A bond formed between two atoms by sharing of a pair of electrons, with both electrons being provided by the same atom.

(b) A salt formed by the complete neutralisation of an acid by a base.

(c) A reaction in which the hydrogen of an alkane is replaced by a halogen.

(d) The energy required to remove an electron from a neutral gaseous atom.

(e) A homogeneous mixture of two or more metals or a metal and a non-metal in a definite proportion in their molten state.

**[Recall]**

**[5]**

(iii) Complete the following by choosing the correct answers from the bracket:

(a) When dilute sulphuric acid reacts with zinc granules, the gas evolved is _____ (*hydrogen / carbon dioxide*), which can be tested using a burning splint.

(b) A solution of copper(II) sulphate in sodium hydroxide solution forms a _____ (*pale blue / green*) precipitate.

(c) In methane, each hydrogen atom share(s) _____ (*one / two*) electron(s) with the central carbon atom to complete its valence shell.

(d) The electron affinity of element X is greater than that of element Y. The oxidising power of X is likely to be _____ (*more / less*) than that of element Y.

(e) The naturally occurring compound of a metal from which the metal can be extracted is called its _____ (*ore / mineral*).

**[Recall & Understanding]**

**[5]**

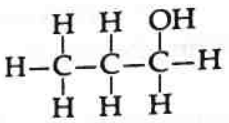
(iv) Match Column A with Column B.

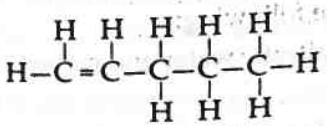
| Column A | Column B |
|---|---|
| (a) Aluminium | 1. Covalent compound |
| (b) Sulphuric acid | 2. Carbonate ore |
| (c) Calcination | 3. Hall Heroult's process |
| (d) Calcium Chloride | 4. Contact Process |
| (e) Carbon tetrachloride | 5. Electrovalent compound |

**[Recall & Understanding]**

**[5]**

(v) (a) Give the IUPAC name of the following organic compounds:

1. 

2. 

(b) Draw the structural diagram for the following compounds:

1. but-2-yne
2. 1, 1, 1, trichloro methane
3. pentan -2-ol

**[Understanding]**

## Section-B (Attempt any four questions from this Section.)

**Question 3.**

(i) Give one significant observation when:

(a) Excess of chlorine gas reacts with ammonia.

(b) Zinc nitrate is strongly heated in a test tube. [2]

[Recall & Understanding]

(ii) Give reasons:

(a) When ammonia gas is passed over black copper oxide in a combustion tube a reddish-brown substance is left behind. [2]

(b) Quick lime is not used to dry hydrogen chloride gas.

[Understanding]

(iii) The electron affinity of an element X is greater than that of element Y.

(a) How is the oxidising power of X likely to compare with that of Y? [3]

(b) How is the electronegativity of X likely to compare with that of Y?

(c) State whether X is likely to be placed to the left or to the right of Y in the periodic table?

[Application]

(iv) Write balanced chemical equations for the following reactions:

(a) Ammonium chloride reacts with calcium hydroxide. [3]

(b) Nitric acid reacts with zinc carbonate.

(c) Concentrated sulphuric acid is added to hydrated copper sulphate.

[Recall]

**Question 4.**

(i) Name the main metal present in the following alloys:

(a) Duralumin [2]

(b) Brass

[Recall]

(ii) Write balanced chemical equations for the following:

(a) Laboratory preparation of hydrochloric acid from a less volatile acid. [2]

(b) Bromine gas is passed over ethene in the presence of carbon tetrachloride.

[Recall & Understanding]

(iii) Abhishek was given a salt 'X' for analysis which was white in colour. On strong heating it produced a yellow residue, a colourless gas, and also a reddish-brown gas. The solution of the salt 'X' when tested with excess of ammonium hydroxide produced a chalky white insoluble precipitate. [3]

(a) Name the coloured gas evolved when Abhishek heated the salt strongly.

(b) Which cation was present in the sample given to Abhishek?

(c) Identify the salt given to Abhishek for analysis.

[Understanding]

(iv) In a round bottom flask, a mixture of ethanol, acetic acid and concentrated sulphuric acid was heated: [3]

(a) Name the type of reaction occurring in the above set up.

(b) What is the role of sulphuric acid in this reaction?

(c) State one observation that takes place during the reaction.

[Understanding]

**Question 5.**

(i) Identify the reactant and write the balanced equation for the following: [2]
Nitric acid reacts with compound **Q** to give a salt Calcium nitrate, water and carbon dioxide.

[Understanding]

(ii) What will be the mass of carbon dioxide that will contain the same number of molecules as present in 3.2 g of oxygen gas? [At. Wt: O = 16, C = 12] [2]

[Understanding & Application]

(iii) State the property exhibited by sulphuric acid in each of the following reactions: [3]

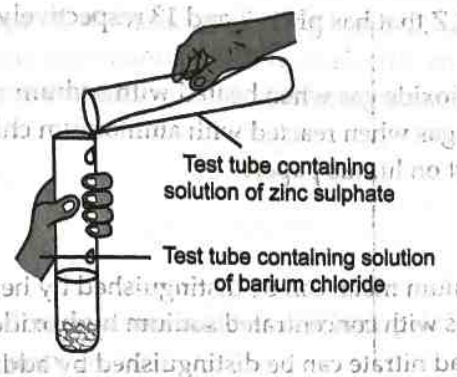
(a) Sulphur with concentrated sulphuric acid.

(b) Conversion of ferrous sulphide to hydrogen sulphide gas using sulphuric acid.
(c) Ethanol with concentrated sulphuric acid.

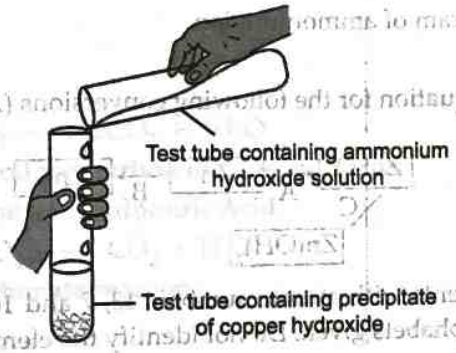
**[Recall & Understanding]**

(iv) Give balanced equations for the following: **[3]**
(a) Laboratory preparation of ethyne from calcium carbide.
(b) Conversion of acetic acid to ethyl acetate.
(c) Laboratory preparation of nitric acid. **[Recall]**

Question 6.
(i) A student was asked to perform two experiments in the laboratory based on the instructions given: **[2]**
Observe the picture given below and state one observation for each of the Experiments 1 and 2 that you would notice on mixing the given solutions.
(a) Experiment 1




(b) Experiment 2




**[Understanding]**

(ii) You are provided with the list of chemicals mentioned below in the box: **[2]**

*Sodium hydroxide solution, copper carbonate, zinc, hydrochloric acid, copper, dilute sulphuric acid*

Using suitable chemicals from the list given, write balanced chemical equation for the preparation of the salts mentioned below:
(a) copper sulphate
(b) sodium zincate **[Understanding & Application]**

(iii) Solid ammonium dichromate decomposes as under: **[3]**

$$(NH_4)_2Cr_2O_7 \rightarrow N_2 + Cr_2O_3 + 4H_2O$$

If 126 g of ammonium dichromate decomposes, calculate:
(a) the number of moles of ammonium dichromate that undergoes decomposition.
(b) the mass of chromic oxide formed at the same time.
(c) the volume of nitrogen gas evolved at STP.
[At. Wt: N = 14, Cr = 52, O = 16, H = 1] **[Understanding & Application]**

(iv) Identify the reactants P, Q and R in the following reactions: **[3]**
(a) Copper oxide + P → Copper + water
(b) Iron pyrite + Q → Iron oxide + Sulphur dioxide
(c) Sodium chloride + R → Sodium nitrate + Silver chloride **[Application]**

**Question7.**

(i) Give reasons for the following:

(a) Nitric acid does not normally liberate hydrogen gas when it reacts with active metals. [2]

(b) Silver-plated cutlery is not considered as pure silver. **[Understanding]**

(ii) The following questions relate to the extraction of Aluminium by electrolysis.

(a) Name the other compound which contains aluminium added to alumina. [2]

(b) Give a balanced equation for the reaction that takes place at the cathode. **[Recall]**

(iii) Give balanced equations for each of the following:

(a) Action of warm water on aluminium nitride. [3]

(b) Oxidation of carbon with conc. nitric acid.

(c) Laboratory preparation of ethanol by using chloroethane and aqueous sodium hydroxide. **[Recall & Understanding]**

(iv) Rohit has solution X, Y and Z that has pH 2, 7 and 13 respectively. Which solution: [3]

(a) will liberate sulphur dioxide gas when heated with sodium sulphite?

(b) will liberate ammonia gas when reacted with ammonium chloride?

(c) will not have any effect on litmus paper? **[Application]**

**Question 8.**

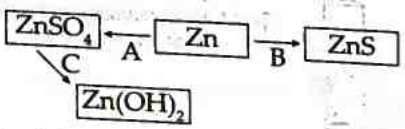
(i) State giving reasons if:

(a) zinc metal and aluminium metal can be distinguished by heating the metal powders separately in two different test tubes with concentrated sodium hydroxide solution. [2]

(b) calcium nitrate and lead nitrate can be distinguished by adding ammonium hydroxide solution to the salt solution. **[Understanding]**

(ii) Draw the electron dot diagram of ammonium ion. [2]
[Atomic No.: N = 7, H = 1] **[Recall & Understanding]**

(iii) Write balanced chemical equation for the following conversions (A to C): [3]




(iv) L, M and N are three elements with atomic numbers 13, 7 and 10 respectively. Answer the following questions using only the alphabets given. Do not identify the elements. [3]

(a) can combine with hydrogen to form a gas which produces dense white fumes with concentrated HCl?

(b) has zero electron affinity?

(c) can form an ionic compound with oxygen? **[Understanding]**

# Answers

## Section-A

**Answer 1.**

(i) (c) NaCl

**Explanation :**

NaCl (Sodium chloride)

**Dissociates into:**

$NaCl \longrightarrow Na^+ + Cl$

**Positive ion:** $Na^+$ (sodium ion)
**Negative ion:** Cl (chloride ion)
→ It gives a **positive ion other than hydronium ($Na^+$)** and a **negative ion other than hydroxyl ($Cl^-$)**.

(ii) (d) Ammonium sulphate

**Explanation :**

When ammonium sulphate is heated with sodium hydroxide, it gives off ammonia gas ($NH_3$). Ammonia is a basic gas, so it turns red litmus paper blue.

(iii) (c) Both (A) and (R) are the true and (R) is the correct explanation of (A).

**Explanation :**

Potassium chloride (KCl) is an ionic compound. Its aqueous solution can conduct electricity. This is because when dissolved in water, it dissociates into $K^+$ and $Cl^-$ ions, which are free to move and conduct electricity. These moving ions allow the flow of electric current through the solution. Thus, both assertion and reason are true and reason is the correct explanation of assertion.

(iv) (b) $H_3O^+$

**Explanation :**

**$H_3O^+$ (Hydronium ion)**
**Central atom:** Oxygen
Oxygen forms **3 bonds** with hydrogen atoms and has **one lone pair** left.
Exactly **one lone pair** is correct answer.

(v) (c) 3 and 4

**Explanation :**

**Reaction 3: Burning Ethanol**

- **Equation:** $C_2H_5OH + 3O_2 \longrightarrow 2CO_2 + 3H_2O$
- Combustion of ethanol produces **carbon dioxide and water.**

**Reaction 4: Magnesium Carbonate + Sulphuric Acid**

- **Equation:** $MgCO_3 + H_2SO_4 \longrightarrow CO_2 + H_2O$
- This is a typical **acid + carbonate** reaction.

**Produces water**

(vi) (d) Potassium Sulphite

**Explanation :**

Potassium sulphite reacts with dilute sulphuric acid to release **sulphur dioxide ($SO_2$)** gas. $SO_2$ is a **reducing agent** — it turns **acidified potassium dichromate from orange to green.**

$$K_2SO_3 + H_2SO_4 \longrightarrow K_2SO_4 + H_2O + SO_2 \text{ (sulphur dioxide)}$$

None of the other compounds produce $SO_2$ gas.

So, **compound X is potassium sulphite.**

(vii) (c) 44.8L

**Explanation :**

At **STP (Standard Temperature and Pressure)**,
**1 mole** of any ideal gas occupies **22.4 litres.**
So, for **2 moles:**
2 moles × 22.4 L/mole = 44.8 L

(viii) (d) Aluminium oxide

**Explanation :**

Aluminium oxide **($Al_2O_3$)** is an **amphoteric oxide.**

This means it can react both with acids and with alkalis:

- With acid (*e.g.*, HCl):

$$Al_2O_3 + 6HCl \longrightarrow 2AlCl_3 + 3H_2O$$

- With base (*e.g.*, NaOH)

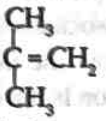
$$Al_2O_3 + 2NaOH + 3H_2O \longrightarrow 2Na[Al(OH)_4]$$

(sodium aluminate)

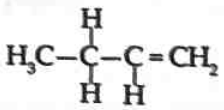
(ix) (b) 2

**Explanation :**

2-methyl propene and But-1-ene are two isomers of butene present in the four hydrocarbons shown above.



2-methyl propene



But-1-ene

(x) (d) Na

**Explanation :**

As we move from left to right, atomic radius decreases due to increasing nuclear charge pulling electrons closer. So,

$$Na > Mg > Al > S$$

Thus, sodium (Na) has the largest atomic radii.

(xi) (d) 6 → 2

**Explanation :**

A lower pH means higher acidity.
Each 1 unit drop in pH increases acidity by 10 times.
So, from pH 6 to 2, acidity increases by $10^4 = 10{,}000$ times
This is the maximum increase among all options.

(xii) (d) Both positive and negative ions

**Explanation :**

In dilute sulphuric acid and the compound $XSO_4$ (a salt in aqueous solution), electricity is conducted through the movement of ions, not electrons.

- Dilute $H_2SO_4$ dissociates into:
  - $H^+$ (or $H_3O^+$) → positive ions
  - $SO_4^{2-}$ → negative ions
- $XSO_4$ (a salt formed from metal X) dissociates into:
  - $X^{2+}$ (or $X^+$ depending on its valency) → positive ions
  - $SO_4^{2-}$ → negative ions

Both positive and negative ions move and carry electric current.

(xiii) (c) They have the same functional group.

**Explanation :**

Methanol and ethanol belong to the same homologous series of alcohol. Thus, they have same functional group.

(xiv) (c) 1 : 10

**Explanation :**

22 g of $CO_2$ = 0.5 mol → Volume = 11.2 L

10 g of $H_2$ = 5 mol → Volume = 112 L

So, the ratio of volumes is 11.2 : 112 = 1 : 10

(xv) (d) Copper ions from the anode move to the cathode and get deposited as pure copper.

**Explanation :**

**In electrorefining of copper:**

**Anode** = Impure copper

**Cathode** = Pure copper

**Electrolyte** = Copper(II) sulphate ($CuSO_4$) solution

- At the **anode**, impure copper loses electrons and forms $Cu^{2+}$ **ions:**

$$Cu(s) \longrightarrow Cu^{2+} + 2e^-$$

- These $Cu^{2+}$ **ions** move through the solution to the **cathode**, where they gain electrons and get **deposited as pure copper:**

$$Cu^{2+} + 2e^- \longrightarrow Cu(s)$$

So, impure copper dissolves from the anode, and pure copper gets deposited at the cathode.

**Answer 2.**

(i) (a) 1. **Observation:** Reddish-brown deposit / pink deposit forms

The mass of the object increases

2. As the **anode releases copper ions**, they **replace** the copper ions being deposited on the cathode. Therefore, the **concentration of copper ions does not decrease.**

(b) **Two changes needed to coat nickel in step 2:**

1. The **anode should be made of nickel.**
2. The **electrolyte should be an aqueous solution of nickel, such as nickel sulphate** or any **nickel salt solution.**

(c) Reaction at the positive electrode (anode) during step 3 (silver coating)

$$Ag \longrightarrow Ag^+ + e^-$$

(ii) (a) Coordinate bond

(b) Normal salt

(c) Substitution

(d) Ionisation potential

(e) Alloy

(iii) (a) Hydrogen

(b) pale blue

(c) one

(d) more

(e) ore

(iv) (a) 3

(b) 4

(c) 2

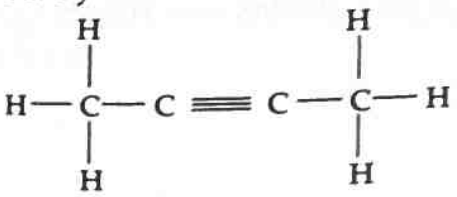
(d) 5

(e) 1

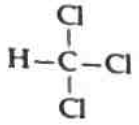
(v) (a) 1. propanol

2. pentene

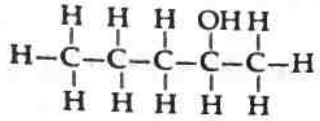
(b) 1. but-2-yne



2. 1, 1, 1-trichloro methane



3. pentan -2-ol



## Section-B

**Answer 3.**

(i) (a) A yellow oily explosive liquid is formed. This liquid is nitrogen trichloride, $NCl_3$ — highly sensitive and explosive.

(b) When zinc nitrate is strongly heated in a test tube:

- A reddish-brown gas is evolved (nitrogen dioxide, $NO_2$)
- A gas which rekindles a glowing splinter is released (oxygen)
- A residue forms which is yellow when hot and white when cold (zinc oxide)

(ii) (a) When ammonia gas ($NH_3$) is passed over black copper(II) oxide (CuO) in a heated combustion tube, the black CuO is reduced to reddish-brown copper (Cu).

(b) Quick lime is not used to dry hydrogen chloride gas because quick lime reacts with hydrogen chloride gas.

(iii) (a) X has more oxidising power than Y.

(b) X will be more electronegative than Y.

(c) X will be placed to the right of Y.

(iv) (a) $2NH_4Cl + Ca(OH)_2 \longrightarrow CaCl_2 + 2H_2O + 2NH_3$

(b) $2HNO_3 + ZnCO_3 \longrightarrow Zn(NO_3)_2 + H_2O + CO_2$

(c) $H_2SO_4 + CuSO_4 . 5H_2O \longrightarrow CuSO_4 + 5H_2O + H_2SO_4$

**Answer 4.**

(i) (a) Aluminium

(b) Copper

(ii) (a) $NaCl + \text{conc. } H_2SO_4 \longrightarrow NaHSO_4 + HCl$

(b) $C_2H_4 + Br_2 \longrightarrow C_2H_4Br_2$

(iii) (a) Nitrogen dioxide

(b) lead ion

(c) Lead nitrate

(iv) (a) Esterification

(b) dehydrating agent

(c) Fruity smell is obtained

**Answer 5.**

(i) Q is Calcium carbonate or Calcium bicarbonate

$CaCO_3 + 2HNO_3 \longrightarrow Ca(NO_3)_2 + H_2O + CO_2$

(ii) 3.2 g of oxygen contains $6.023 \times 10^{22}$ molecules

So, 4.4 g of $CO_2$ will contain $6.023 \times 10^{22}$ molecules

Answer 4.4 g of $CO_2$.

(iii) (a) Oxidising property

(b) Acidic property

(c) dehydrating property

(iv) (a) $CaC_2 + 2H_2O \longrightarrow Ca(OH)_2 + C_2H_2$

(b) $CH_3COOH + C_2H_5OH \longrightarrow CH_3COOC_2H_5 + H_2O$

(c) $NaNO_3 + \text{conc. } H_2SO_4 \longrightarrow NaHSO_4 + 2HNO_3$

**Answer 6.**

(i) (a) White precipitate is formed.

(b) Blue precipitate dissolves to form an inky blue solution.

(ii) (a) $CuCO_3 + H_2SO_4 \longrightarrow CuSO_4 + H_2O + CO_2$

(b) $Zn + 2NaOH \longrightarrow Na_2ZnO_2 + H_2$

(iii) (a) 252 g of Ammonium dichromate = 1mole

126 g of Ammonium dichromate = 0.5 moles

(b) 252 g of ammonium dichromate gives 152 g of chromic oxide.

126 g of ammonium dichromate provides $\frac{152 \times 126}{252}$ = 76 g of chromic oxide

(c) 252 g of ammonium dichromate produces 22.4 litre of nitrogen.

126 g of ammonium dichromate produces $\frac{22.4 \times 126}{252}$ = 11.2 litre of nitrogen

(iv) (a) P = Hydrogen

(b) Q = Oxygen

(c) R = Silver Nitrate

**Answer 7.**

(i) (a) Nitric Acid is a very strong oxidising agent and hence oxidises hydrogen to water. So, it is not used for obtaining hydrogen from metals.

(b) Silver-plated cutlery is not considered as pure silver because it is not made fully of silver only its top coating is of silver.

(ii) (a) Cryolite

(b) $Al^{3+} + 3e^- \longrightarrow Al$

(iii) (a) $AlN + 3H_2O \longrightarrow Al(OH)_3 + NH_3$

(b) $C + 4HNO_3 \longrightarrow CO_2 + 2H_2O + 4NO_2$

(c) $C_2H_5Cl + \text{aq. } NaOH \longrightarrow C_2H_5OH + NaCl$

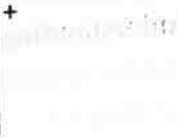
(iv) (a) X (b) Z (c) Y

**Answer 8.**

(i) (a) No, both will liberate hydrogen gas which burns with a pop sound.

(b) Yes, white ppt. will be formed with lead nitrate but no ppt. is formed with calcium nitrate/ or no visible reaction.

(ii)



(iii) A = $Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2$

B = $Zn + S \longrightarrow ZnS$

C = $ZnSO_4 + 2NaOH \longrightarrow Zn(OH)_2 + Na_2SO_4$ or with $NH_4OH$

(iv) (a) M (b) N (c) L

# 1 Sample Paper

## Chemistry

## Questions

### Section-A (Attempt all questions)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

(i) An electrolyte which completely dissociates into ions is :

(a) Alcohol
(b) Carbonic acid
(c) Sucrose
(d) Sodium hydroxide

**[Understanding & Application]**

(ii) The reaction of metal iron salts with caustic soda is given as:

$$FeSO_4 + 2NaOH \longrightarrow Fe(OH)_2(\downarrow) + Na_2SO_4$$
$$FeCl_3 + 3NaOH \longrightarrow Fe(OH)_3(\downarrow) + 3NaCl$$

What happens when the precipitates are allowed to mix in excess of NaOH?

(a) $Fe(OH)_2$ is soluble but $Fe(OH)_3$ is insoluble
(b) $Fe(OH)_2$ is insoluble but $Fe(OH)_3$ is soluble
(c) $Fe(OH)_2$, $Fe(OH)_3$ both are insoluble
(d) $Fe(OH)_2$, $Fe(OH)_3$ both are soluble

**[Understanding]**

(iii) **Assertion (A):** Solutions of compounds like alcohol and glucose do not show acidic character.
**Reason (R):** They do not show acidic character because they do not dissociate into ions.

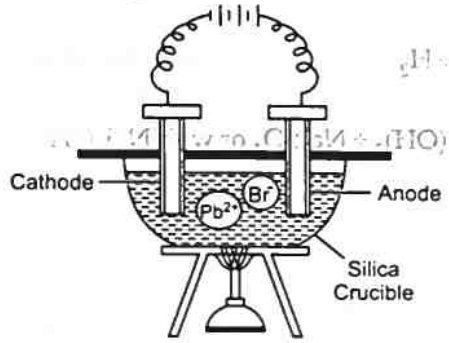
(a) Both A and R are true and R is the correct explanation of the A.
(b) Both A and R are true but R is not the correct explanation of the A.
(c) A is true, but R is false.
(d) A is false, but R is true.

**[Understanding]**

(iv) The empirical formula and molecular mass of a compound are $CH_2O$ and 180 g respectively. What will be the molecular formula of the compound?

(a) $C_9H_{18}O_9$
(b) $CH_2O$
(c) $C_6H_{12}O_6$
(d) $C_2H_4O_2$ **[Understanding & Applications]**

(v) Study the given figure and answer the question that follow :



Why silica crucible is used in this type of electrolysis?

(a) Non-reactive
(b) Non-conductor of electricity
(c) Withstand at high temperature
(d) All of these

**[Understanding & Application]**

(vi) A compound with low boiling point, is :

(a) Sodium chloride
(b) Calcium chloride
(c) Potassium chloride
(d) Carbon tetrachloride

**[Recall & Understanding]**

(vii) 40 $cm^3$ of methane ($CH_4$) is reacted with 60 $cm^3$ of oxygen.
The equation for the reaction is given below:

$$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$$

All volumes are measured at room temperature.
What is the total volume of the gases remaining at the end of the reaction? **[Understanding]**

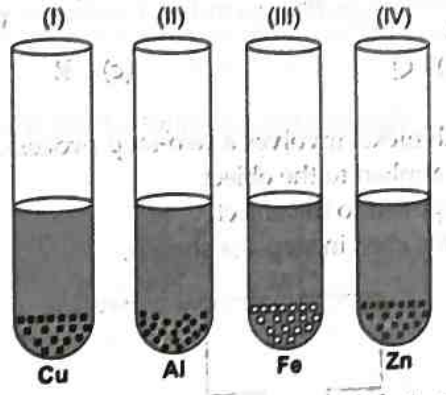
(a) 60 $cm^3$
(b) 40 $cm^3$
(c) 45 $cm^3$
(d) 50 $cm^3$

(viii) Modern periodic table is based on which of the following properties of elements ?

(a) Atomic number
(b) Atomic mass
(c) Electronegativity
(d) Electron affinity

**[Understanding]**

(ix) A student takes Cu, Al, Fe, and Zn strips, separately in four test tubes labelled as I, II, III, and IV, respectively. He adds 10 mL of freshly prepared copper sulphate solution to each test tube and observes the changes in each case.




He would observe a fading of blue colour of the copper sulphate solution in the test tubes:

(a) (I) and (II)
(b) (I) and (III)
(c) (II), (III), (IV)
(d) (II) and (III)

**[Understanding & Application]**

**[Understanding & Application]**

(x) The IUPAC name of acetylene is :

(a) Propane
(b) Propyne
(c) Ethene
(d) Ethyne

(xi) Rearrange the following steps involved in the contact process for the manufacturing of $H_2SO_4$.

(i) Production of Sulphur trioxide
(ii) Addition of Water to $H_2S_2O_7$
(iii) Production of Sulphur dioxide
(iv) Production of Oleum
(v) Purification of Gases

(a) (i), (v), (iii), (iv), (ii)
(b) (iii), (v), (i), (iv), (ii)
(c) (v), (iii), (i), (iv), (ii)
(d) (iii), (i), (v), (iv), (ii)

**[Understanding & Application]**

(xii) The oxidizing agent in the equation $S + 2H_2SO_4 \rightarrow 3SO_2 + 2H_2O$ is:

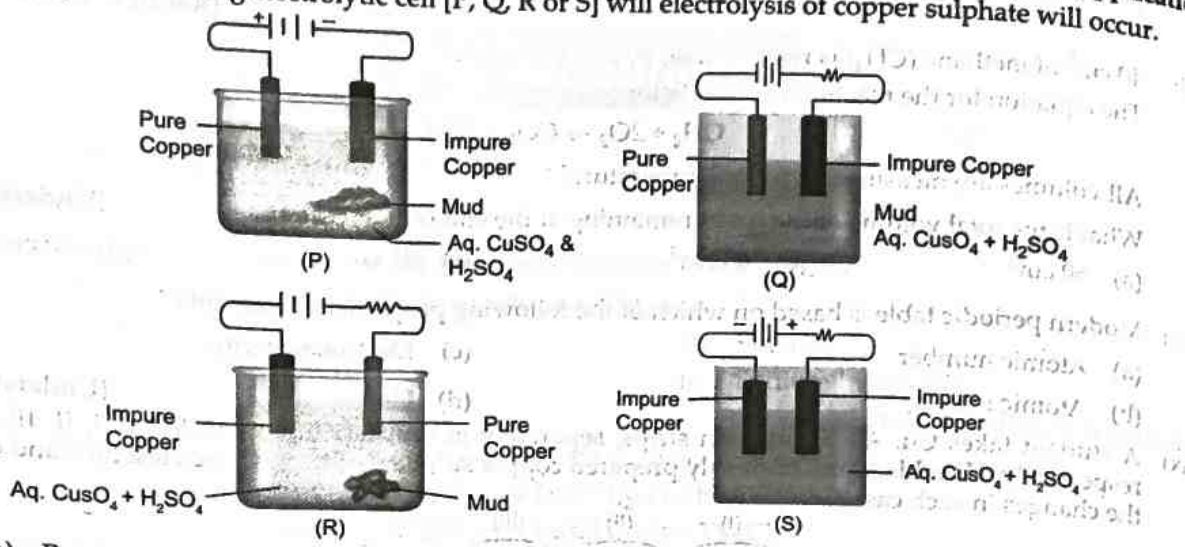
(a) Sulphur
(b) Sulphuric acid
(c) Sulphur dioxide
(d) Water

**[Understanding]**

(xiii) An example of hydracid is _____.
(a) Hydrochloric acid
(b) Sulphuric acid
(c) Nitric acid
(d) Acetic acid **[Understanding]**

(xiv) If vapour density of the gas is 39 and has molecular formula $(CH)_n$. Then what should be the formula of the compound?
(a) $C_3H_3$
(b) $C_4H_4$
(c) $C_2H_2$
(d) $C_6H_6$ **[Application]**

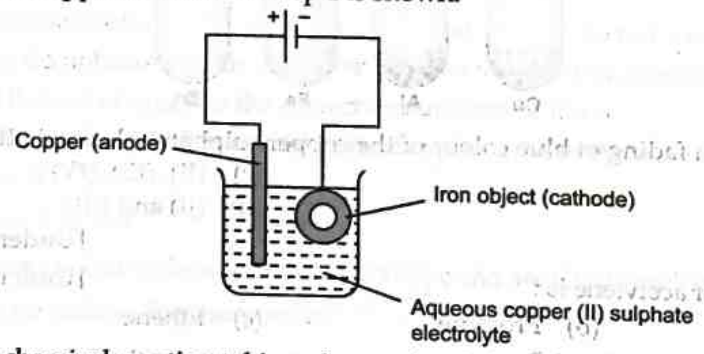
(xv) In which of following electrolytic cell [P, Q, R or S] will electrolysis of copper sulphate will occur.




(a) P (b) Q (c) R (d) S

**Question 2.**

(i) Electroplating iron objects with nickel involves a two-step process.
**Step 1:** A coating of copper is applied to the object.
**Step 2:** A coating of nickel is applied to the object.
(a) A diagram of the apparatus used in step 1 is shown.




1. What is the chemical reaction taking place at the anode?
2. Explain the movement of copper ions in the electrolyte during step 1.

(b) What will be made the cathode and the anode to coat nickel onto the object in step 2.
(c) Write down the reactions taking place at both the electrodes during step 2. **[Analysis & Application]**

(ii) Identify the following :
(a) The formula that represents the simplest ratio of the various elements present in one molecule of the compound.
(b) The substance that releases hydronium ion as the only positive ion when dissolved in water.
(c) The tendency of an atom to attract electrons towards itself when combined in a covalent compound.
(d) The ratio of the mass of a certain volume of gas to the mass of an equal volume of hydrogen under the same conditions of temperature and pressure.
(e) Electrolyte used in the process of silver plating. **[Recall]**

(iii) Complete the following by choosing the correct answers from the bracket:

(a) Across a period, the ionisation potential.....[increases/decreases].

(b) Down the group, electron affinity.....[increases/decreases].

(c) The higher the electron affinity of a non-metal, ..... [more/less] chemically reactive the non-metal is.

(d) Elements having high ionisation potential have ..... [high/low] electron affinities.

(e) In general, non-metals are ..... [more/less] electronegative than metals.

**[Recall & Understanding]**

(iv) Match the items given in column A with the most appropriate ones in column B and rewrite the correct matching pairs.

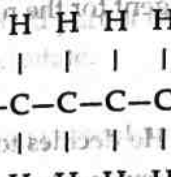
| Column A | Column B |
|---|---|
| (a) A substance that turns moist starch iodide paper blue. | 1. Ammonium sulphate |
| (b) A compound which releases a reddish brown gas on reaction with concentrated sulphuric acid and copper turnings. | 2. Lead carbonate |
| (c) A solution of this compound gives a dirty green precipitate with sodium hydroxide. | 3. Chlorine |
| (d) A compound which on heating with sodium hydroxide produces a gas which forms dense white fumes with hydrogen chloride. | 4. Copper nitrate |
| (e) A white solid which gives a yellow residue on heating. | 5. Ferrous sulphate |

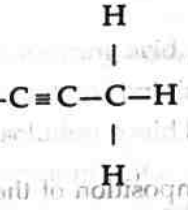
**[Recall & Understanding]**

(v) (a) Draw the structural diagram for the following compounds :

1. Ethyne
2. 2-Methyl propane
3. 2, 3-Dimethyl butane

(b) Give the IUPAC name of the following organic compounds :

1. 

2. 

**[Understanding]**

## Section-B (Attempt any four questions)

**Question 3.**

(i) Give one relevant observation for the following:

(a) Dry ammonia gas reacts with oxygen in the presence of a catalyst.

(b) Excess chlorine gas reacts with ammonia gas.

**[Recall & Understanding]**

(ii) Give a reason for each of the following :

(a) Ionic compounds have a high melting point.

(b) Inert gases do not form ions.

**[Understanding]**

(iii) Ionisation energy decreases with an increase in the atomic size.

(a) Which element in periodic table possesses the highest ionisation energy?

(b) Which element in periodic table possesses the lowest ionisation energy?

(c) Arrange the following in order of increasing ionisation potential:

Na, K, Cl, S, Si **[Application]**

(iv) You are provided with list of chemicals in the box :

| Hydrochloric acid, Sodium hydroxide, Sodium chloride, Sulphuric acid, Lead hydroxide |
|---|

Using suitable chemicals from the list given, write balanced chemcial equation for the preparation of the salts mentioned below:

(a) Normal salt

(b) Acid salt

(c) Basic salt **[Recall]**

**Question 4.**

(i) Name the alloy which is made up of:

(a) Copper and Zinc (b) Copper and Tin **[Recall]**

(ii) Give balanced equation for each of the following:

(a) Calcium bicarbonate reacts with dilute hydrochloric acid.

(b) Dilute sulphuric acid is poured over sodium sulphite. **[Recall & Understanding]**

(iii) Choose the answer from the list which fits in the description:

[$CCl_4$, PbO, NaCl, CuO, $NH_4Cl$]

(a) A compound which undergoes thermal dissociation.

(b) An amphoteric oxide.

(c) A compound which is a non-electrolyte. **[Understanding]**

(iv) Hydrogen chloride gas is prepared in the laboratory by the action of concentrated sulphuric acid on sodium chloride.

(a) Give balanced chemical equation for the above reaction.

(b) State the method of collection of the gas formed above.

(c) What is the property of sulphuric acid that makes it a suitable reagent for the reaction? **[Understanding]**

**Question 5.**

(i) (a) Arjun wants to investigate the reducing properties of hydrogen. He decides to use hydrogen gas to reduce iron (III) oxide. What will Arjun observe during the experiment when hydrogen gas is passed over heated iron (III) oxide?

(b) Write a balanced chemical equation for the reaction that occurs. **[Understanding]**

(ii) Ammonia burns in oxygen as shown below.

$$4NH_3 + 3O_2 \rightarrow 2N_2 + 6H_2O$$

If 240 cc of ammonia is burnt in 300 cc of oxygen, find out the composition of the resultant gaseous mixture at room temperature. **[Understanding & Application]**

(iii) A, B, C and D summarize the properties of sulphuric acid depending on whether it is dilute or concentrated.

A = Typical acid property B = Non-volatile acid

C = Oxidizing agent D = Dehydrating agent

Choose the property (A, B, C or D) depending on which is relevant to each of the following :

(i) Preparation of hydrogen chloride gas.

(ii) Preparation of copper sulphate from copper oxide.

(iii) Action of conc. sulphuric acid on sulphur. **[Recall & Understanding]**

(iv) Write balanced chemical equations to show :

(i) The oxidizing action of conc. Sulphuric acid on Carbon.

(ii) The behavior of $H_2SO_4$ as an acid when it reacts with magnesium.

(iii) The dehydrating property of conc. Sulphuric acid with sugar. **[Recall]**

**Question 6.**

(i) XO is a compound formed by burning magnesium ribbon in air. Which of the following statements accurately describes the properties of XO?

(1) (a) XO is insoluble in water.

(b) XO is a basic oxide.

(c) XO solution has a neutral pH.

(d) XO is a gas at room temperature.

(2) Justify your answer in the above question. **[Application]**

(ii) P, Q, R and S are the different methods of preparation of salts.

P – Simple displacement

Q – Neutralisation by titration

R – Precipitation

S – Direct combination

Choose the most appropriate method to prepare the following salts:

(a) $PbCl_2$

(b) $FeCl_3$

(c) $Na_2SO_4$ **[Understanding & Application]**

(iii) An organic compound 'X' contains carbon, oxygen and hydrogen only. The percentage of carbon and hydrogen are 47.4% and 10.5% respectively. The relative molecular mass of 'X' is 76. Find the empirical formula and the molecular formula of 'X'.

[Atomic weight: C = 12, O = 16, H = 1]

(iv) Rita was given an unknown salt for identification. She prepared a solution of the salt and divided it into two parts.

- To the first part of the salt solution, she added a few drops of ammonium hydroxide and obtained a reddish-brown precipitate.
- To the second part of the salt solution, she added a few drops of silver nitrate solution and obtained a white precipitate.

Name:

(a) the cation present and

(b) the anion present in the salt given for identification. **[Application]**

**Question 7.**

(i) Solution A is a strong acid, solution B is a weak acid, solution C is a strong alkali.

(a) Which solution contains solute molecules in addition to water molecules?

(b) Which solution could be a solution of glacial acetic acid?

(c) Give an example of a solution which is a weak alkali. **[Understanding]**

(ii) The following questions refer to the extraction of aluminium and iron from their ores :

(a) Name the principal ore from which; (a) iron and (b) aluminium are extracted.

(b) What is the most important chemical process in the extraction of any metal? State how this essential step is carried out in the extraction of; (a) iron, (b) aluminium.

(iii) Ammonia burns in oxygen and the combustion, in the presence of a catalyst; may be represented as :

$$2NH_3 + 2\frac{1}{2}O_2 \longrightarrow 2NO + 3H_2O$$

(a) What mass of steam is produced when 1.5 g of nitrogen monoxide is formed?

(b) What volume of oxygen at S.T.P. is required to form 10 moles of products?

**[Recall & Understanding]**

(iv) The pH values of three solution, A, B and C are given in the table. Answer the following questions :

| Solution | pH value |
|---|---|
| A | 12 |
| B | 2 |
| C | 7 |

(i) Which solution will have no effect on litmus solution ?

(ii) Which solution will liberate $CO_2$ when reacted with sodium carbonate ?

(iii) Which solution will turn red litmus solution blue ?

**Question 8.**

(i) State giving reason if:

(a) Hydrogen chloride is not collected over water.

(b) Sodium is not used to prepare hydrogen from hydrochloric acid (or any other acid).

**[Understanding]**

(ii) Draw the electron dot diagram of nitrogen molecule. **[Recall & Understanding]**

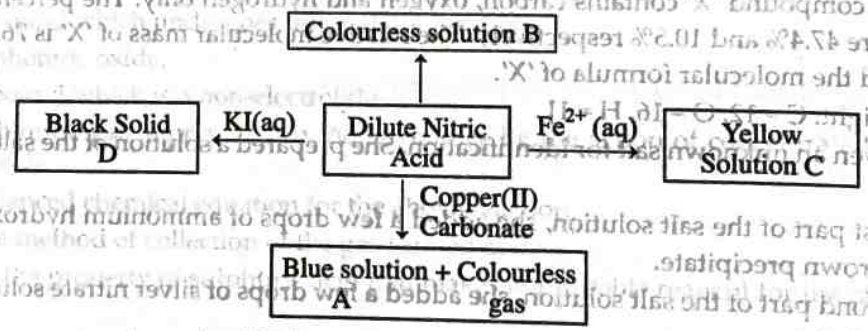
(iii) Give balanced equation for the following:

(a) Methane to methyl chloride.

(b) Methane to methyl alcohol.

(c) Methane to formaldehyde. **[Recall]**

(iv) Study the scheme for dilute nitric acid.




(a) Give the name or formula of Solution A.

(b) Give the name or formula of a cation in solution C.

(c) Which property of nitric acid is shown by its reaction with iron(II) ions and aqueous potassium iodide solution?

**[Understanding & Application]**

# 2 Sample Paper

## Chemistry

### Questions

**Section-A** (Attempt all questions from this section)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

(i) A strong electrolyte is one which _____.

(a) is completely ionised in the solution
(b) dissociates partially in solution
(c) is having low electrical conductivity
(d) Ionises partially

**[Understanding & Application]**

(ii) A compound X changes blue litmus paper to red, and it reacts readily with potassium chloride to yield hydrochloric acid. What is compound X?

(a) Acetic acid
(b) Sulphuric acid
(c) Carbonic acid
(d) Citric acid

**[Understanding]**

(iii) **Assertion (A):** The elements of the different group have similar chemical properties.
**Reason (R):** It is because they have same number of valence electrons.

(a) Both A and R are true and R is the correct explanation of the A.
(b) Both A and R are true but R is not the correct explanation of the A.
(c) A is true, but R is false.
(d) A is false, but R is true.

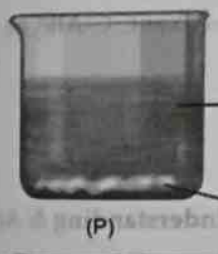
**[Understanding]**

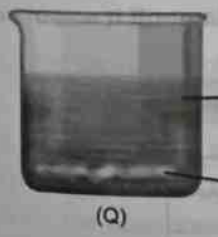
(iv) The empirical formula of a compound is CH and its molecular mass is 78, its molecular formula is _____.

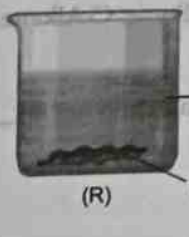
(a) $C_2H_4$
(b) $C_4H_8$
(c) $C_6H_6$
(d) $C_2H_2$

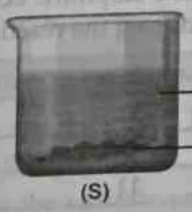
**[Understanding & Application]**

(v) Ammonium hydroxide reacts with soluble salts of metals to give insoluble precipitate of metallic hydroxide. Hence experiment with respect to above statement was conducted by student with four different metallic salts which one is the correct observation among reported four.

(a)



(b)



(c)



(d)



**[Understanding & Application]**

(vi) The reactants for laboratory preparation of Nitric acid are:

(a) Ammonium hydroxide and sulphuric acid
(b) Sodium nitrate and sulphuric acid
(c) Sodium nitrate and water
(d) Ammonium nitrate and water

**[Understanding]**

(vii) Calcium reacts with water as shown:

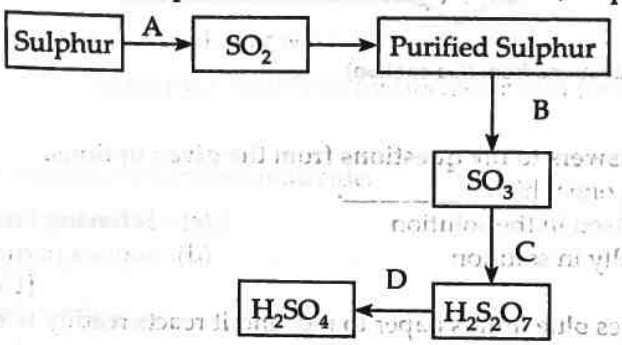
$$Ca(s) + 2H_2O(l) \longrightarrow Ca(OH)_2\,(aq.) + H_2(g)$$

What is the total mass of the solution that remains when 40 g of Calcium reacts with 100 g of water.

(a) 58 g
(b) 74 g
(c) 138 g
(d) 140 g

**[Understanding]**

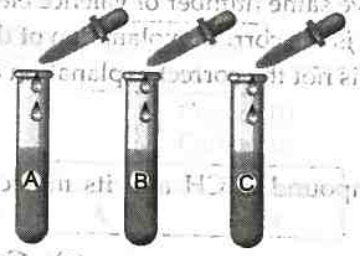
(viii) Given is the flowchart of the contact process. What are A, B, C and D, respectively?




(a) $O_2$, $V_2O_5$, $H_2SO_4$, $H_2O$
(b) $CO_2$, $V_2O_5$, $H_2SO_4$, $H_2O$
(c) $O_2$, $V_2O_5$, $H_2O$, $H_2SO_4$
(d) $O_2$, $V_2O_5$, $H_2O$, $SO_3$

**[Understanding]**

(ix) In a class three test tube labelled as A,B,C were presented, each of a student was asked to identify the test tube as alkane, alkene and alkyne




To each of the test tube bromine solution in carbon tetrachloride was added in test tube A and B colour decalourises while test tube C does not show any change. Further, again few drops of ammonical cuprous chloride was added. No change was observed in 'C' test tube while in 'B' test tube red precipitate of copper acetylide was formed Identify and pick correct answer.

(a) A -Alkane, B -Alkene, C -Alkyene
(b) A-Alkene, B-Alkyne, C-Alkane
(c) A-Alkyne, B-Alkene, C-Alkane
(d) A-Alkene, B-Alkane, C-Alkyne

**[Analysis]**

(x) The general formula of alkynes is _____.

(a) $C_nH_{2n-2}$
(b) $C_nH_{2n+2}$
(c) $C_nH_{2n}$
(d) $C_nH_{2n+2}$

**[Understanding & Application]**

(xi) A student added some sulphuric acid gradually to a solution of ammonia untill it was in excess. What happens to the pH during the reaction.

| | pH of ammonia at start | pH after excess sulphuric acid |
|---|---|---|
| A | 11 | 7 |
| B | 7 | 13 |
| C | 11 | 2 |
| D | 3 | 8 |

**[Understanding & Application]**

(xii) In the reaction given below sulphuric acid acts as a/an:

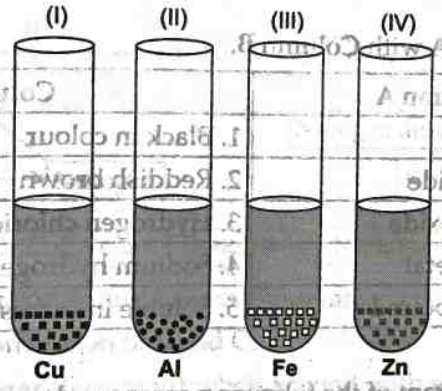
$$S + 2H_2SO_4 \rightarrow 3SO_2 + 2H_2O$$

(a) Non-volatile acid (c) Oxidising agent
(b) Dibasic acid (d) Reducing agent **[Understanding]**

(xiii) Aqueous copper (II) sulphate is electrolysed using copper electrodes.
Which statement about the electrolysis is not correct?
(a) An oxidation reaction occurs at the positive electrode.
(b) The current is carried through the electrolyte by ions.
(c) The positive electrode loses mass.
(d) The number of copper (II) ions in the electrolyte decreases. **[Understanding]**

(xiv) Naphthalene contains 93.75% C and the rest hydrogen. Molecular mass of naphthalene is 128. Find its empirical formula.
(a) $C_5H_4$ (b) $C_6H_4$ (c) $C_5H_{10}$ (d) $C_5H_2$
**[Application]**

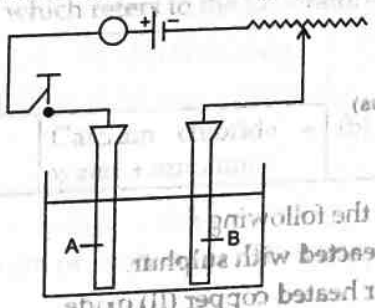
(xv) A student takes Cu, Al, Fe, and Zn strips, separately in four test tubes labelled as I, II, III, and IV, respectively. He adds 10 mL of freshly prepared dilute hydrochloric acid to each test tube and observes the changes in each case.




He would observe a no evolution of hydrogen gas in the test tubes:
(a) (I) only
(b) (I) and (III)
(c) (II) and (IV)
(d) (II) and (III) **[Understanding & Application]**

**Question 2.**

(i) (a) Study the diagram given below and answer the questions that follows:




1. Give the names of the electrodes A and B.
2. Which electrode is the oxidising electrode?

(b) A strip of copper is placed in four different colourless salt solutions. They are $KNO_3$, $AgNO_3$, $Zn(NO_3)_2$, $Ca(NO_3)_2$. Which one of the solutions will finally turn blue?

(c) Write the equations of the reactions which take place at the cathode and anode when acidified water is electrolysed. **[Analysis & Application]**

(ii) Identify the following :

(a) Cation that does not form a precipitate with ammonium hydroxide but forms one with sodium hydroxide.

(b) The electrolyte used for electroplating an article with silver.

(c) The particles present in a liquid such as kerosene, that is a non-electrolyte.

(d) An organic compound containing —COOH functional group.

(e) A solid formed by reaction of two gases, one of which is acidic and the other basic in nature.

**[Recall]**

(iii) Complete the following by choosing the correct answers from the bracket.

(a) Conversion of ethanol to ethene by the action of concentrated sulphuric acid is an example of _____. (dehydration/dehydrogenation)

(b) When sodium chloride is heated with concentrated sulphuric acid below 200°C, one of the products formed is _____. (sodium bisulphate/sodium sulphate)

(c) Ammonia reacts with excess chlorine to form _____. (nitrogen/nitrogen trichloride/ammonium chloride)

(d) Substitution reaction are characteristic reactions of _____. (alkenes/alkanes)

(e) In period 3, the most metallic element is _____. (sodium/magnesium).

**[Recall & Understanding]**

(iv) Match the following Column A with Column B. **[5]**

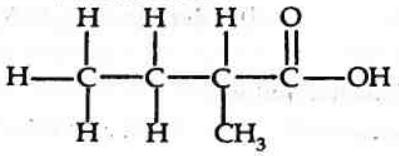
| Column A | Column B |
|---|---|
| (a) Acid salt | 1. Black in colour |
| (b) Copper oxide | 2. Reddish brown |
| (c) Zinc hydroxide | 3. Hydrogen chloride |
| (d) Copper metal | 4. Sodium hydrogen carbonate |
| (e) Polar compound | 5. Soluble in excess sodium hydroxide |

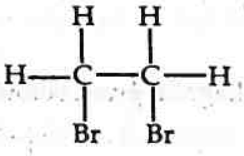
**[Recall & Understanding]**

(v) (a) Draw the structural diagram of the following compounds :

1. Pentane
2. 2-Methyl butane
3. 2, 2-Dimethyl propane

(b) Give the IUPAC name of the following organic compounds :

1. 

2. 

**[Understanding]**

## Section-B (Attempt any four questions)

**Question 3.**

(i) State one observation for each of the following :

(a) Concentrated nitric acid is reacted with sulphur.

(b) Ammonia gas is passed over heated copper (II) oxide.

(ii) Give reasons why :

(a) Sodium chloride will conduct electricity only in fused or aqueous solution state.

(b) In the electroplating of an article with silver, the electrolyte sodium argento-cyanide solution is preferred over silver nitrate solution.

(iii) Element 'X' is a strong reducing agent and 'Y' is a strong oxidising agent.

(a) Out of 'X' and 'Y', which one forms electrovalent compound with non-metals?

(b) Out of 'X' and 'Y', which one of these possesses low electron affinity?

(c) Comment on the atomic size in the period for X and Y. **[Application]**

(iv) You are provided with list of chemicals mentioned below in the box:

| Ethane, ethyl iodide, methane, propane, ethyl alcohol |
|---|

Using suitable chemical from list given, write balanced chemical equation for preparation of the following:

(a) Higher alkane from lower alkane

(b) Unsaturated (alkene) from Saturated (alkene)

(c) Preparation of formaldehyde **[Understanding & Application]**

**Questions 4.**

(i) Name the main metal used in making of the alloys given below:

(a) Duralumin

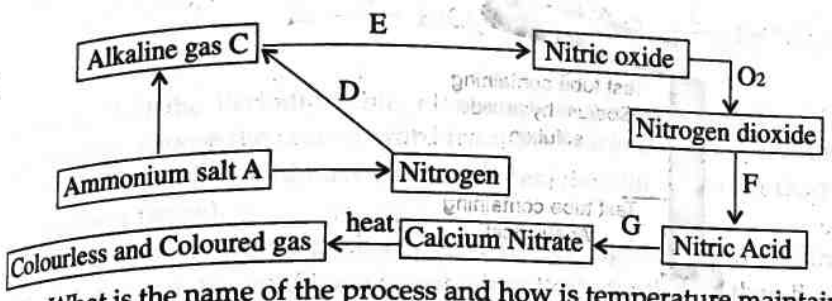
(b) Stainless steel **[Recall]**

(ii) Write balanced equation for each of the following:

(a) Reaction of hydrogen chloride with ammonia.

(b) The preparation of ammonia from ammonium chloride and calcium hydroxide. **[Recall & Understanding]**

(iii)




(a) What is the name of the process and how is temperature maintained in above process?

(b) Write the equation for conversion of F and G. **[Recall]**

(iv) A compound **X** (having vinegar like smell) when treated with ethanol in the presence of the acid **Z**, gives a compound **Y** which has a fruity smell. The reaction is:

$$C_2H_5OH + X \xrightarrow{Z} Y + H_2O$$

(a) Identify Y and Z.

(b) Write the structural formula of X.

(c) Name the above reaction.

**Questions 5.**

(i) Complete the table given below which refers to the Laboratory preparation of **Ammonia gas:**

| Laboratory preparation | Reactants used | Products formed | Drying agent | Method of collection |
|---|---|---|---|---|
| Ammonia gas | (a) ..... | Calcium chloride + water + ammonia | (b) ..... | (c) ..... |

**[Understanding]**

(ii) State the volume occupied by 40 gm of methane at STP, if its vapour density (V.D.) is 8. **[Understanding & Application]**

(iii) Which property of sulphuric acid is shown by the reaction of concentrated sulphuric acid with :

(a) Ethanol ? (b) Carbon ?

(iv) Write a balanced chemical equation for each of the following :

(a) Action of cold and dilute nitric acid on copper.

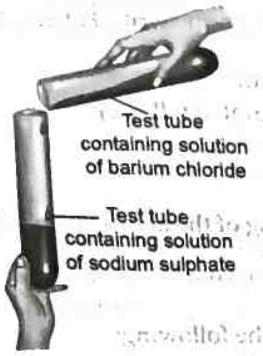
(b) Reaction of ammonia with heated copper oxide.

(c) Preparation of methane from iodomethane. **[Recall]**

**Question 6.**

(i) A student was asked to perform two experiments in the laboratory based on the instructions given. Observe the pictures given below and state one observation for each of the experiments 1 and 2 that you would notice on mixing the given solutions.

(a) Experiment 1:




(b) Experiment 2:

**[Understanding]**

(ii) Making use only of substances chosen from those given below :

| | |
|---|---|
| Dilute sulphuric acid | Sodium carbonate |
| Zinc | Sodium sulphite |
| Lead | Calcium carbonate |

Give the equations for the reactions by which you could obtain :

(a) Hydrogen (b) Sulphur dioxide

(c) Carbon dioxide (d) Zinc carbonate

(iii) A cylinder contains 68 g of ammonia gas at S.T.P.

(a) What is the volume occupied by this gas ?

(b) How many moles of ammonia are present in the cylinder ?

(c) How many molecules of ammonia are present in the cylinder ?

[N–14, H–1] **[Understanding & Application]**

(iv) Identify the substance underlined, in each of the following cases :

(i) <u>Cation</u> that does not form a precipitate with ammonium hydroxide but forms one with sodium hydroxide.

(ii) The <u>electrolyte</u> used for electroplating an article with silver.

(iii) The <u>particles</u> present in a liquid such as kerosene, that is a non-electrolyte.

**Question 7.**

(i) Give appropriate scientific reasons for the following statements :

(a) Zinc oxide can be reduced to zinc by using carbon monoxide, but aluminium oxide cannot be reduced by a reducing agent.

(b) Carbon tetrachloride does not conduct electricity. **[Understanding]**

(ii) Answer the following question based on the extraction of aluminium from alumina by Hall-Heroult's Process :

(a) What is the function of cryolite used along with alumina as the electrolyte ?

(b) Why is powdered coke sprinkled on top of the electrolyte ? [Recall]

(iii) Write a balanced chemical equation for each of the following :

(a) Action of concentrated sulphuric acid on carbon.

(b) Reaction of sodium hydroxide solution with iron (III) chloride solution.

(c) Action of heat on aluminium hydroxide. [Recall & Understanding]

(iv) Solution A is a strong acid, solution B is a weak acid, solution C is a strong alkali.

(a) Which solution contains solute molecules in addition to water molecules.

(b) Which solution could be a solution of glacial acetic acid?

(c) Give an example of a solution which is a weak alkali. [Application]

**Question 8.**

(i) Give reasons for the following:

(a) Inert gases do not form ions.

(b) Covalent compounds have a low melting and boiling point. [Understanding]

(ii) Draw an electron dot diagram to show the structure of hydronium ion. [Recall & Understanding]

(iii) Give balanced chemical equations for the following conversions A, B and C :

$$Fe \xrightarrow{A} FeCl_3 \xrightarrow{B} FeCO_3 \xrightarrow{C} Fe(NO_3)_2$$

[Understanding & Application]

(iv) In Period 3 of the Periodic Table, element B is placed to the left of element A. On the basis of this information, choose the correct word from the brackets to complete the following statements:

(a) The element B would have (lower/higher) metallic character than A as metallic character decreases across a period.

(b) The element A would probably have (lesser/higher) electron affinity than B.

(c) The element A would have (greater/smaller) atomic size than B. [Understanding]

□□

# 3 Sample Paper

## Chemistry [Unsolved]

### Questions

## Section-A (Attempt all questions)

**Question 1.**

**Choose the correct answer to the questions from the given options :**

(i) Ammonium hydroxide is a weak alkali which dissociates partially to furnish.....$OH^-$ ions precipitate.....metal hydroxides.

(a) Sufficient, Soluble
(b) Insufficient, Insoluble
(c) Sufficient, Insoluble
(d) Insufficient, Soluble

(ii) The compound that is, not a constituent of the electrolytic mixture used in the Hall-Heroult's process is:

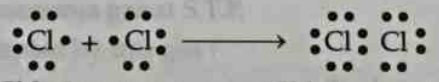
(a) $Al_2O_3$
(b) $NaAlO_2$
(c) $Na_3AlF_6$
(d) $CaF_2$

(iii) **Assertion (A):** Chlorine is called halogen.

**Reason (R):** It is because chlorine reacts with metals to form salts.

(a) Both A and R are true and R is the correct explanation of the A.
(b) Both A and R are true but R is not the correct explanation of the A.
(c) A is true, but R is false.
(d) A is false, but R is true. **[Understanding]**

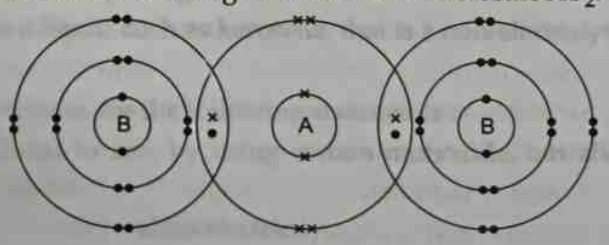
(iv) How many pairs of bond and lone pair contains in the given chlorine molecule figure?



Chlorine atoms  Chlorine molecule

(a) Contains four bond pair and six lone pair
(b) Contains one bond pair and six lone pair
(c) Contains two bond pair and six lone pair
(d) Contains six bond pair and six lone pair **[Analysis]**

(v) The diagram given below shows the bonding in the covalent molecule $AB_2$.



Which option represents the correct electronic configuration of atoms A and B before combining together to form the above molecule?

| | A | B |
|---|---|---|
| (a) | 2, 4 | 2, 8, 6 |
| (b) | 2, 4 | 2, 8, 7 |
| (c) | 2, 8 | 2, 8, 8 |
| (d) | 2, 6 | 2, 8, 7 |

(vi) Element X is extracted by the electrolysis of a molten compound of elements X and Y. The electrode reactions are as shown.

At the cathode: $X^{2+}(l) + 2e^- \longrightarrow X$

(I) At the anode: $2Y^{2-}(l) \longrightarrow Y_2(g) + 4e^-$

What is?

(a) Aluminium oxide
(b) Calcium chloride
(c) Magnesium oxide
(d) Potassium chloride

(vii) The empirical formula and molecular mass of a compound are $CH_2O$ and 180 g respectively. What will be the molecular formula of the compound ?

(a) $C_9H_{18}O_9$
(b) $CH_2O$
(c) $C_6H_{12}O_6$
(d) $C_2H_4O_2$ **[Understanding & Application]**

(viii) Identify the pairs of metals and their ores from the following :

| Group A | Group B |
|---|---|
| (1) Bauxite | (i) Iron |
| (2) Calamine | (ii) Aluminium |
| (3) Magnetite | (iii) Zinc |

(a) (1)-(i), (2)-(ii), (3)-(iii)
(b) (1)-(ii), (2)-(i), (3)-(iii)
(c) (1)-(i), (2)-(iii), (3)-(ii)
(d) (1)-(ii), (2)-(iii), (3)-(i) **[Applications]**

(ix) From the given options, electron dot structure of Mg and Na atom is.

(a) Mg, Na
(b) $\dot{\dot{M}}g, \dot{N}a$
(c) $\dot{M}g, \dot{\dot{N}}a$
(d) $\dot{\dot{M}}g$, Na

(x) An alkyne has 75 carbon atoms in its molecule. The number of hydrogen atoms in its molecule will be_____.

(a) 148
(b) 150
(c) 147
(d) 152 **[Understanding]**

(xi) As the pH of solution decreases, its acidic strength progressively .....

(a) Increases
(b) Decreases
(c) Does not change
(d) Depends on the quantity of solution

(xii) Chlorine reacts with ammonia in the gas phase.

$$8NH_3 + 3Cl_2 \rightarrow N_2 + 6NH_4Cl$$

Which statements are correct?

(a) Ammonia behaves as a reducing agent.
(b) The oxidation number of the hydrogen changes.
(c) Ammonia behaves as acid.
(d) White colour of chlorine disappears.

(xiii) Ionisation potential increases over a period from left to right because the:

(a) Atomic radius increases and nuclear charge increases
(b) Atomic radius and nuclear charge decrease
(c) Atomic radius increases and nuclear charge decreases
(d) Atomic radius decreases and nuclear charge increases

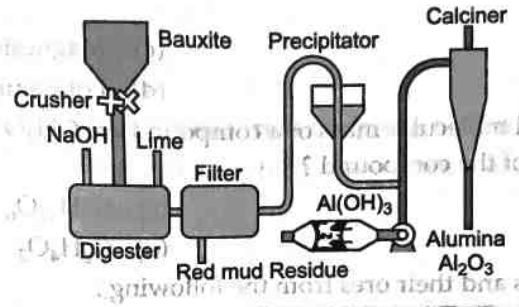
[Und

(xiv) The molecular formula of the china clay (aluminium silicate) was shown in old book as $Al_2O_3.2SiO_2.2H_2O$. The formula is shown in modern book as $Al_2.Si_2O_y.(OH)_x$

What are valencies of $x$ and $y$ in the modern formula?

| | $y$ | $x$ |
|---|---|---|
| (a) | 2 | 4 |
| (b) | 2 | 5 |
| (c) | 4 | 3 |
| (d) | 4 | 5 |

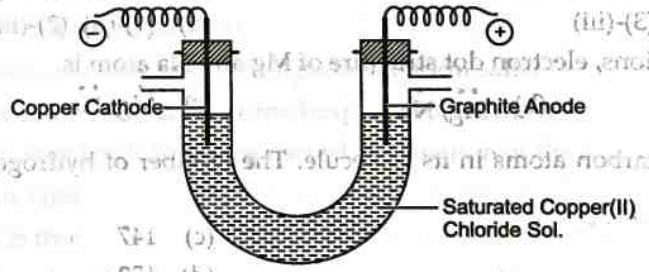
(xv) The given picture describes Baeyer's process. At the precipitator, $Al(OH)_3$ is obtained from which compound in the process? **[Understanding & Application]**




(a) $NaAlO_2$
(b) $Al_2O_3.2H_2O$
(c) $Al_2O_3$
(d) $Na_3AlF_6$

**Question 2.**

(i) (a) A saturated aqueous copper (II) chloride is electrolysed using graphite anode and copper cathode as illustrated in diagram given below:




1. Which ion is likely to discharge at cathode and why?
2. Write ionic equation for reaction taking place at cathode.

(b) If electric current is passed for a very long time, state colour change taking place in electrolyte. State one reason for the change.

(c) Give one reason for using graphite anode, rather than copper anode. **[Analysis & Understanding]**

(ii) Identify the following :

(a) A substance that absorbs moisture from the atmospheric air without dissolving in it.

(b) The tendency of an atom in a molecule to attract the shared pair of electrons towards itself.

(c) A hydrocarbon containing $-\overset{\overset{\displaystyle O}{\|}}{C}-H$ functional group.

(d) The process of heating the concentrated ore to a high temperature in presence of air.

(e) The amount of a substance containing elementary particles like atoms, molecules or ions in 12g of C.

iv) Complete the following by choosing the correct answers from the bracket:

(a) Metals are good _____. (oxidising agents/ reducing agents) because they are electron donors.

(b) Electrovalent compounds have _____ (high/low) melting points.

(c) Higher the pH value of a solution, the more _____ (acidic/ alkaline) it is.

(d) _____($AgCl/PbCl_2$), a white precipitate is soluble in excess $NH_4OH$.

(e) Conversion of ethene to ethane is an example of _____. (hydration/hydrogenation)

**[Recall & Understanding] [Recall]**

v) Match the following column A with column B.

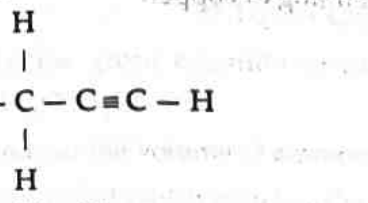
| Column A | Column B |
|---|---|
| (a) Metal | 1. Contains only molecules |
| (b) Magnesium chloride | 2. Aluminium |
| (c) Solder | 3. White |
| (d) Double salt | 4. Electrical Fuse |
| (e) Carbon tetrachloride | 5. Alum |

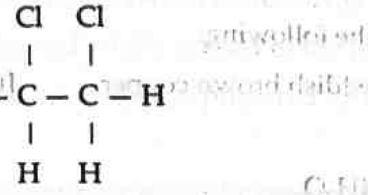
**[Recall & Understanding]**

(vi) (a) Draw the structural diagram for the following compound :

1. 2-pentanol 2. Ethanal 3. 1-butene

(b) Give the IUPAC name of the following organic compounds:

1. 

2. 

**[Understanding]**

## ection-B (Attempt any four questions)

**uestion 3.**

(i) Give one significant observation when:

(a) a solution of barium chloride is added to zinc sulphate solution.

(b) lead nitrate is heated in a test tube.

(ii) Give reason for the following:

(a) Aqueous solution of ammonia turns red litmus blue.

(b) Ammonia solution is used to remove oil and grease stains from clothes.

(iii) 'Alumina (aluminium oxide) has a very high melting point of over 2,000°C so that it cannot readily be liquiefied. However, conversion of alumina to aluminium and oxygen, by electrolysis, can occur when it is dissolved in some other substance.'

(a) Which solution is used to react with bauxite as a first step in obtaining pure aluminium oxide?

(b) The aluminium oxide for the electrolytic extraction of aluminium is obtained by heating aluminium hydroxide. Write the equation for this reaction.

(c) Name the element which serves both as the anode and the cathode in the extraction of aluminium.

(iv) Give a balanced chemical equation for the following conversions with conditions:

(a) Ethene from ethanol

(b) Ethyne from calcium carbide

(c) Monochloromethane from methane

**Questions 4.**

(i) Write one use of the following alloys:

(a) Bronze.

(b) Fuse metal.

(ii) Give balance equation for each of the following:

(a) Monochloroethane is hydrolysed with aqueous KOH.

(b) Ethanol under high pressure and low temperature is treated with acidified potassium dichromate

**[Recall & Understanding]**

(iii) The following questions are pertaining to the laboratory preparation of hydrogen chloride gas :

(a) Write the equation for its preparation mentioning the condition required.

(b) Name the drying agent used and justify your choice.

(c) State a safety precaution you would take during the preparation of hydrochloric acid.

(iv) Answer the following questions with reference to electrorefining of copper:

(a) What is the anode made of?

(b) What do you observe at the cathode?

(c) Write the reaction taking place at the cathode.

**Questions 5.**

(i) Identify the reactant and write the balanced equation for the following:

Compound 'X' reduces heated yellow lead monoxide to reddish brown copper. **[Understanding]**

(ii) Propane burns in air according to the following equation:

$$C_3H_8 + 5O_2 \longrightarrow 3CO_2 + 4H_2O$$

What volume of propane is consumed on using 1000 $cm^3$ of air, considering only 20% of air contains oxygen?

(iii) What property about the compound is revealed in the following cases:

(a) On adding few drops of alkaline potassium paramagnate to the hydrocarbon, the purple colour fades.

(b) On adding ammonical silver nitrate to the hydrocarbon, the white precipitate is formed.

(c) Onadding bromine water to the hydrocarbon, the reddish-brown colour disappears

**[Recall & Understanding]**

(iv) You are provided with list of chemicals mentioned below in the box.

| Copper sulphate, Ammonium hydroxide, Zinc sulphate, Sodium hydroxide, Ferrous sulphate |
|---|

Using suitable chemical from list given, write balanced equation for preparation of insoluble hydroxide with following colour:

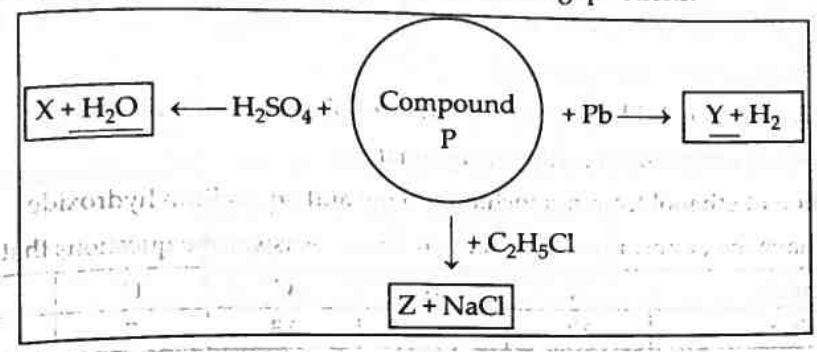
(a) Pale blue

(b) Dirty green

(c) Gelatinous white **[Understanding]**

**Question 6.**

(i) Observe the reactions given below and answer the following questions:




(a) Give the chemical formula of Z.

(b) Identify compound P and Write the reaction taking place between the identified compound P and sulphuric acid. **[Understanding]**

(ii) The following questions are pertaining to the laboratory preparation of hydrogen chloride gas:

(a) Write the balanced equation for its preparation mentioning the condition required.

(b) Name the drying agent used and justify your choice. **[Understanding]**

(iii) (a) Rewrite the following equation in terms of moles of reactants and products :

$$2NH_4Cl + Ca(OH)_2 \longrightarrow CaCl_2 + 2H_2O + 2NH_3$$

(b) Use the given equation to calculate the weight of calcium hydroxide needed to decompose 2.14 g $NH_4Cl$.

(c) Find out the volume of ammonia at S.T.P. obtained from 4.28 g of $NH_4Cl$.

(iv) Identify the acid which matches the following description :

(a) The acid which is used in the preparation of a non-volatile acid.

(b) The acid which is prepared by catalytic oxidation of ammonia.

**Question 7.**

(i) Give appropriate scientific reasons for the following statements :

(a) During electrolysis of molten lead bromide graphite anode is preferred to other electrodes.

(b) The electrical conductivity of acetic acid is less in comparison to the electrical conductivity of dilute sulphuric acid at a given concentration.

(ii) The following questions relate to the extraction of aluminium by electrolysis :

(a) Give the equation for the reaction that takes place at the cathode.

(b) Explain why it is necessary to renew the anode from time to time.

(iii) Give balanced chemical equations for the following conversions:

(a) Ethanoic acid to ethyl ethanoate.

(b) Sodium ethanoate to methane.

(iv) Solution A is a sodium hydroxide solution. Solution B is a weak acid. Solution C is dilute sulphuric acid. Which solution will:

(a) Liberate sulphur dioxide from sodium sulphate.

(b) Contain solute molecules and ions.

**Question 8.**

(i) State giving reason if:

(a) Zinc sulphate solution and zinc chloride solution can be distinguish using $BaCl_2$.

(b) Calcium nitrate solution and calcium chloride solution can be distinguish using silver nitrate. **[Understanding]**

(ii) Draw electron dot diagram of methane. **[Recall & Understanding]**

(iii) Give balanced equation for the following:

(a) Reaction between 1, 2-dibromoethane and alcoholic potassium hydroxide.

(b) Preparation of ethane from sodium propionate.

(c) Preparation of ethanol from monochloroethane and aq. sodium hydroxide.

(iv) Six elements have the atomic number as shown below. Answer the questions that follow :

| Elements | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Atomic number | 12 | 17 | 18 | 7 | 9 | 11 |

(a) The element with lowest electron affinity.

(b) The element with the largest atomic size.

(c) The element that belongs to the third period and has the highest ionization potential. **[Understanding & Application]**

# 4 Sample Paper

## Chemistry [Unsolved]

### Questions

**Section-A** (Attempt all questions)

**Question 1.**

**Choose the correct answer to the questions from the given options:**

(i) A weak electrolyte is one which dissociates..... .

(a) completely

(b) partially ionised in the solution

(c) ionises completely

(d) is having high electrical conductivity **[Understanding & Application]**

(ii) The following reactions occur in Hall and Heroult's experiment. The X, Y and Z here respectively are:

$$Na_3AlF_6 \rightleftharpoons 3Na^+ + Al^{3+} + X$$
$$CaF_2 \rightleftharpoons Y + 2F^-$$
$$Al_2O_3 \rightleftharpoons 2Al^{3+} + Z$$

(a) $F^-$, $Cu^{2+}$ and $O^-$

(b) $F^-$, $Ca^{2+}$ and $O^{2-}$

(c) $F^-$, $Ca^+$ and $O^{2-}$

(d) $F^-$, $Cu^+$ and $O^-$ **[Understanding]**

(iii) **Assertion (A):** The reactant which is present in lesser amount parameters the amount of product formed is called limiting reagent.

**Reason(R):** Amount of product formed does not depend upon the number of reactants taken.

(a) Both A and R are true and R is the correct explanation of the A.

(b) Both A and R are true but R is not the correct explanation of the A.

(c) A is true, but R is false.

(d) A is false, but R is true. **[Understanding]**

(iv) _____ indicates the actual number of constituent atoms in a molecule.

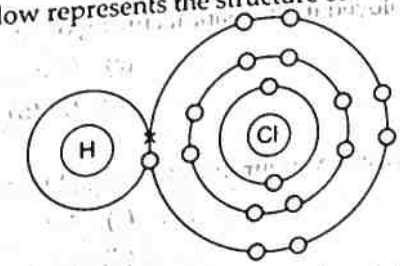
(a) Empirical formula

(b) Molecular formula

(c) Empirical mass **[Understanding & Application]**

(d) Molecular mass **[Understanding & Application]**

(v) The orbital diagram given below represents the structure of:




(a) H-S

(b) H-Cl

(c) H = Cl

(d) H-K

(vi) A compound X on reaction with dilute hydrochloric acid produces a green colour solution with emission of $H_2S$ gas. Name the compound X. **[Recall & Understanding]**

(a) $K_2SO_4$

(b) $NaHSO_3$

(c) FeS

(d) $PbO_2$

(vii) In $Na_2CO_3$, the percentage mass of oxygen is: [Understanding]

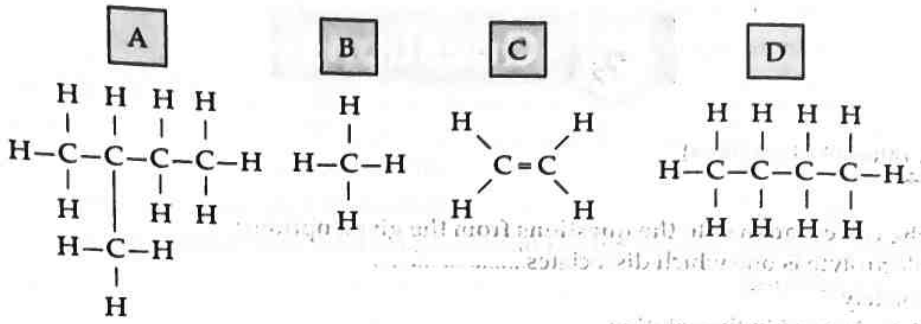
(a) 62.93 (b) 45.3 (c) 59.6 (d) 40.3

(viii) When HCl gas reacts with a gas X (having a pungent choking smell), it produces white fumes. The gas X is _____.

(a) $H_2$ (c) $N_2$

(b) $Cl_2$ (d) $NH_3$ [Recall]

(ix) Which of the following structures shows a compound that belongs to a different homologous series than octane?




The molecular formula of the given compounds: [Analysis]

(a) $C_5H_{12}$ (b) $CH_4$ (c) $C_2H_4$ (d) $C_4H_{10}$

(x) The hydrocarbon 2-methyl butane is an isomer of _____.

(a) *n*-Butane

(b) *n*-Pentane

(c) Propane

(d) None of these [Understanding & Application]

(xi) In terms of acidic strength, which one of the following is in the correct increasing order?

(a) Water < Acetic acid < Hydrochloric acid

(b) Water < Hydrochloric acid < Acetic acid

(c) Acetic acid < Water < Hydrochloric acid

(d) Hydrochloric acid < Water < Acetic acid [Understanding & Application]

(xii) Which of the following is an example of a reaction of two gases producing solid?

(a) $HCl + NH_4OH \rightarrow NH_4Cl + H_2O$ (c) $C + O_2 \rightarrow CO_2$

(b) $NaHSO_4 + NaCl \rightarrow Na_2SO_4$ (d) $NH_3 + HCl \rightarrow NH_4Cl$ [Analysis]

(xiii) Which of the following statement is false?

(i) Common salt is used in the preparation of HCl gas.

(ii) $P_2O_5$ is not used as a drying agent for HCl.

(iii) Dilute sulphuric acid is employed in the manufacturing of HCl gas.

(a) (i) and (ii) (c) Only (iii)

(b) (i) and (iii) (d) (i), (ii) and (iii)

[Understanding & Application]

(xiv) Calculate the atomicity of a gas whose vapour density is equal to its relative molecular mass.

(a) 3 (c) 4

(b) 2 (d) 1 [Application]

(xv) A student takes salt solutions, separately in four test tube I, II, III and IV, respectively. On reaction with excess of ammonium hydroxide solution results finally in dissolution of the precipitate first formed?

(a) (I) and (II) (c) (IV) only

(b) (I) and (III) (d) (I), (II), (III) and (IV) [Understanding]

Question 2.

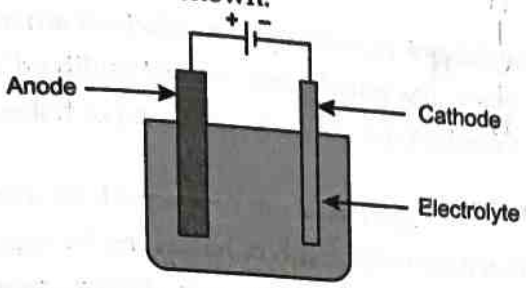
(i) Electrorefining of copper involves the following steps:

Step 1: The pure and impure copper metals are made the electrodes.

Step 2: A suitable solution is used as an electrolyte.

Step 3: The electrodes are connected to the electric cell.

(a) A diagram of the apparatus used is shown:




1. What is used at the cathode and the electrode?
2. Write the chemical reactions occurring in the process shown above.

(b) What will happen to the concentration of ions in the electrolyte.

(c) What deposition is seen below the anode? Why is it formed? **[Analysis & Understanding]**

(ii) Identify the following :

(a) The property by which carbon bonds with itself to form a long chain.

(b) A substance that conducts electricity in molten or aqueous state.

(c) The energy required to remove an electron from the valence shell of a neutral isolated gaseous atom.

(d) The name of the process by which the Bauxite ore is concentrated.

(e) The bond formed by a shared pair of electrons with both electrons coming from the same atom. **[Recall]**

(iii) Complete the following by choosing the correct answers from the bracket :

(a) The basicity of acetic acid is _____. (1, 4)

(b) The compound formed when ethanol reacts with sodium is _____. (sodium ethoxide, sodium propanoate)

(c) Quicklime is not used to dry HCl gas because _____. (CaO is alkaline, CaO is acidic)

(d) Ammonia gas is collected by _____. (a downward displacement of water, a downward displacement of air)

(e) Cold, dilute nitric acid reacts with copper to form _____. (nitrogen dioxide, nitric oxide) **[Recall & Understanding]**

(iv) Match the following Column A with Column B.

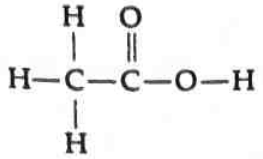
| Column A | Column B |
|---|---|
| (a) Acid salt | 1. Sodium zincate |
| (b) Proton | 2. Responsible for nuclear charge |
| (c) Barium | 3. An alkali metal |
| (d) Complex salt | 4. Sodium hydrogen sulphate |
| (e) Carbon tetrachloride | 5. Responsible for nuclear charge |

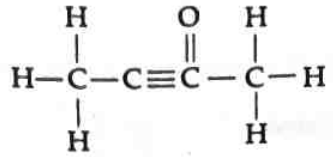
**[Recall & Understanding]**

(v) (a) Draw the structure of the following compounds :

1. 1, 2 dichloroethane
2. Propanoic acid
3. 2-methyl propane

(b) Give the IUPAC name of the following organic compounds :

1. 

2. 

[Understanding]

## Section-B (Attempt any four questions)

**Question 3.**

(i) (a) Ethyne is bubbled through a solution of bromine in carbon tetrachloride. What will be the observation?

(b) Write a balanced chemical equation for the above. [Recall & Understanding]

(ii) State a relevant reason for the following:

(a) Hydrogen chloride gas cannot be dried over quick lime.

(b) Ammonia gas is not collected over water. [Understanding]

(iii) The action of heat on the blue crystalline solid L gives a reddish brown gas M, a gas which relights a glowing splint and leaves a black residue. When gas N, which has a rotten egg smell, is passed through a solution of L a black precipitate is formed.

(a) Identify L, M and N (Name or formula).

(b) Write the equation for the action of heat on L.

(c) Write the equation for the reaction between the solution of L and the gas N. [Application]

(iv) Convert the following reactions into a balanced chemical equation:

(a) Ammonia to nitric oxide using oxygen and platinum catalyst.

(b) Sodium hydroxide to sodium sulphate using sulphuric acid.

(c) Ferrous sulphide to hydrogen sulphide using hydrochloric acid. [Recall]

**Question 4.**

(i) State one use of the given alloys:

(a) Magnalium (b) Duralumin [Recall]

(ii) Give balanced equations for each of the following:

(a) The oxidising action of conc. sulphuric acid on carbon.

(b) The behaviour of $H_2SO_4$ as an acid when it reacts with magnesium.

(c) The dehydrating property of conc. sulphuric acid with sugar. [Understanding & Application]

(iii) The following table represent the elements and the atomic number: [Understanding]

With reference to this, answer the following using only the alphabets given in the table.

| Element | Atomic number |
|---|---|
| P | 13 |
| Q | 7 |
| R | 10 |

(a) Which element combines with hydrogen to form a basic gas?

(b) Which element has an electron affinity zero?

(c) Name the element, which forms an ionic compound with chlorine.

(iv) Hydrogen chloride gas is prepared in the laboratory using concentrated sulphuric acid and sodium chloride. Answer the questions that follow based on this reaction:

(a) Give the balanced chemical equation for the reaction with suitable conditions(s) if any. **[Understanding]**

(b) Why is concentrated sulphuric acid used instead of concentrated nitric acid?

(c) How is the gas collected?

**Question 5.**

(i) Identify the reactant and write the balanced equation for the following:

Compound 'X' is reduced by dilute HCl to give calcium salt, water and chlorine. **[Understanding]**

(ii) What weight of zinc is needed to produce 100 ml of dry hydrogen at S.T.P. from dilute sulphuric acid solution ? **[Understanding & Application]**

(iii) Which property of sulphuric acid is used in the following:

(a) As a source of hydrogen when treated in dilute form with metals like Zn, Mg, Fe, etc.

(b) Production of hydrogen chloride on treating concentrated acid with sodium chloride.

(c) Production of sulphur dioxide on heating in concentrated form with copper turnings. **[Recall & Understanding]**

(iv) You are provided with the list of acids mention below in the box:

| Hydrochloric acid, Nitric acid, Acetic acid, Sulphuric acid |
|---|

Using suitable acid, write balanced chemical equation for the preparation of following:

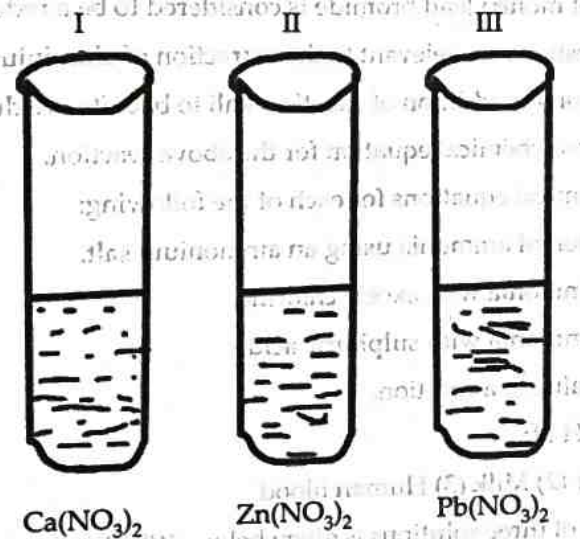
(a) Less volatile to more volatile acid

(b) Oxidising agent producing hydogen

(c) Two acids forming aqua-regia **[Recall]**

**Question 6.**

(i) Three test tubes contain calcium nitrate solution, zinc nitrate solution and lead nitrate solution respectively. Each solution is divided into two portions. Describe the effect of :




(i) Adding sodium hydroxide solution to each portion in turn till it is in excess.

(ii) Adding ammonium hydroxide to each portion till it is in excess. **[Understanding]**

(ii) Name the method used for preparation of the following salts from the list given below:

(a) Sodium nitrate

(b) Iron (III) chloride

(c) Lead chloride

(d) Zinc sulphate

(e) Sodium hydrogen sulphate

List:

(1) Simple displacement
(2) Neutralisation
(3) Decomposition by acid
(4) Double decomposition
(5) Direct synthesis

(iii) Calculate: **[Understanding & Application]**

(a) The amount of each reactant required to produce 750 ml of carbon dioxide, when two volumes of carbon monoxide combine with one volume of oxygen to produce two volumes of carbon dioxide:

$$2CO + O_2 \rightarrow 2CO_2$$

(b) The volume occupied by 80g of carbon dioxide at STP.

(c) Calculate the number of molecules in 4.4 gm of $CO_2$. [Atomic mass of C = 12, O = 16]

**[Understanding & Application]**

(iv) Complete the table given below which refers to the Laboratory preparation of Ammonia gas:

| Laboratory preparation | Reactants used | Products formed | Drying agent | Method of collection |
|---|---|---|---|---|
| *Ammonia gas* | *(a)* | *Calcium chloride + water ammonia* | *(b)* _____ | *(c)* _____ |

**[Application]**

**Question 7.**

(i) Give reasons for the following: **[Understanding]**

(a) Although copper is a good conductor of electricity, it is a non-electrolyte.

(b) Electrolysis of molten lead bromide is considered to be a redox reaction.

(ii) The following questions are relevant to the extraction of aluminium: **[Recall]**

(a) State the reason for addition of caustic alkali to bauxite ore during purification of bauxite.

(b) Give a balanced chemical equation for the above reaction.

(iii) Give balanced chemical equations for each of the following: **[Recall &Understanding]**

(a) Lab preparation of ammonia using an ammonium salt.

(b) Reaction of ammonia with excess chlorine.

(c) Reaction of ammonia with sulphuric acid.

(iv) (a) Explain pH value of a solution.

(b) What is the pH of:

(1) Pure water (2) Milk (3) Human blood

(c) The pH value of three solutions is given below. Which one of them is acidic, neutral and alkaline in nature? (1) pH = 7 (2) pH = 10 (3) pH = 3 **[Understanding & Application].**

**Question 8.**

(i) State giving reasons if:

(a) Sodium chloride will conduct electricity only in fused or aqueous solution state.

(b) In the electroplating of an article with silver, the electrolyte sodium argento-cyanide solution is preferred over silver nitrate solution. **[Understanding]**

(ii) Draw the electron dot diagram of carbon tetrachloride. **[Recall & Understanding]**

(iii) Give balanced equations for the following:

(a) A saturated hydrocarbon from iodomethane.

(b) An unsaturated hydrocarbon from an alcohol.

(c) An alcohol from ethyl bromide. **[Understanding & Application]**

(iv) The table given below shows the mass number and the number of neutrons in four elements P, Q, R and S.

| Element | P | Q | R | S |
|---|---|---|---|---|
| Number of neutrons | 6 | 10 | 12 | 18 |
| Mass number | 12 | 20 | 23 | 35 |

(a) Write down the atomic number and the electronic configuration of S.

(b) To which group and period S belongs ?

(c) What will be the nature of bond (ionic or convalent) formed in the compound of (1) R and S, (2) P and S ? **[Understanding]**

# 5 Sample Paper

## Chemistry [Unsolved]

## Questions

### Section-A (Attempt all questions)

**Question 1.**

(i) When electrolyte dilute $CuSO_4$ solution undergoes dissociation of electrolytes. Which ions combinations discharge at cathode and anode?

P. Cathode : $Cu^{2+}$ Anode : $OH^-$

Q. Cathode : $Cu^{2+}$ Anode : $SO_4^{2-}$

R Cathode : $Cu^{2+}$ Anode : $Cl^-$

(a) Only P
(b) Only Q
(c) Only R
(d) Both Q and R

**[Understanding & Application]**

(ii) Methane molecule regarded as a non-polar covalent compound because:

(a) Methane has four carbon-hydrogen single ionic bonds
(b) Methane has four carbon-hydrogen single covalent bonds
(c) Shared pair lies between the atoms at an unequal distance from both carbon and hydrogen atom
(d) None of the above

(iii) **Assertion (A):** Water is one of the best solvent.

**Reason (R):** H-bonding is present in water molecules.

(a) Both A and R are true and R is the correct explanation of the A.
(b) Both A and R are true but R is not the correct explanation of the A.
(c) A is true, but R is false.
(d) A is false, but R is true.

**[Understanding]**

(iv) Electron Affinity is maximum in:

(a) Mg (b) Ar (c) Li (d) Br

**[Understanding]**

(v) An aqueous solution of a compound sodium hydroxide reacts with:

P: Aqueous zinc sulphate to form a white precipitate which dissolves when sodium hydroxide is in excess,

Q: Aluminium sulphate solution to form a white precipitate which is insoluble when sodium hydroxide is in excess.

Which statements are correct?

(a) Only P
(b) Only Q
(c) Both P and Q
(d) None of these

**[Understanding & Application]**

(vi) A neutralisation reaction occurs between ammonia and sulphuric acid.

$$2NH_3(g) + H_2SO_4(l) \longrightarrow (NH_4)_2SO_4(s)$$

How does ammonia act in this reaction?

(a) As a proton donor
(b) As an electron acceptor
(c) As a proton acceptor
(d) As a neutron donor

**[Understanding]**

(vii) Which of the following would occupy 22.4 litres at S.T.P.?

1. 32g of oxygen gas
2. 2 moles of hydrogen gas
3. $6.022 \times 10^{23}$ molecules of ammonia

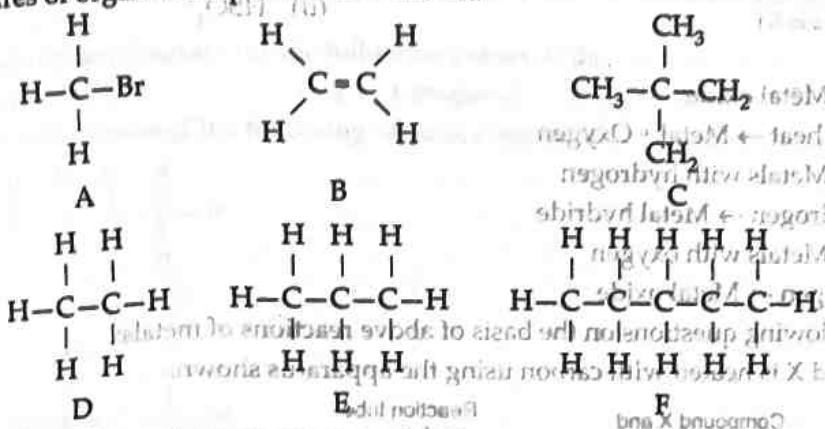
(a) 1 & 2
(b) 1 & 3
(c) 2 & 3
(d) 1, 2 & 3

[Atomic weights: O = 16, H = 1, N = 14]

(viii) The metal hydroxide which reacts with both acids and alkalis to form salt and water is:

(a) Calcium hydroxide
(b) Magnesium hydroxide
(c) Aluminium hydroxide
(d) Ferric hydroxide

(ix) The six structures of organic compound X are shown.




Which two compounds are isomers of one another?

(a) B and D
(b) A and C
(c) C and E
(d) C and F

[Analysis]

(x) An element with the largest atomic radius among the following is:

(a) Carbon
(b) Nitrogen
(c) Lithium
(d) Beryllium

[Understanding & Application]

(xi) You are supplied with five solutions : A , B , C, D and E with pH values as follows:

A = 1.8 , B = 7 , C = 8.5 , D = 13 and E = 5

(a) A is neutral
(b) A is strong base
(c) A is strong acid
(d) Cannot say

(xii) Which of the following reactions takes place at the anode during the electroplating of an article with silver?

(a) $Ag - 1e^- \rightarrow Al^{1+}$
(b) $Ag + 1e^- \rightarrow Al^{1-}$
(c) $Ag - 1e^- \rightarrow Ag$
(d) None of the above

[Understanding]

(xiii) Identify the statement which does not describe the property of alkenes :

(a) They are unsaturated hydrocarbons.
(b) They decolourise bromine water.
(c) They can undergo addition as well as substitution reactions.
(d) They undergo combustion with oxygen forming carbon dioxide and water.

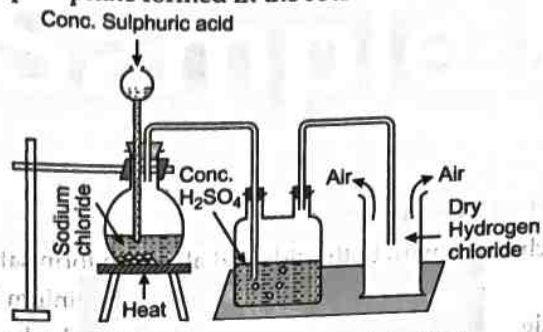
(xiv) Which of the following would weigh the least ?

(a) 2 gram atoms of Nitrogen
(b) 1 mole of silver
(c) 22.4 litre of oxygen gas at 1 atmospheric pressure and 273 K
(d) $6.02 \times 10^{23}$ atoms of carbon

[Atomic masses : Ag = 108, N = 14, O = 16, C = 12]

[Application]

(xv) The anion present in the precipitate formed in the round bottom flask, as shown in the figure is :




(a) $H^+$
(b) $Cl^-$
(c) $Na^+$
(d) $HSO_4^-$

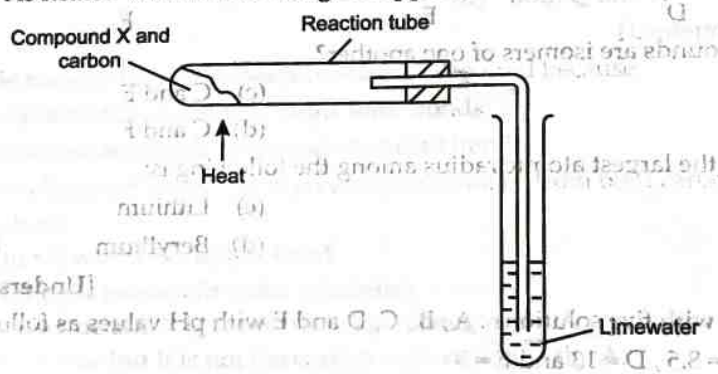
**[Applications]**

**Question 2.**

(i) 1. Reaction of Metal oxide
Metal oxide heat → Metal + Oxygen
2. Reaction of Metals with hydrogen
Metal + Hydrogen → Metal hydride
3. Reaction of Metals with oxygen
Metal + Oxygen → Metal oxide

Answer the following questions on the basis of above reactions of metals:

(a) Compound X is heated with carbon using the apparatus shown:




1. A brown solid is formed in the reaction tube and the lime water turns cloudy. What is compound X?
2. Why Lime water turn milky?

(b) An element X reacts with hydrogen, when heated, to form a covalent hydride $H_2X$. If $H_2X$ has a smell of rotten eggs, the element X is likely to be?

(c) Write one example of amphoteric oxide. **[Understanding & Application]**

(ii) Identify the following :

(a) Cation that does not form a precipitate with ammonium hydroxide but forms one with sodium hydroxide.
(b) The electrolyte used for electroplating an article with silver.
(c) The particles present in a liquid such as kerosene, that is a non-electrolyte.
(d) An organic compound containing —COOH functional group.
(e) A solid formed by reaction of two gases, one of which is acidic and the other basic in nature. **[Recall]**

(iii) Complete the following by choosing the correct answers from the bracket :

(a) The basic character of oxides _____ as we move down the group. (increases/decreases)
(b) An element which consists of molecules has _____ bonding. (covalent/ionic)
(c) _____ are generally sour in taste. (Bases/Acids)

(d) When dilute HCl acid reacts with active metals, it liberates _____ gas which burns with a popping sound. (hydrogen/carbon dioxide)

(e) Chemical name for wood spirit is _____. (ethanol/methanol) **[Recall & Understanding]**

(iv) Match the following column A with column B.

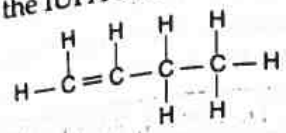
| Column A | Column B |
|---|---|
| (1) Acid salt | (a) Ferrous ammonium sulphate |
| (2) Double salt | (b) Contains only ions |
| (3) Ammonium hydroxide solution | (c) Sodium hydrogen sulphate |
| (4) Dilute hydrochloric acid | (d) Contains only molecules |
| (5) Carbon tetrachloride | (e) Contains ions and molecules |

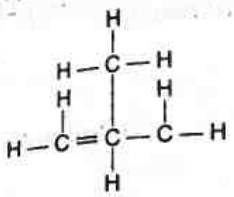
**[Recall & Understanding]**

(v) (a) Draw the structural diagram for the following compounds :

1. Ethanol 2. 1-propanal 3. Ethanoic acid

(b) Give the IUPAC names of the following organic compound:

1. 

2. 

**[Understanding]**

## Section-B (Attempt any four questions)

**Question 3.**

(i) State one relevant observation for each of the following reactions :

(a) Action of concentrated nitric acid on copper.

(b) Addition of excess ammonium hydroxide into copper sulphate solution.

**[Recall & Understanding]**

(ii) State one relevant reason for each of the following :

(a) Graphite anode is preferred to platinum in the electrolysis of molten lead bromide.

(b) Soda lime is preferred to sodium hydroxide in the laboratory preparation of methane.

**[Understanding]**

(iii) Arrange the following according to the instructions given in brackets :

(a) K, Pb, Ca, Zn. (In the increasing order of the reactivity)

(b) $Mg^{2+}$, $Cu^{2+}$, $Na^{+}$, $H^{+}$ (In the order of preferential discharge at the cathode)

(c) Li, K, Na, H (In the decreasing order of their ionization potential)

(iv) Write balanced chemical equations for each of the following :

(a) Action of warm water on AlN.

(b) Action of hot and concentrated nitric acid on copper.

(c) Action of hydrochloric acid on sodium bicarbonate.

**Question 4.**

(i) State the main components of the following alloys :

(a) Brass (b) Duralumin

(ii) Give balanced equations for each of the following:

(a) Ethanol is heated with conc. $H_2SO_4$ at 170°C.

(b) Silver nitrate solution is added to dilute hydrochloric acid.

(c) Zinc sulphide is heated with dilute hydrochloric acid. **[Recall & Understanding]**

(iii) Three test tubes contain calcium nitrate solution, zinc nitrate solution and lead nitrate solution respectively. Each solution is divided into two portions. Describe the effect of :

(a) Adding sodium hydroxide solution to each portion in turn till it is in excess.

(b) Adding ammonium hydroxide to each portion till it is in excess.

(iv) (a) Which two gases are combined during contact process?

(b) Write the equation for the reaction between zinc and the final product of the contact process.

(c) What happens when sulphur trioxide gas is passed into concentrated sulphuric acid?

**Question 5.**

(i) Identify the reactant and write the balanced equation for the following:
'X' oxidises hydrochloric acid to give nitrosyl chloride and chlorine. **[Understanding]**

(ii) Calculate the mass and volume of oxygen at STP, which will be evolved on electrolysis of 1 mole (18g) of water. **[Understanding& Application]**

(iii) Which property of sulphuric acid is used in the following :

(a) Liberation of sulphur from $H_2S$ with concentrated form.

(b) Charring of sugar with hot concentrated acid.

(c) Liberation of ethylene gas with hot concentrated acid.

(iv) You are provided with a list of chemicals in the given box:

| |
|---|
| $Pb(NO_3)_2$, $MgCl_2$, $FeCl_3$, $NaNO_3$, $ZnCO_3$, $Cl_2$, PbO, Mg, Fe, NaOH, $ZnSO_4$, HCl, $HNO_3$ |

Using the chemicals from the list represent the following type of reaction:

(a) Neutralisation Reaction

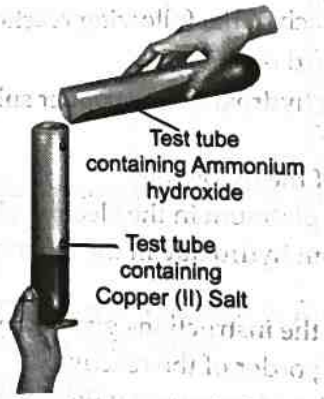
(b) Combination Reaction

(c) Displacement Reaction **[Understanding & Application]**

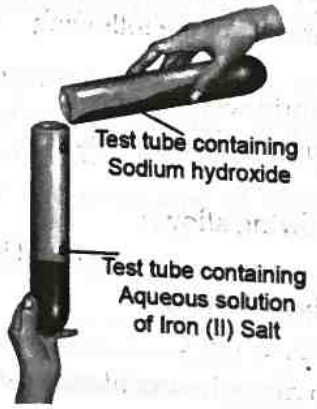
**Question 6.**

(i) A student was asked to perform two experiments in the laboratory based on the instructions given. Observe the pictures given below and state one observation for each of the experiments 1 and 2 that you would notice on mixing the given solutions.

(a) Experiment 1:




(b) Experiment 2:




**[Understanding& Application]**

(ii) Some methods used for the laboratory preparation of salts are :

A : Metal + acid
B : Carbonate + acid
C : Precipitation (double decomposition)
D : Direct combination
E : Titration

Copy and complete the following table :

| Salt | Method of Preparation |
|---|---|
| Ammonium sulphate | |
| Calcium carbonate | |
| Iron(III) chloride | |
| Lead nitrate | |
| Zinc sulphate | |

(iii) Solve the following :

(a) What volume of oxygen is required to burn completely 90 $dm^3$ of butane under similar conditions of temperature and pressure ? $2C_4H_{10} + 13O_2 \longrightarrow 8CO_2 + 10H_2O$

(b) The vapour density of a gas is 8. What would be the volume occupied by 24.0 g of the gas at STP ?

(c) A vessel contains X number of molecules of hydrogen gas at a certain temperature and pressure. How many molecules of nitrogen gas would be present in the same vessel under the same conditions of temperature and pressure ?

(iv) Certain blank spaces are left in the following table and these are labelled as A, B, C, D and E. Identify each of them.

| | Lab preparation of | Reactants used | Products formed | Drying agent | Method of collection |
|---|---|---|---|---|---|
| (i) | HCl gas | $NaCl + H_2SO_4$ | A | conc. $H_2SO_4$ | B |
| (ii) | $NH_3$ gas | C | $Mg(OH)_2 NH_3$ | D | E |

**Question 7.**

(i) Give reason for the following:

(a) Ionisation potential decreases down a group.

(b) Ionic compounds do not conduct electricity in solid state. **[Understanding]**

(ii) Answer the following questions with respect to the electrolytic process in the extraction of aluminium :

(a) Identify the components of the electrolyte other than pure alumina and the role played by each.

(b) Explain why powdered coke is sprinkled over the electrolytic mixture.

(iii) Give a balanced chemical equation for each of the following :

(a) Action of conc. nitric acid on sulphur.

(b) Catalytic oxidation of ammonia.

(c) Laboratory preparation of nitric acid.

(d) Reaction of ammonia with nitric acid.

(iv) Mohan has three solutions P, Q and R are given in the table. Answer the following questions:

| Solutions | pH value |
|---|---|
| A | 13 |
| B | 5 |
| C | 2 |

(a) Which of the above solutions will react with Magnesium to liberate hydrogen gas?

(b) Which of the above solutions will liberate ammonia gas when it reacts with ammonium chloride?

(c) Which of the above solutions will contain molecules as well as ions?

**Question 8.**

(i) State giving reason if:

(a) Sodium carbonate and sodium sulphite can be distinguish using HCl.

(b) Ferrous nitrate and lead nitrate can be identified by addition of sodium hydroxide. **[Understanding]**

(ii) Draw the electron dot diagram of chlorine molecule. **[Recall & Understanding]**

(iii) Write balanced equation for the following conversions:

(a) Carbon from cane sugar and concentrated sulphuric acid.

(b) Ferric nitrate from ferric hydroxide and nitric acid.

(c) Ammonium sulphate from ammonium hydroxide and Sulphuric acid.

(iv) The following table represents the elements and their atomic numbers:

With reference to this, answer the following using only the alphabets given in the table.

| Element | Atomic number |
|---|---|
| P | 13 |
| Q | 7 |
| R | 10 |

(i) Which element combines with hydrogen to form a basic gas ?

(ii) Which element has an electron affinity zero ?

(iii) Name the element, which forms an ionic compound with chlorine. **[Understanding]**

□□

# 1 Sample Paper

## Chemistry

## Answers

### Section-A

**Answer 1.**

(i) (d) sodium hydroxide

**Explanation :**

Sodium hydroxide (NaOH) is a strong base that completely dissociates into $Na^+$ and $OH^-$ ions in aqueous solution.

(ii) (c) $Fe(OH)_2$, $Fe(OH)_3$ both are insoluble.

**Explanation :**

When Ferrous sulphate reacts with sodium hydroxide it forms ferrous hydroxide [$Fe(OH)_2$] which is insoluble in excess of sodium hydroxide. Similarly, when ferric chloride reacts with sodium hydroxide it forms ferric hydroxide, [$Fe(OH)_3$] it is also insoluble in excess of sodium hydroxide.

(iii) (a) Both A and R are true and R is the correct explanation of the A.

**Explanation :**

Alcohol and glucose do not exhibit acidic properties because they do not dissociate into ions. For a solution to show acidic character, it must release hydrogen ions ($H^+$) when dissolved in water. Alcohol and glucose do not dissociate into ions in water; hence they do not produce hydrogen ions and therefore do not exhibit acidic properties. Thus, both assertion and reason are true and reason is the correct explanation of assertion.

(iv) (a) $C_6H_{12}O_6$

**Explanation :**

Given, Empirical formula = $CH_2O$

Empirical formula mass = $12 + (1 \times 2) + 16$
$= 12 + 2 + 16 = 30$ g

Now, determining molecular formula

Given, Molecular mass = 180 g

Molecular formula = $(CH_2O)_n$

Where value of $n = \dfrac{\text{Molecular mass}}{\text{Emprical mass}}$

$= \dfrac{18}{30} = 6$

Thus, value of $n = 6$

Molecular formula = $(CH_2O)_6 = C_6H_{12}O_6$.

(v) (d) All of these

**Explanation :**

Silica is non-reactive. It can withstand at high temperature and is almost a non-conductor of electricity.

(vi) (d) Carbon tetrachloride

**Explanation :**

Carbon tetrachloride has a relatively low boiling point compared to the ionic compounds listed because it is a covalent compound and does not have strong ionic bonds.

(vii) (b) 40 $cm^3$

**Explanation :**

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

Applying Gay Lussac's Law, one volume of methane reacts with two volumes of oxygen to give one volume of carbon dioxide. Since, water ($H_2O$) is liquid, it does not contribute to the total volume of gases.

Therefore, 40 $cm^3$ of $CH_4$ would require $2 \times 40\ cm^3 = 80\ cm^3$ of $O_2$.

Since, only 60 $cm^3$ of $O_2$ is available, 60 $cm^3$ of $O_2$ reacts with $1/2 \times 60\ cm^3 = 30\ cm^3$ of $CH_4$ is used. Now, volume of remaining $CH_4$ will be $40\ cm^3 - 30\ cm^3 = 10\ cm^3$.

According to equation, 60 $cm^3$ of $O_2$ will produce $1/2 \times 60\ cm^3 = 30\ cm^3$ of $CO_2$.

Therefore, total volume of gases remaining is the sum of the volume of $CH_4$ remaining and the volume of $CO_2$ produced.

So, total volume = $10\ cm^3 + 30\ cm^3 = 40\ cm^3$.

(viii) (a) Atomic number

**Explanation :**

Modern Periodic law states that physical and chemical properties of elements are periodic functions of their atomic number.

(ix) (c) (II), (III), (IV)

**Explanation :**

As Al, Fe, and Zn are more reactive than Cu, they will all displace Cu from its salt solution and this fades out the blue colour of the solution.

(x) (d) Ethyne

**Explanation :**

The formula of acetylene is CH ≡ CH. Its IUPAC name is Ethyne.

(xi) (b) (iii), (v), (i), (iv), (ii)

**Explanation :**

The first step in the contact process is to produce $SO_2$ from sulphur or metallic sulphide, which includes some impurities. Therefore, the second step is the purification of $SO_2$ produced in the first step. Then purified $SO_2$ is used to produce $SO_3$ gas, which is further converted to oleum ($H_2S_2O_7$). The last step is the production of sulphuric acid by adding water to the oleum.

(xii) (b) Sulphuric acid

**Explanation :**

The reaction is as follows:

$$S + 2H_2SO_4(conc.) \rightarrow 3SO_2 + 2H_2O$$

In this reaction, concentrated $H_2SO_4$ acts as an oxidising agent. It oxidises sulphur (S) to sulphur dioxide ($SO_2$), while itself gets reduced to $SO_2$.

(xiii) (a) Hydrochloric acid.

**Explanation :**

An acid which contains hydrogen and a non-metal other than oxygen is called hydracid. From the given options, hydrochloric acid is an example of hydracid.

(xiv) (d) $C_6H_6$

**Explanation :**

Given that,

$$\text{Molecular weight} = 2 \times \text{Vapour density}$$
$$= 2 \times 39 = 78$$
$$(CH)_n = (13)_n$$
$$13 \times n = 78$$

or,

$$n = \frac{78}{13} = 6$$
$$\text{Molecular formula} = C_6H_6$$

(xv) (b) Q

**Explanation :**

Electrode connected to positive terminal is anode which is made of impure copper, the mud is collected under anode called anode mud where electrode connected to negative terminal is cathode made of thin pure metal. In 'P' anode and cathode are reversed, no refining takes place. In 'R' mud is collected under cathode which is strip of pure copper. In 'S' cathode and anode are made of impure strip.

**Answer 2.**

(i) (a) 1. $Cu\ (s) \rightarrow Cu^{+2}\ (aq) + 2e^-$

2. Copper ions move from the anode into the electrolyte. An equal amount of copper ions from the electrolyte moves to cathode and get deposited over there.

(b) Cathode – Copper coated iron object, Anode –A pure Nickel metal rod.

(c) **Anode:** $Ni\ (s) \rightarrow Ni^{+2}\ (aq) + 2e^-$

**Cathode:** $Ni^{+2}\ (aq) + 2e^- \rightarrow Ni\ (s)$

(ii) (a) Empirical formula

(b) Protic acid

(c) Electronegativity

(d) Vapour density

(e) Potassium argentocyanide

(iii) (a) increases (d) high

(b) decreases (e) more

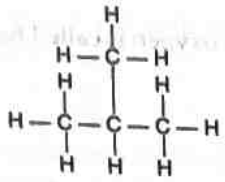
(c) more

(iv)

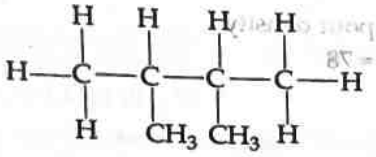
| Column A | Column B |
|---|---|
| (a) A substance that turns moist starch iodide paper blue. | 3. Chlorine |
| (b) A compound which releases a reddish brown gas on reaction with concentrated sulphuric acid and copper turnings. | 4. Copper nitrate |
| (c) A solution of this compound gives a dirty green precipitate with sodium hydroxide. | 5. Ferrous sulphate |
| (d) A compound which on heating with sodium hydroxide produces a gas which forms dense white fumes with hydrogen chloride. | 1. Ammonium sulphate |
| (e) A white solid which gives a yellow residue on heating. | 2. Lead carbonate |

(v) (a) 1. $H-C\equiv C-H$

Ethyne

2. 

2-Methyl propane

3. 

2, 3-Dimethyl butane

(b) 1. Butan-1-ol 2. Prop-1-yne

## Section-B

**Answer 3.**

(i) (a) When dry ammonia gas reacts with oxygen in the presence of platinum as a catalyst, then an enormous amount of heat is evolved with the emission of colourless NO gas, which combines with atmospheric oxygen to produce $NO_2$ gas, which is reddish-brown in colour. Also, the platinum continues to glow even after the completion of the reaction.

(b) When ammonia gas reacts with an excess of chlorine gas, then hydrogen chloride (HCl) and yellow coloured viscous liquid nitrogen trichloride ($NCl_3$) are formed. This nitrogen trichloride is highly explosive in nature. The reaction is given as

$$NH_3 + 3Cl_2 \text{ (excess)} \rightarrow 3HCl + NCl_3$$

(ii) (a) Ionic compounds have high melting points because the ionic bonds are formed by transfer of electrons which are held by strong electrostatic force of attraction and require a great deal of energy to break the bond

(b) Inert gases do not form ions because their outermost shell is complete and they have a stable electronic configuration.

(iii) (a) Helium has the highest ionisation enegy.

(b) Caesium has the lowest ionisation energy.

(c) K < Na < Si < S < Cl

Ionisation energy increases across a period. Along a period electrons in number increase hence nuclear pull increases and removal of electron from outer shell requires high amount of energy.

(iv) (a) **Normal Salt:** A normal salt is formed when all the replaceable hydrogen ions of an acid are replaced by metal ions.

$$HCl + NaOH \longrightarrow NaCl + H_2O$$

(b) **Acid Salt:** Salts formed by partial replacement of the ionisable hydrogen atom of polybasic acid.

$$H_2SO_4 + NaCl \xrightarrow{<200^\circ C} NaHSO_4 + HCl$$

(c) **Basic Salt:** A basic salt is formed when not all the hydroxide ions of a base are replaced by an acid radical.

$$Pb(OH)_2 + HCl \longrightarrow Pb(OH)Cl + H_2O$$

**Answer 4.**

(i) (a) Brass

(b) Bronze

(ii) (a) $Ca(HCO_3)_{2(aq)} + 2HCl_{(aq)} \longrightarrow CaCl_{2(aq)} + 2H_2O_{(l)} + 2CO_{2(g)}$

(b) $Na_2SO_3 + H_2SO_4$ (dilute) $\longrightarrow Na_2SO_4 + H_2O + SO_2 \uparrow$

(iii) (a) $NH_4Cl$

(b) PbO

(c) $CCl_4$

(iv) (a) $NaCl + \text{Conc. } H_2SO_4 \longrightarrow HCl + NaHSO_4$

Hydrogen chloride gas is prepared in laboratory by the reaction of sodium chloride with concentrated sulphuric acid. This produces hydrogen chloride gas and sodium bisulphate.

(b) Upwards displacement of air.

(c) Least volatile acid, high boiling point and strong intermolecular forces of sulphuric acid makes it suitable reagent for this reaction.

**Answer 5.**

(i) (a) Arjun will observe that the black iron (III) oxide ($Fe_2O_3$) is reduced to metallic iron, which appears as grey solid, and water vapour will be released.

(b) $Fe_2O_3(s) + 3H_2(g) \longrightarrow 2Fe(s) + 3H_2O(g)$

Iron (III) oxide, Hydrogen, Iron, Water vapour (steam)

(ii) $4NH_3 + 3O_2 \rightarrow 2N_2 + 6H_2O$ (vapour)

By Gay Lussac's Law

1. For $N_2$:

4 vol. of $NH_3$ results 2 vol. of $N_2$

240 cc of $NH_3$ will result $\frac{2 \times 240}{4} = 120$ cc of $N_2$

For $H_2O$ (vapour phase):

4 Vol. of $NH_3$ results 6 vol. of $H_2O$

240 cc of $NH_3$ will result $\frac{240 \times 6}{4} = 360$ cc of $H_2O$

For $O_2$:

4 vol. of $NH_3$ reacts with 3 vol. of $O_2$

240 cc of $NH_3$ will react with $\frac{3 \times 240}{4} = 180$ cc of $O_2$

(iii) (i) B = Non-volatile acid

(ii) A = Typical acid property

(iii) C = Oxidizing agent

(iv) (i) $C + 2H_2SO_4 \longrightarrow CO_2\uparrow + 2SO_2\uparrow + 2H_2O$

(ii) $Mg + H_2SO_4 \longrightarrow MgSO_4 + H_2\uparrow$

(iii) $C_{12}H_{22}O_{11} \xrightarrow{\text{conc. } H_2SO_4} 12C + 11H_2O$

(Cane sugar)

**Answer 6.**

(i) (1) (b) XO is a basic oxide.

(2) XO is a basic oxide. Magnesium oxide, a white powdery substance, is known for its remarkable properties. It has a high melting point of 2,800°C and a boiling point of 3,600°C, making it an excellent refractory material in various industrial applications. Its ability to rapidly absorb moisture from the surrounding environment allows it to act as a desiccant in reducing humidity levels. Additionally, magnesium oxide displays strong alkaline properties and can neutralize acids effectively.

(ii) (a) $PbCl_2$ is an insoluble salt formed by R-Precipitation reaction.

(b) $FeCl_3$ can be prepared by the reaction of iron with chlorine gas through S-Direct combination.

(c) $Na_2SO_4$ is a soluble salt that can be prepared by Q – Neutralisation by titration.

(iii) Percentage of carbon = 47.4%, percentage of hydrogen = 10.5%, Percentage of oxygen = 100 – (47.4 + 10.5) % = 42.1%

| Name of element | Percentage mass | Atomic mass | Relative no. of moles | Simplest ratio |
|---|---|---|---|---|
| Carbon | 47.4 | 12 | 47.4 ÷ 12 = 3.95 | 3.95 ÷ 2.63 = 1.5 |
| Hydrogen | 10.5 | 1 | 10.5 ÷ 1 = 10.5 | 10.5 ÷ 2.63 = 4 |
| Oxygen | 42.1 | 16 | 42.1 ÷ 16 = 2.63 | 2.63 ÷ 2.63 = 1 |

Ratio between Carbon, hydrogen and oxygen is 1.5 : 4 : 1

To convert it into simple whole numbers, multiply all terms of the ratio by 2

Hence, C : H : O = 3 : 8 : 2

Empirical formula of the compound = $C_3H_8O_2$

Empirical formula weight = 12 × 3 + 1 × 8 + 16 × 2 = 36 + 8 + 32 = 76

$$n = \frac{\text{Molecular mass}}{\text{Empirical formula mass}} = \frac{76}{76} = 1$$

Hence, molecular formula of the compound = $1(C_3H_8O_2) = C_3H_8O_2$

(iv) (a) Cation $Fe^{3+}$ (ferric ion)

When $Fe^{3+}$ reacts with $NH_4OH$ it forms ferric hydroxide.

$$Fe^{3+} + 3NH_4OH \longrightarrow \underset{\text{(Reddish brown ppt.)}}{Fe(OH)_3} + 3NH_4^+$$

(b) Anion : $Cl^-$ (Chloride ion)

When $Cl^-$ reacts with silver nitrate it forms white ppt. of silver chloride.

$$Cl^- + AgNO_3 \longrightarrow \underset{\text{Silver chloride}}{AgCl} + NO_3^-$$

**Answer 7.**

(i) (a) Solution B, which is a weak acid, is likely to contain solute molecules in addition to water molecules. Weak acids, such as acetic acid ($CH_3COOH$), partially ionises in water, resulting in the presence of both undissociated molecules and their respective ions in the solution.

(b) Solution B, the weak acid, could be a solution of glacial acetic acid. Glacial acetic acid is pure acetic acid ($CH_3COOH$) in its undiluted form, and when it is dissolved in water, it does not ionise completely in water. Therefore, the solution of glacial acetic acid fits the description of a weak acid (Solution B).

(c) An example of a solution that is a weak alkali is an ammonium hydroxide ($NH_4OH$).

(ii) (a) (a) Haematite ($Fe_2O_3$). (b) Bauxite ($Al_2O_3$).

(b) Reduction of the oxide is an important step in extraction of metal.

In case of iron, $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

$Al_2O_3$ cannot be easily reduced, hence it is subjected to electrolysis. Aluminium is collected at the cathode.

(iii) (a)

$$2NH_3 + 2\frac{1}{2}O_2 \longrightarrow 2NO + 3H_2O$$

Wt. of 2NO = 2[14 + 16]

= 60 g

and Wt. of $3H_2O$ = 3[2 (1) + 16]

= 54 g

When 60 g of NO is formed, mass of steam produced = 54 g

∴ For 1.5 g of NO mass of steam produced $= \frac{54 \times 1.5}{60} = 1.35$ g

Hence, 1.35 g of steam is produced when 1.5 g of nitrogen monoxide is formed.

(b) For 5 moles of products, oxygen required = 2.5 × 22.4 litre

For 10 moles of products, oxygen required $= \frac{2.5 \times 22.4 \times 10}{5}$

$\therefore$ $= 112$ litre.

(iv) (i) Solution C would have no effect on litmus solution as its pH is 7 and hence it is neutral.

(ii) Solution B would liberate $CO_2$ when reacted with sodium carbonate as it is acidic solution and has pH 2.

(iii) Solution A would turn red litmus solution blue as it is basic in nature and has pH 12.

**Answer 8.**

(i) (a) Hydrogen chloride is not collected over water because it is highly soluble in water and does not remain on the surface of water.

(b) Sodium is not typically used to prepare hydrogen from hydrochloric acid (HCl) because it reacts violently and explosively with water, including the water present in acids. When sodium comes into contact with water, a highly exothermic and rapid reaction occurs. This reaction is so vigorous that it can lead to the immediate release of hydrogen gas along with the potential for a violent explosion.

(ii) Electron dot structure of nitrogen molecule :

$$:\underset{\cdot}{\ddot{N}}: + :\underset{\cdot}{\ddot{N}}: \rightarrow :N::N: \text{ OR } :N\equiv N:$$

Two nitrogen atom  Nitrogen molecule

(iii) (a) When a mixture of methane and chlorine in the ratio of 1 : 1 by volume is exposed to diffused sunlight, methyl chloride is formed.

$$\underset{\text{Methane}}{CH_4} + Cl_2 \xrightarrow[\text{Diffused sunlight}]{\text{Chlorination}} \underset{\text{Methyl chloride}}{CH_3Cl} + HCl$$

(b) Methane is first converted into methyl chloride by chlorination, in the presence of diffused sunlight. Methyl chloride on hydrolysis forms methyl alcohol.

$$CH_4 + Cl_2 \xrightarrow{\text{Hydrolysis}} \underset{\text{Methyl chloride}}{CH_3Cl} + HCl$$

$$\underset{\text{Methyl chloride}}{CH_3Cl} + KOH_{(aq)} \xrightarrow[\text{Diffused sunlight}]{\text{Chlorination}} \underset{\text{Methyl alcohol or Methanol}}{CH_3OH} + KCl + H_2O$$

(c) Methyl alcohol obtained from above reaction is subjected to oxidation with sodium dichromate and dilute sulphuric acid to form formaldehyde.

$$\underset{\text{Methane}}{CH_4} + Cl_2 \xrightarrow{\text{Diffused sunlight}} \underset{\text{Methyl chloride}}{CH_3Cl} + HCl$$

$$\underset{\text{Methyl chloride}}{CH_3Cl} + KOH_{(aq)} \xrightarrow{\text{Hydrolysis}} \underset{\text{Methyl alcohol or Methanol}}{CH_3OH} + KCl + H_2O$$

$$\underset{\text{Methyl alcohol}}{CH_3OH} + [O] \xrightarrow[\text{Oxidation}]{Na_2Cr_2O_7/\text{Dil. } H_2SO_4} \underset{\text{Formaldehyde}}{HCHO} + H_2O$$

(iv) (a) Copper(II) nitrate $[Cu(NO_3)_2]$

(b) $Fe^{3+}$

(c) Oxidising property of nitric acid.

□□

# 2 Sample Paper

## Chemistry

## Answers

### Section-A

(i) (a) is completely ionised in the solution

**Explanation :**

A strong electrolyte is one that completely dissociates in a solution. HCl (hydrochloric acid), $H_2SO_4$, NaOH and KOH are all examples of strong electrolytes.

(ii) (b) Sulphuric acid

**Explanation :**

Compound X, which changes blue litmus paper to red and reacts readily with potassium chloride to yield hydrochloric acid, is Sulphuric acid ($H_2SO_4$). It is a strong acid and can react with various substances, including metal chlorides like potassium chloride, to produce hydrochloric acid and the corresponding sulphate salt.

$$KCl + H_2SO_4 \rightarrow KHSO_4 + HCl$$

The other three acids, acetic acid, carbonic acid, and citric acid, are very mild acids.

(iii) (d) A is false, but R is true

**Explanation :**

Assertion (A) is false because elements in different groups typically have different chemical properties. However, reason is true in the context of elements within the same group. Elements have similar chemical properties because they have the same number of valence electrons, but this is not true for elements in different groups. Thus, assertion is false but reason is true.

(iv) (c) $C_6H_6$

**Explanation :**

$$\text{Molecular formula} = n \times \text{Empirical formula}$$
$$\text{Empirical formula mass} = CH = 12 + 1 = 13$$
$$\text{Molecular mass} = 78$$

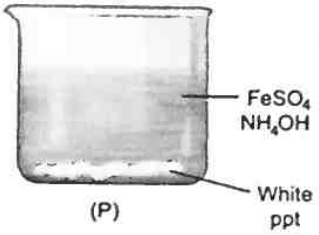
Therefore, $n = 6$

Now,

$$\text{Molecular formula} = n \times \text{Empirical formula}$$
$$= 6 \times CH$$
$$= C_6H_6$$

Hence, the molecular formula of compound will be $C_6H_6$.

(v) (a)



**Explanation :**

In P ferric chloride reacts with $NH_4OH$ yielding ferric hydroxide which reddish brown is colour. 'P' has ferrous sulphate which ppt of dirty green 'Q' has $CuSO_4$ which gives ppt of pale blue and 'S' has $Pb(NO_3)_2$, yielding white ppt.

$$FeCl_3 + 3NH_4OH \longrightarrow 3NH_4Cl + \underset{\text{Reddish brown}}{Fe(OH)_3\downarrow}$$

$$FeSO_4 + 2NH_4OH \longrightarrow (NH_4)_2SO_4 + \underset{\text{Drity Green}}{Fe(OH)_2\downarrow}$$

$$CuSO_4 + 2NH_4OH \longrightarrow (NH_4)_2SO_4 + \underset{\text{Pale Blue}}{Cu(OH)_2\downarrow}$$

$$Pb(NO_3)_2 + 2NH_4OH \longrightarrow 2NH_4NO_3 + \underset{\text{White}}{Pb(OH)\downarrow}$$

(vi) (b) Sodium nitrate and sulphuric acid

**Explanation :**

Nitric acid in the laboratory is prepared by reaction of sodium or potassium nitrate and sulphuric acid. They are distilled to produce the required ammonia.

(vii) (c) 138 g

**Explanation :**

Determine the total mass of the solution remaining:

Initial mass of reactants: 40 g (Ca) + 100 g ($H_2O$) = 140 g

Mass of hydrogen gas escaping: 2 g

Total mass of the solution remaining: 140 g – 2 g = 138 g

Therefore, the total mass of the solution that remains is 138 g.

(viii) (a) $O_2$, $V_2O_5$, $H_2SO_4$, $H_2O$

**Explanation :**

In the contact process, the first step includes oxidation of sulphur to produce $SO_2$, which on purification, is converted to $SO_3$ using the catalyst $V_2O_5$. This $SO_3$ is then subjected to sulphuric acid to produce oleum which on dilution gives sulphuric acid.

(ix) (b) A-Alkene, B-Alkyne, C-Alkane

**Explanation :**

Test tube A is alkene, B is Alkyene, C is Alkane. When bromine is added to test tubes, A and B being unsaturated compounds decolourises bromine solution due to addition reaction while saturated compound does not show addition reaction hence A and B can be alkene and alkyne while C is alkane. Further on addition of ammonical $CuCl_2$ preapitate was observed 'B' hence A is alkene and B is alkyne.

(x) (a) $C_nH_{2n-2}$

**Explanation :**

The general formula of alkyne is $C_nH_{2n-2}$.

(xi)

**Explanation :**

At first the solution is basic due to the presence of ammonia. Thus, the pH of the solution will be greater than 7. As we start adding sulphuric acid, the neutralisation reaction will start taking place.

$$NH_3 + H_2SO_4 \rightarrow (NH_4)_2SO_4$$

Thus, the pH of solution will be almost equals to 7, but as the amount of sulphuric acid added becomes excess, the solution will start to be acidic and pH will be lower than 7.

(xii) (c) Oxidising agent

**Explanation :**

In the equation $S + 2H_2SO_4 \rightarrow 3SO_2 + 2H_2O$, sulphuric acid ($H_2SO_4$) acts as an oxidising agent because it oxidises sulphur to sulphur dioxide.

(xiii) (d) The number of copper (II) ions in the electrolyte decreases.

**Explanation :**

During electrolysis of aqueous copper (II) sulphate using copper electrodes, copper electrodes act as active electrode and the work of active electrode is to maintain the concentration of ions in the electrolyte, so the concentration of copper ions remains constant in the electrolyte and blue colour of the solution remains unchanged. The statement which is not correct is that the number of copper ions in the electrolyte decreases.

(xiv) (a) $C_5H_4$

**Explanation :**

P

Mass of carbon = 93.71

Mass of hydrogen = 6.29

$$\text{Number of moles (carbon)} = \frac{93.71}{12} = 7.8$$

$$\text{Number of moles (hydrogen)} = \frac{6.29}{1} = 6.29$$

$$\text{Hence, most simple ratio, for carbon} = \frac{7.8}{6.29} = 1.25$$

$$\text{For hydrogen} = \frac{6.29}{6.29} = 1$$

Since, it is not a whole number we multiply the ratio by 4 to get a whole number ratio.

Lowest whole number ratio is:

For carbon = 5

For hydrogen = 4

Empirical formula = $C_5H_4$

Hence, the empirical formula of naphthalene is $C_5H_4$.

(xv) (a) (I) only

**Explanation :**

Copper is place below hydrogen in the reactivity series, so it cannot displace hydrogen from dilute hydrochloric acid. Al, Zn, and Fe are above hydrogen and librate hydrogen gas with dilute acids.

**Answer 2.**

(i) (a) (1) A—Anode

B—Cathode

(2) The oxidising electrode is usally the anode in an electrolysis setup. It is the electrode where oxidation occurs, involving the loss of electrons.

(b) From the given salt solutions, only $AgNO_3$ will turn blue because copper will replace the silver and form copper nitrate $Cu(NO_3)_2$ which is blue in colour. This is because Potassium (K), Zinc (Zn) and Calcium (Ca) are all more reactive than copper. So copper can not displace them.

(c) **At the Cathode (Reduction):** Reduction of hydrogen ions ($H^+$) takes place at the cathode, resulting in the formation of hydrogen gas ($H_2$):

$$2H^+_{(aq)} + 2e^- \longrightarrow H_{2(g)}$$

**At the Anode (Oxidation):** Oxidation of water molecules (or hydroxide ions $OH^-$) occurs at the anode, leading to the release of oxygen gas ($O_2$) and the generation of protons ($H^+$):

$$4OH^-_{(aq)} \longrightarrow O_{2(g)} + 2H_2O_{(l)} + 4e^-$$

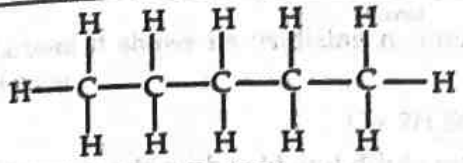
(ii) (a) $Ca^{2+}$
(b) $Na[Ag(CN)_2]$
(c) Free molecules.
(d) Carboxylic acid.
(e) Ammonium chloride ($NH_4Cl$)

(iii) (a) dehydration
(b) sodium bisulphate or sodium hydrogen sulphate
(c) nitrogen trichloride
(d) alkanes
(e) sodium

(iv)

| Column A | Column B |
|---|---|
| (a) Acid salt | 4. Sodium hydrogen carbonate |
| (b) Copper oxide | 1. Black in colour |
| (c) Zinc hydroxide | 5. Soluble in excess sodium hydroxide |
| (d) Copper metal | 2. Reddish brown |
| (e) Polar compound | 3. Hydrogen chloride |

(v) (a) 1.



Pentane

2.

2-Methylbutane

3.

2,2-Dimethylpropane

(b) 1. 2-Methyl butanoic acid.
2. 1,2- Dibromoethane

## Section-B

**Answer 3.**

(i) (a) Concentrated nitric acid is reacted with sulphur to give reddish brown nitrogen oxide gas.

$$6HNO_3(Conc.) + S(s) \rightarrow H_2SO_4(g) + 6NO_2\uparrow(g) + 2H_2O(l)$$

(b) When ammonia gas is passed over heated copper (II) oxide, reddish brown copper metal is obtained and black CuO is used up.

$$2NH_3 + 3CuO \xrightarrow{\text{Heat}} 3Cu + 3H_2O + N_2$$

(ii) (a) **Sodium chloride conductivity:** In solid state, sodium chloride forms a crystal lattice that prevents ions from moving freely. However, when melted or dissolved in water (fused or aqueous state), ions are free to move, allowing it to conduct electricity.

(b) **Electroplating with sodium argento-cyanide:** This compound is preferred over silver nitrate because it provides a more consistent and smoother coating. The complex ions in sodium argento-cyanide reduce the chances of silver precipitating out, resulting in a better-quality electroplate.

(iii) (a) 'X' will form electrovalent compound as it has tendency to loose electron.

(b) 'Y' will have high electron affinity as it has tendency to accept electron.

(c) 'X' have the largest atomic size in their period while Y would have the smallest atomic size in their period.

(iv) (a) Wurtz Reaction

$$\underset{\text{Methyl iodide}}{2CH_3I} + 2Na \xrightarrow[\text{ether}]{\text{dry}} \underset{\text{Ethane}}{H_3C-CH_3} + 2NaI$$

(b) $$\underset{\text{Ethane}}{CH_3-CH_3} \xrightarrow[Al_2O_3]{500°C} \underset{\text{Ethene}}{H_2C=CH_2} + H_2$$

(c) $$\underset{\text{Methane}}{CH_3} + O_2 \xrightarrow{MO_2O_3} \underset{\text{Formaldehyde}}{HCHO} + H_2O$$

**Answer 4.**

(i) (a) **Aluminium:** Duralumin is actually a composition with 95% Al, 4% Copper, 0.5% Mg and 0.5% Mn.

(b) **Iron:** Stainless steel is mainly composed of iron and carbon in small proportions. Hence, steel is only stainless with addition of 10% Ni and 15% Cr.

(ii) (a) $$HCl + NH_3 \longrightarrow NH_4Cl.$$

(b) $$2NH_4Cl + Ca(OH)_2 \longrightarrow \underset{\text{Calcium Chloride}}{CaCl_2} + \underset{\text{Ammonia}}{2NH_3} + \underset{\text{Water}}{2H_2O}$$

(iii) (a) The name of the process is Ostwald process. The oxidation of ammonia to nitric oxide is exothermic reaction and once the reaction is started it maintains the temperature of the platinum gauze.

(b) Equations for the conversion of F and G:

1. **Conversion of F (Nitrogen dioxide to Nitric acid):**

$$3NO_2 + H_2O \longrightarrow 2HNO_3 + NO$$

This reaction involves the absorption of nitrogen dioxide ($NO_2$) in water to form nitric acid ($HNO_3$) and nitric oxide (NO).

2. **Conversion of G (Calcium nitrate to Nitrate acid):**

$$Ca(NO_3)_2 + H_2SO_4 \longrightarrow CaSO_4 + 2HNO_3$$

This reaction involves the treatment of calcium nitrate ($Ca(NO_3)_2$) with sulfuric acid ($H_2SO_4$) to produce calcium sulfate ($CaSO_4$) and nitric acid ($HNO_3$).

(iv) (a) Compound Y, which has a fruity smell, is likely to be ethyl acetate ($CH_3COOC_2H_5$). The acid Z used in the reaction is sulphuric acid ($H_2SO_4$) or a similar strong acid, which acts as a catalyst in this esterification reaction.

(b) The structural formula of X is $CH_3COOH$ i.e. acetic acid.

(c) The above reaction is known as 'Esterification' reaction.

$$\underset{\text{Ethanol}}{C_2H_5OH} + \underset{\text{Acetic acid}}{CH_3COOH} \xrightarrow[\text{Esterification}]{H_3O^+} \underset{\text{Ethyl acetate}}{CH_3COOC_2H_5}$$

Answer 5.

(i) (a) **Ammonium chloride + Calcium hydroxide :** The reactants used for the manufacturing of ammonia gas are ammonium chloride ($NH_4Cl$) and calcium hydroxide ($Ca(OH)_2$). The reaction is given as

$$2NH_4Cl + Ca(OH)_2 \rightarrow CaCl_2 + 2H_2O + 2NH_3$$

(b) **Quick lime or calcium oxide :** Quicklime (CaO) is used for drying ammonia gas during its manufacturing as it is cheap, and other drying agents like sulphuric acid or phosphorus pentoxide react with ammonia to give different products.

(c) **Downward displacement of air:** Ammonia is lighter than air, and hence it is collected by downward displacement of air, *i.e.*, it displaces air present at the bottom of the flask.

(ii) Molecular weight = 2 × Vapour density at STP

In case of methane, substituting the given information :

$$\text{Molecular weight} = 2 \times 8 = 16$$

Molecular weight of methane = 16 which means 16 g of methane occupy 22.4 L volume at STP.

So, 40 g of methane will occupy $= \frac{22.4}{16} \times 40 = 56$ L

(iii) (a) **Ethanol:** It exhibits its dehydrating property, removing water from ethanol, and forming ethene.

$$\underset{\text{Ethanol}}{C_2H_5OH} \xrightarrow[\text{Dehydration}]{H_2SO_4} \underset{\text{Ethene}}{C_2H_4} + H_2O$$

(b) **Carbon:** It shows its oxidizing nature. Concentrated sulphuric acid oxidizes carbon to carbon dioxide.

$$C + 2H_2SO_4 \rightarrow CO_2 + 2H_2O + 2SO_2$$

(iv) (a) Copper reacts with cold and dilute nitric acid to form copper nitrate, water and nitric oxide.

$$\underset{\text{Copper}}{3Cu} + \underset{\text{Nitric acid}}{8HNO_3} \longrightarrow \underset{\text{Copper nitrate}}{3Cu(NO_3)_2} + 4H_2O + \underset{\text{Nitric oxide}}{2NO\uparrow}$$

(b)
$$\underset{\text{Copper oxide}}{3CuO} + \underset{\text{Ammonia}}{2NH_3} \longrightarrow 3Cu + N_2 + 3H_2O$$

(c)
$$CH_3I + 2H \xrightarrow[\text{Alcohol}]{Zn/Cu} \underset{\text{Methane}}{CH_4} + HI$$

Answer 6.

(i) **Experiment 1:** When aqueous solutions of barium chloride and sodium sulphate are mixed, a white precipitate of barium sulphate is formed due to the combination of the cations and anions from each compound. This reaction can be represented by the chemical equation:

$$BaCl_2(aq) + Na_2SO_4(aq) \longrightarrow BaSO_4(s) + 2NaCl(aq).$$

The formation of the insoluble barium sulphate allows for easy visual identification of the reaction taking place. This experiment is valuable for reinforcing concepts such as solubility rules, ionic bonding, and chemical equations in introductory chemistry courses.

**Experiment 2:** When sodium hydroxide reacts with acetic acid, it undergoes a neutralization reaction to form sodium acetate and water. The reaction can be represented by the chemical equation:

$$NaOH + CH_3COOH \rightarrow CH_3COONa + H_2O.$$

This process is exothermic, meaning that it releases heat as a byproduct. Both sodium hydroxide and acetic acid are strong electrolytes, so the reaction occurs rapidly in an aqueous solution. The reaction is commonly used in industrial processes to produce sodium acetate, which has applications in food preservation, as a buffer solution in laboratory experiments, and as a descaling agent. It is important to note that this reaction should be handled with caution due to the corrosive nature of both sodium hydroxide and acetic acid.

(ii) (a) $Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2$

(b) $Na_2SO_3 + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O + SO_2$

(c) $Na_2CO_3 + H_2SO_4 \xrightarrow{\Delta} Na_2SO_4 + H_2O + CO_2$

**OR**

$CaCO_3 \xrightarrow{\Delta} CaO + CO_2$

(d) $Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2$

$ZnSO_4 + Na_2CO_3 \longrightarrow ZnCO_3 + Na_2SO_4$

(iii) (a) Given, 68g of ammonia ($NH_3$) at S.T.P.

S.T.P. indicates Standard Temperature and Pressure

At S.T.P one mole of a gas has a volume of 22.4 L.

Molecular weight of $NH_3 = N + 3H$

$= (14 + 3 \times 1)g = 17g$

Since, 17g of $NH_3$ occupies 22.4L volume at S.T.P.

Therefore, 68g of $NH_3$ will occupy $\frac{22.4L}{17g} \times 68\ g = 89.6$ L volume at S.T.P.

Hence, the volume occupied by the gas is 89.6 L.

(b) $$\text{Number of moles} = \frac{\text{Mass in g}}{\text{Gram molecular mass}}$$

$$= \frac{68}{17} = 4 \text{ moles}$$

(c) One mole of $NH_3$ contains $= 6.022 \times 10^{23}$ molecules therefore,

4 moles of $NH_3$ contains $= 4 \times 6.022 \times 10^{23}$ molecules

$= 2.4088 \times 10^{24}$ molecules.

(iv) (i) **Cation** that does not form a precipitate with ammonium hydroxide but forms one with sodium hydroxide — **$Ca^{2+}$**.

(ii) The **electrolyte** used for electroplating an article with silver — **Solution of sodium argentocyanide *i.e.*, $Na[Ag(CN)_2]$.**

(iii) The **particles** present in a liquid such as kerosene, that is a non-electrolyte — **Free Molecules.**

**Answer 7.**

(i) (a) This is because of the fact that aluminium has great affinity towards oxygen than zinc and so aluminium oxide cannot be reduced by reducing agents such as carbon monoxide or carbon or hydrogen.

(b) This is because of the absence of free ions or $e^-$ to carry an electrical charge in the carbon tetrachloride molecule.

(ii) (a) Cryolite ($Na_3AlF_6$) is mixed with alumina to bring down the melting point of electrolyte mixture and to increase its electrical conductivity.

(b) The electrolytic mixture is sprinkled with coke to prevent the anode's oxidation by the oxygen evolved.

(iii) (a) $C + 2H_2SO_4\ (conc.) \rightarrow CO_2 + 2SO_2 + 2H_2O$

(b) $FeCl_3 + 3NaOH \rightarrow \underset{\text{Iron (III) hydroxide}}{Fe(OH)_3} + 3NaCl$

(c) Aluminium hydroxide on heating decomposes into aluminium oxide along with water.

$$2Al(OH)_3 \rightarrow \underset{\text{Aluminium oxide}}{Al_2O_3} + 3H_2O$$

(iv) (a) Solution B, which is a weak acid, is likely to contain solute molecules in addition to water molecules. Weak acids, such as acetic acid ($CH_3COOH$), partially ionise in water, resulting in the presence of both undissociated molecules and their respective ions in the solution.

(b) Solution B, the weak acid, could be a solution of glacial acetic acid. Glacial acetic acid is pure acetic acid ($CH_3COOH$) in its undiluted form, and when it is dissolved in water, it forms a weak acidic solution.

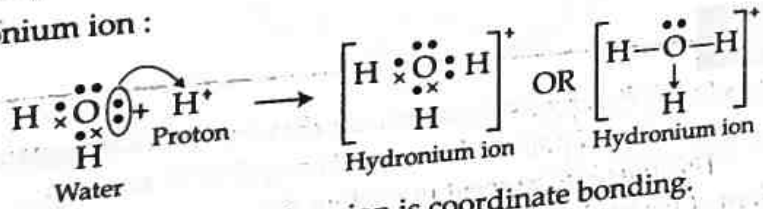
(c) An example of a solution that is a weak alkali is an ammonium hydroxide ($NH_4OH$).

**Answer 8.**

(i) (a) Inert gases do not form ions as their outer most shell is completely filled thus they have stable electronic configuration. Thus, electrons can neither be gained nor lost by atom to form ions.

(b) Covalent compounds are held by weak inter molecular forces. Hence, very small amount of energy is required to break the bonds between two or more molecules. Hence, such compounds have a low melting and boiling point.

(ii) Formation of hydronium ion :




The type of bonding present in hydronium ion is coordinate bonding.

(iii)

$$\underset{\text{Chlorine gas (Dry) (A)}}{2Fe + 3Cl_2} \longrightarrow \underset{\text{Iron (III) Chloride}}{2FeCl_3}$$

$$\underset{\text{Sodium carbonate solution (B)}}{2FeCl_3 + 3Na_2CO_3} \longrightarrow Fe_2(CO_3)_3 + 6NaCl$$

$$\underset{\text{Nitric acid (C)}}{FeCO_3 + 2HNO_3} \longrightarrow Fe(NO_3)_2 + H_2O + CO_2$$

(iv) (a) The element B would have higher metallic character than element A as electron affinity increases across a period.

(b) The element A would have probably higher electron affinity than element B.

(c) The element A would have smaller atomic size than element B as atomic size generally decreases from left to right across a period in the periodic table.

□□

# Specimen Question Paper

## Biology

Maximum Marks: 80
Time allowed: Two hours

### General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will not be allowed to write during first 15 minutes.*
*This time is to be spent in reading the question paper.*
*The time given at the head of this Paper is the time allowed for writing the answers.*
***Section A is compulsory. Attempt any four questions from Section B.***
*The intended marks for questions or parts of questions are given in brackets [].*
***Instruction for the Supervising Examiner***
*Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.*

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options :** [15]
**(Do not copy the question, write the correct answers only.)**

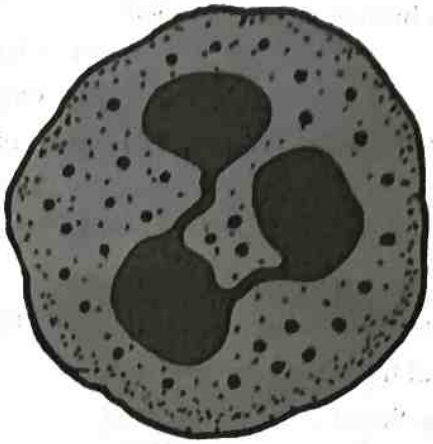
(i) Allen's blood report showed an abnormal decrease in the number of R.B.C. He is suffering from:
(a) Polycythemia
(b) Erythropenia
(c) Glycosuria
(d) Haemophilia **[Application]**

(ii) A farmer notices that storing ripe mangoes with unripe ones speeds up the ripening process. The phytohormone primarily responsible for this phenomenon is:
(a) Auxins
(b) Cytokinins
(c) Gibberellins
(d) Ethylene **[Analysis]**

(iii) **Assertion (A)** : Oxygen is produced during light dependent reactions of photosynthesis.
**Reason (R)** : Oxygen is released as a byproduct during photolysis.
(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A). **[Understanding]**

(iv) Reena gets emotionally stressed when the school examinations are approaching. Which hormone is responsible for this condition?
(a) Adrenaline
(b) Thyroxine
(c) Insulin
(d) Growth hormone **[Application]**

(v) The diagram given below is that of a Neutrophil.
The function is _____:

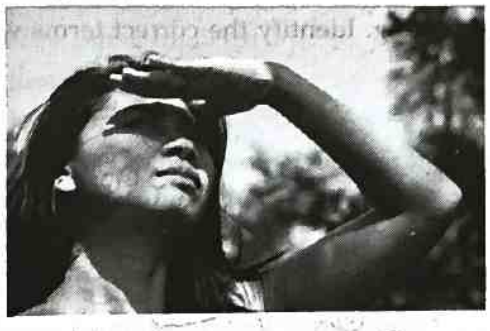


(a) secreting hormone
(b) transporting food
(c) phagocytosis
(d) producing antibodies

**[Understanding & Recall]**

(vi) **Assertion (A):** Pituitary gland is known as the master gland.
**Reason (R):** It regulates the activities of other exocrine glands.
(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A). **[Understanding]**

(vii) Aruna went to a theatre to watch a movie on a bright sunny morning. As she came out of the theatre, she felt a dazzling effect and could not open her eyes. After a few minutes her vision became normal. This is due to:



(a) Accommodation of eye
(b) Mutation
(c) Polarisation
(d) Adaptation of eyes **[Analysis]**

(viii) Reflex actions provide a survival advantage because they:
(a) are controlled by the cerebrum.
(b) are controlled by the medulla oblongata.
(c) require no conscious thought, allowing rapid responses.
(d) always involve the spinal cord. **[Recall]**

(ix) Industrial melanism is the phenomenon by which the peppered moth:
(a) die due to industrial growth.
(b) in polluted areas, became darker in colour for better camouflage.
(c) became lighter in colour due to natural selection.
(d) became resistant to industrial pollution. **[Understanding & Recall]**

(x) The hormone that maintains the thickening of the endometrium during pregnancy is:
(a) Oestrogen
(b) ACTH
(c) Progesterone
(d) Oxytocin **[Recall]**

(xi) The onset of menstruation in a human female is called:

(a) Menopause
(b) Menarche
(c) Ovulation
(d) Oogenesis **[Understanding & Recall]**

(xii) The number of autosomes and allosomes present in a human cell:

(a) 22 allosomes, 1 autosome
(b) 22 pairs of autosomes, 1 pair of allosome
(c) 22 autosomes, 1 allosome
(d) 22 pairs of allosomes, 1pair of autosome **[Recall]**

(xiii) Cultural revolution favours a steep rise in human population. Identify the correct sequence of revolution:

(a) Tool making, Scientific and Industrial, Agricultural
(b) Agricultural, Tool making, Scientific and Industrial
(c) Scientific and Industrial, Agricultural, Tool making
(d) Tool making, Agricultural, Scientific and Industrial **[Understanding]**

(xiv) Tanvi tried to match the phases of menstrual cycle with the number of days as given in the table below:

| PHASE | DAYS |
|---|---|
| P—Follicular Phase | Day 5–12 |
| Q—Luteal Phase | Day 15–28 |
| R—Menstrual Phase | Day 3–5 |
| S—Ovulatory Phase | Day 13 or 14 |

Identify the correct sequence:

(a) P, Q, R, S
(b) Q, S, R, P
(c) R, P, S, Q
(d) S, R, P, Q **[Application]**

(xv) Aditya who is fond of roller skating. Identify the correct terms which help him to maintain his body balance:

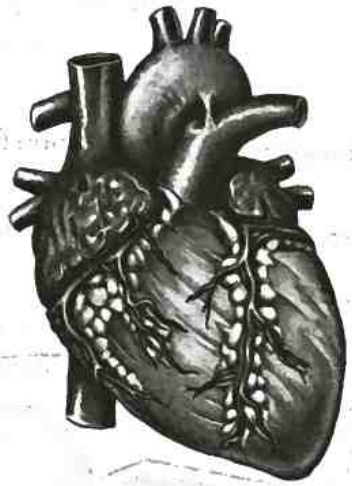
(a) Cerebellum, Semicircular canals, Vestibule
(b) Vestibule, Sclera, Cerebrum
(c) Malleus, Semicircular canals, Utriculus
(d) Sacculus, Stapes, Cochlea **[Analysis & Application]**

**Question 2.**

(i) Give the biological/technical terms for the following: **[5]**

(a) A mixture of smoke and fog.
(b) The inner lining of uterus.
(c) The pressure that is responsible for the movement of water molecules across the cortical cells of the root.
(d) The ground substance present in a chloroplast.
(e) The fluid present between the layers of meninges. **[Recall]**

(ii) Given below is the diagram of a human heart. Read the information below the diagram and fill in the blanks: **[5]**



*The human heart pumps blood throughout the body. It is the size of a large fist. The heart is located between the lungs in the thoracic cavity. It has four chambers. The heart functions all through the lifespan of a person and is responsible for the survival of the person.*

The heart is enclosed by a membrane called (a) _____ (*Pericardium / Pleura*). The ventricles give rise to two large blood vessels called (b) _____ (*Pulmonary vein / Pulmonary artery*) and (c) _____ (*Aorta / Venacava*). The flaps of the cuspid valves are kept in position by (d) _____ (*Chordae tendinae / Endometrium*). (e) _____ (*Hepatic / Coronary*) arteries supply oxygenated blood to the walls of the heart. **[Recall & Application]**

(iii) Choose the odd term out from each of the following set of terms. Mention the category to which the remaining three belong: **[5]**

(a) Sulphur dioxide, Oxygen, Carbon monoxide, Nitrogen dioxide.

(b) Pons, Epidermis, Xylem, Phloem.

(c) Tympanum, Pinna, Auditory canal, Malleus.

(d) Ureter, Urethra, Uterus, Renal Pelvis.

(e) Stomata, Lenticles, Cuticle, Root hair. **[Understanding & Application]**

(iv) Rajeev, a 10 year old boy, went to an Ophthalmologist to get his eyes tested. He noticed a poster in the clinic with questions related to the parts of human eye. Help Rajeev answer the questions:

(a) Which is the fluid that lubricates the eye?

(b) Which cells help in colour vision?

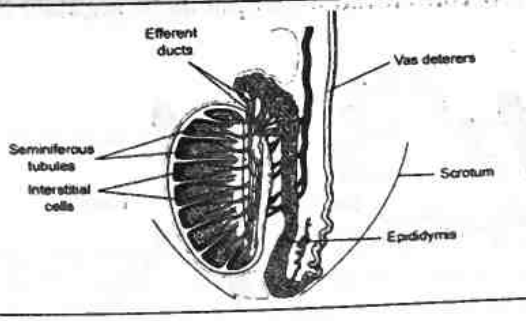
(c) Which nerve sends impulses from the eyeball to the brain?

(d) Name the structure that gives colour to the eyes.

(e) Name the part that allows entry of light rays into the eye. **[Application & Recall]**

(v) Study the diagram given below and match the structure with its function:

**Example: Scrotum - (f)**

| Structure | Functions |
|---|---|
|   | (a) Secrete Testosterone<br>(b) Transports sperms to Epididymis<br>(c) Stores sperms till maturation<br>(d) Transport sperms to urethra<br>(e) Produce sperms<br>(f) Regulates temperature of Testis. |

**[Understanding & Recall]**

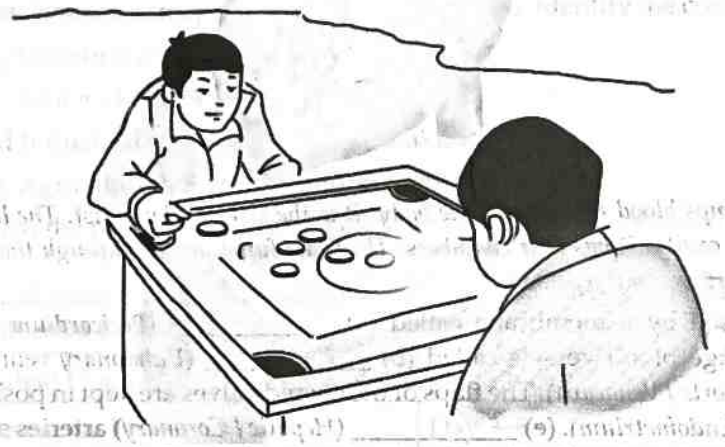
## Section-B (Attempt any four questions from this Section.)

**Question 3.**

(i) Explain the term *Menarche*. [1]
[Recall]

(ii) In what form is water lost during transpiration and guttation from plants? [2]
[Recall]

(iii) Ayush was in the final round of a carrom match. He was focussing intently on the strokes of the opponent player. [2]



(a) Which part of the brain helps Ayush to focus on the game?
(b) Name the part of the brain that co-ordinates his muscles while using the striker.
[Analysis & Application]

(iv) State the permeability of cell membrane and cell wall. [2]
[Recall]

(v) Draw a neat, labelled diagram of a cross section of an Artery and a Vein. [3]
[Understanding & Skill]

**Question 4.**

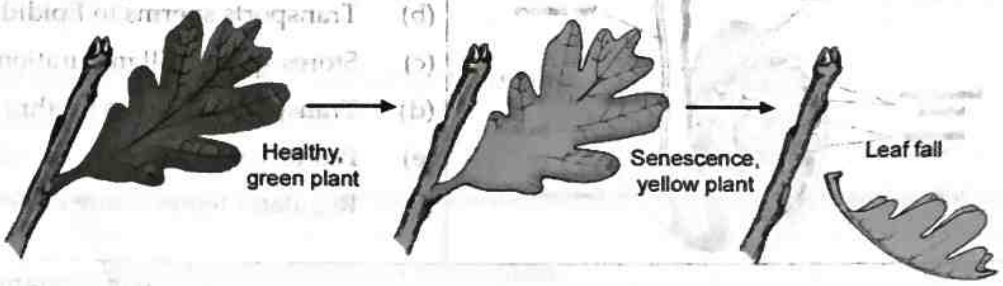
(i) What is Excretion? [1]
[Recall]

(ii) Differentiate between *Diabetes mellitus* and *Diabetes insipidus* with reference to the hormone involved. [2]
[Understanding]

(iii) Give the common name and the scientific name of the plant on which Gregor Mendel conducted his breeding experiments. [2]
[Recall]

(iv) Name the tonicity of the solutions for a living cell to show Endosmosis and Exosmosis. [2]
[Understanding & Recall]

(v) Plant hormones are produced in extremely low concentrations in plants to regulate the physiological processes and tropic movements: [3]



(a) Name one plant hormone responsible for the changes shown in the above picture.
(b) Identify a hormone that has an opposite effect to the one depicted in the picture.
(c) Give an example of a plant that shows Thigmotropism. **[Analysis & Application]**

**Question 5.**

(i) What are non-biodegradable wastes? **[1]**

(ii) Mention any two objectives of the *Swachh Bharat Abhiyan*. **[Understanding & Recall]**

(iii) Arrange the following *food chain* in a proper sequence: **[2]**
(a) Small fish, Penguin, Algae, Seal, Mosquito larvae
(b) Woodpecker, Caterpillar, Mountain lion, Fox, Cabbage **[Understanding]**

(iv) Mention the number of cranial nerves and spinal nerves in a human being. **[2]** **[Recall]**

(v) Surya used a plant with variegated leaves for an experiment on photosynthesis. He tested a leaf with iodine after keeping the plant in sunlight for a few hours. **[3]**

(a) Which parts of the leaf will turn blue black after the iodine test?
(b) What does this tell us about the role of chlorophyll in photosynthesis? **[Application & Recall]**
(c) Write the overall chemical equation for photosynthesis. **[1]**

**Question 6.**

(i) State Mendel's Law of Dominance. **[Recall]**

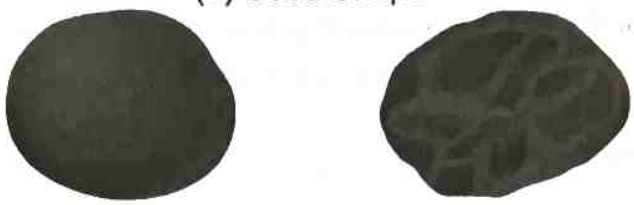
(ii) State the rate of transpiration when the air surrounding a plant has: **[2]**
(a) more atmospheric humidity. **[Understanding & Application]**
(b) hot and dry air. **[2]**

(iii) Expand the following abbreviations: **[Recall]**
(a) ACTH
(b) ADH

(iv) Which part of the ear equalizes air pressure on either side of the ear drum? Where is this structure located? **[2]** **[Understanding & Recall]**

(v) Santosh loved his garden, especially his pea plants. One year, he noticed that all the pea plants he grew from one batch of seeds had round seeds. Curious, he took the seeds from one of those plants and grew a new generation. To his surprise, 75% of the new plants had round seeds, but 25% had wrinkled seeds.

(1) Seed Shape



Round Wrinkled

(a) What were the genotypes of the parent plants that Santosh originally planted?

(b) Which trait is dominant – round or wrinkled seeds?

(c) What is the genotypic ratio of the second generation (F2) plants? [3]

[Analysis]

**Question7.**

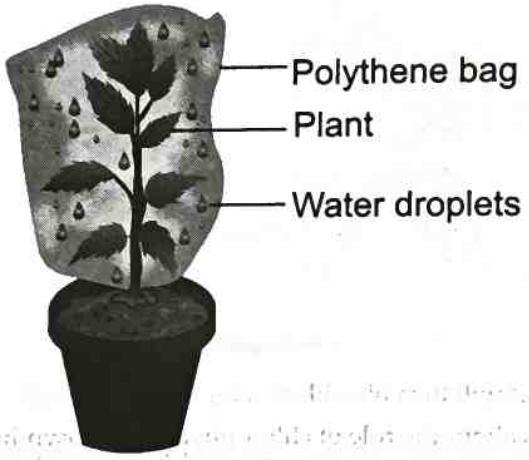
(i) Explain the term *Natality*. [1]

[Recall]

(ii) Distinguish between Sympathetic system and Parasympathetic system on the basis of heartbeat.

[Understanding & Recall]

(iii) Meena covered a potted plant as shown below with a transparent plastic bag. She observed water droplets inside the bag after a few hours when kept in sunlight. [2]




(a) Name the process that resulted in the formation of water droplets inside the bag.

(b) Define the process mentioned above. [Analysis & Application]

(iv) Mention the regions of the kidney where we can find glomerulus and Henle's loop. [2]

[Understanding & Recall]

(v) Draw a neat, labelled diagram to show the internal structure of a root hair. [3]

[Analysis & Application]

**Question 8.**

(i) How does the ozone layer depletion affect life on earth? [1]

[Application]

(ii) Mention two body features of *Australopithecus*. [2]

[Recall]

(iii) Identical twins are always of the same gender. Explain why. [2]

[Understanding]

(iv) We should not insert sharp objects into the ear to removes ear wax. Give a suitable reason. [2]

[Application]

(v) In a school experiment, a few students grow plants in pots placed horizontally as shown below. After a few days, the students observed that the roots bent downward, and the shoots curved upward. [3]

(a) Name the tropic movement seen in shoots.
(b) Why do roots always grow downwards?
(c) Which phytohormone regulates the above tropic movements? **[Analysis & Application]**

# Answers

## Section-A

**Answer 1.**

(i) (b) Erythropenia

**Explanation :**

Erythropenia is the condition where there is an abnormally low number of red blood cells (RBCs) in the blood. This can lead to symptoms like fatigue and weakness due to reduced oxygen transport. Polycythemia is an increase in RBCs, glycosuria is sugar in urine, and haemophilia is a bleeding disorder.

(ii) (d) Ethylene

**Explanation :**

Ethylene is a gaseous plant hormone that promotes the ripening of fruits. Ripe mangoes release ethylene, which acts on nearby unripe fruits, accelerating their ripening. This natural process is often used in fruit storage and transport. Auxins, cytokinins, and gibberellins mainly regulate growth and development, not ripening.

(iii) (c) Both (A) and (R) are true and (R) is the correct explanation of (A).

**Explanation :**

During the light-dependent phase of photosynthesis, sunlight splits water molecules in a process called photolysis. This reaction occurs in the thylakoid membranes of chloroplasts and produces oxygen, electrons, and protons. The oxygen is released as a byproduct. Hence, the reason correctly explains the assertion, as photolysis is the source of oxygen in photosynthesis.

(iv) (a) Adrenaline

**Explanation :**

Adrenaline is a hormone secreted by the adrenal medulla in response to stress or fear. It prepares the body for a 'fight or flight' response by increasing heart rate, respiration, and energy supply. During exam stress, adrenaline levels rise, causing emotional and physical stress symptoms. Thyroxine regulates metabolism, insulin controls blood sugar, and growth hormone aids development.

(v) (c) Phagocytosis

**Explanation :**

Neutrophils are a type of white blood cell involved in the body's defence mechanism. Their main function is phagocytosis—engulfing and destroying bacteria, dead cells, and harmful particles. They are the first line of defence during infection. They do not secrete hormones, transport food, or produce antibodies (which is the function of lymphocytes).

(vi) (a) (A) is true and (R) is false.

**Explanation :**

The assertion is true as pituitary gland is called the master gland because it controls the functions of many other **endocrine glands** by releasing hormones. However, the reason is incorrect because **exocrine glands** (like salivary or sweat glands) release substances through ducts and are not regulated by the pituitary gland.

(vii) (d) Adaptation of eyes

**Explanation :**

The dazzling effect Aruna experienced was due to the sudden change in light intensity. When she stepped from a dark theatre into bright sunlight, her pupils needed time to constrict. This process is called light adaptation. It allows the eyes to adjust to brightness gradually. It is not accommodation (focusing), mutation, or polarisation.

(viii) (c) require no conscious thought, allowing rapid responses.

**Explanation :**

Reflex actions are automatic, quick responses to stimuli that occur without involving the thinking brain. This allows the body to respond instantly to danger (like pulling away from a hot object), increasing chances of survival. They may or may not involve the spinal cord but are not controlled by the cerebrum or medulla oblongata in all cases.

(ix) (b) in polluted areas, became darker in colour for better camouflage.

**Explanation :**

Industrial melanism is an example of natural selection. In polluted areas, tree barks became dark due to soot. Dark-coloured (melanic) moths were better camouflaged and survived predation, while light-coloured were eaten. Over time, dark moths became more common in polluted regions.

(x) (c) Progesterone

**Explanation :**

Progesterone is secreted by the corpus luteum and later by the placenta during pregnancy. It maintains the thickened endometrium (uterine lining), ensuring proper implantation and nourishment of the embryo. Oestrogen helps in initial thickening, ACTH regulates adrenal function, and oxytocin helps in childbirth, not maintaining pregnancy.

(xi) (b) Menarche

**Explanation :**

Menarche is the first occurrence of menstruation in a female, marking the beginning of reproductive maturity. It usually occurs between ages 10 to 14. Menopause is the permanent stopping of menstruation, ovulation is the release of an egg, and oogenesis is the process of egg formation.

(xii) (b) 22 pairs of autosomes, 1 pair of allosome

**Explanation :**

Human cells have 23 pairs of chromosomes: There are 22 pairs of autosomes (non-sex chromosomes), and 1 pair of allosomes (sex chromosomes—XX in females, XY in males). These total 46 chromosomes are present in each somatic cell.

(xiii) (d) Tool making, Agricultural, Scientific and Industrial

**Explanation :**

The correct sequence of cultural revolutions that boosted human population is:

I. Tool making – early survival and hunting.
II. Agricultural – stable food supply enabled settlements.
III. Scientific and Industrial – improved medicine, hygiene, and technology, reducing death rates and increasing lifespan.

(xiv) (c) R, P, S, Q

**Explanation :**

The menstrual cycle phases occur in this order:

R – Menstrual Phase (Day 1–5): Shedding of uterine lining.
P – Follicular Phase (Day 5–12): Follicle develops in ovary.
S – Ovulatory Phase (Day 13–14): Ovum is released.
Q – Luteal Phase (Day 15–28): Corpus luteum forms, endometrium thickens.

(xv) (a) Cerebellum, Semicircular canals, Vestibule

**Explanation :**

The cerebellum in the brain controls balance and coordination. The semicircular canals and vestibule (in the inner ear) detect changes in head position and motion, helping maintain body balance, especially during activities like skating. Other options include unrelated parts like sclera (eye), malleus (ear bone), and cochlea (hearing), which are not involved in balance.

**Answer 2.**

(i) (a) Smog
(b) Endometrium
(c) Osmotic pressure
(d) Stroma
(e) Cerebrospinal fluid (CSF)

(ii) (a) Pericardium
(b) Pulmonary artery
(c) Aorta
(d) Chordae tendinae
(e) Coronary

(iii) (a) Odd term: Oxygen — Category: Air pollutants
(b) Odd term: Pons — Category: Plant tissues
(c) Odd term: Malleus — Category: Parts of the middle ear ossicles
(d) Odd term: Uterus — Category: Parts of the excretory system
(e) Odd term: Root hair — Category: Structures for gaseous exchange in plants

(iv) (a) Tear (Lacrimal) fluid
(b) Cone cells
(c) Optic nerve
(d) Iris
(e) Pupil

(v) Interstitial cells – (a) Secrete Testosterone
Efferent ducts – (b) Transports sperms to Epididymis
Epididymis – (c) Stores sperms till maturation
Vas deferens – (d) Transport sperms to urethra
Seminiferous tubules – (e) Produce sperms
Scrotum – (f) Regulates temperature of Testis

## Section-B

**Answer 3.**

(i) Menarche is the first occurrence of menstruation in human females, marking the onset of reproductive maturity. It usually occurs between the ages of 10 and 15 years.

(ii) **Forms of water loss:**

During transpiration, water is lost in the form of water vapour through stomata.

During guttation, water is lost in the form of liquid droplets from the tips or edges of leaves.

(iii) (a) **Cerebrum** – It helps Ayush to focus on the game by controlling thinking, reasoning, and voluntary actions.

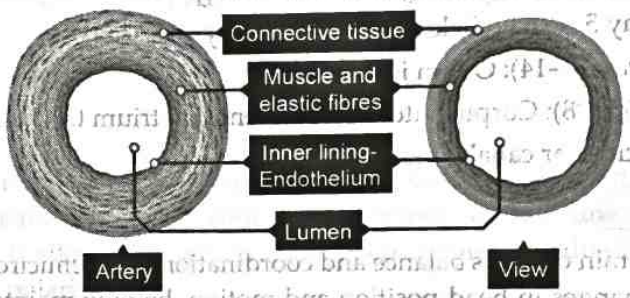
(b) **Cerebellum** – It co-ordinates the muscles and maintains balance and posture while using the striker.

(iv) **Permeability of cell membrane and cell wall:**

**Cell membrane:** Selectively permeable – allows only certain substances to pass through.

**Cell wall:** Freely permeable – allows all substances in solution to pass through.

(v) **Diagram:** Cross-section of an Artery and a Vein




**Answer 4.**

(i) Excretion is the biological process of removing metabolic waste products like urea, carbon dioxide, and excess salts from the body to maintain internal balance.

(ii) Difference between Diabetes mellitus and Diabetes insipidus (with hormone):

| Diabetes Mellitus | Diabetes Insipidus |
|---|---|
| 1. Due to hyposecretion of Insulin (produced by pancreas) | Due to hyposecretion of ADH / Vasopressin (produced by hypothalamus and stored in pituitary) |
| 2. **Impact:** High blood sugar due to lack of insulin. | **Impact:** Excessive urination due to lack of ADH. |

(iii) **Gregor Mendel's Plant:**

Common name: Pea plant

Scientific name: *Pisum sativum*

(iv) **Tonicity of solutions:**

Endosmosis: Hypotonic solution

Exosmosis: Hypertonic solution

(v) (a) **Abscisic acid** – It is responsible for leaf senescence and leaf fall shown in the picture.

(b) **Auxin**– It has the opposite effect; it delays leaf fall and promotes growth.

(c) **Example of thigmotropism:** Pea plant *(Pisum sativum)* – Its tendrils coil around a support in response to touch.

**Answer 5.**

(i) Non-biodegradable wastes are materials that cannot be broken down by natural decomposers like bacteria or fungi. They persist in the environment for a long time *e.g.*, plastic, glass, metals.

(ii) Two objectives of the *Swachh Bharat Abhiyan*:

1. To eliminate open defecation and promote sanitation.
2. To ensure proper solid waste management and maintain cleanliness in public spaces.

(iii) Proper sequence of food chains:
(a) Algae → Mosquito larvae → Small fish → Penguin → Seal
(b) Cabbage → Caterpillar → Woodpecker → Fox → Mountain lion

(iv) Cranial nerves: 12 pairs
Spinal nerves: 31 pairs

(v) (a) The green parts of the leaf will turn blue-black after the iodine test because they contain chlorophyll and perform photosynthesis, producing starch.
(b) This shows that chlorophyll is essential for photosynthesis. Only the areas containing chlorophyll (green parts) can trap sunlight, perform photosynthesis, produce starch, and turn blue-black when tested with iodine.
(c) Chemical equation for photosynthesis:

$$\underset{\text{(Carbon dioxide)}}{6CO_2} + \underset{\text{(Water)}}{6H_2O} \longrightarrow \underset{\text{(Glucose)}}{C_6H_{12}O_6} + \underset{\text{(Oxygen)}}{6O_2} + \underset{\text{(Water)}}{6H_2O}$$

**Answer 6.**

(i) **Mendel's Law of Dominance:**
When two alleles for a trait are present, one is dominant and masks the effect of the recessive allele in the heterozygous condition.

(ii) **Rate of transpiration:**
(a) Decreases – due to high atmospheric humidity, reducing the water vapor gradient.
(b) Increases – hot and dry air promotes rapid water loss from leaves.

(iii) **Abbreviations:**
(a) ACTH – Adrenocorticotropic Hormone
(b) ADH – Antidiuretic Hormone

(iv) **Ear structure:** Eustachian tube
**Location:** It connects the middle ear to the pharynx (throat) and equalises air pressure on both sides of the ear drum.

(v) (a) The genotypes of the parent plants Santosh originally planted were:
RR (homozygous round) × rr (homozygous wrinkled).
(b) Round seeds are dominant over wrinkled seeds.
(The presence of 75% round in F2 shows round is dominant.)
(c) The genotypic ratio of the $F_2$ generation (from Rr × Rr cross) is:
1 RR : 2 Rr : 1 rr
This gives 75% round (RR and Rr) and 25% wrinkled (rr).

**Answer 7.**

(i) Natality refers to the birth rate—the number of **live births per 1000 people** in a population **per year**. It increases the population size.

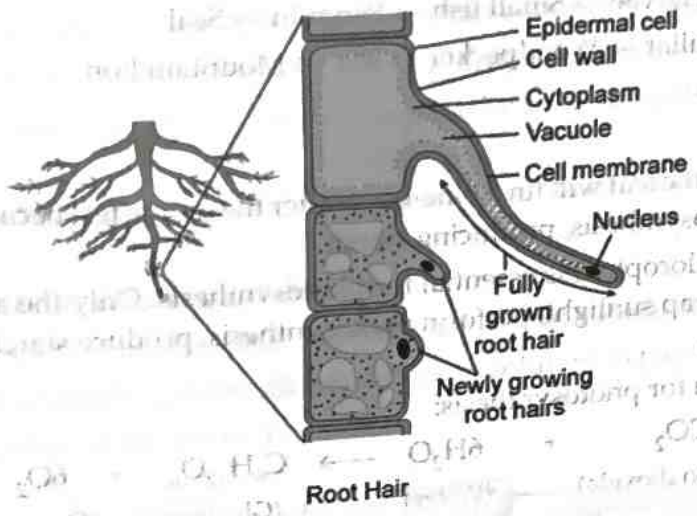
(ii) Difference based on heartbeat:

| Sympathetic System | Parasympathetic System |
|---|---|
| Increases heartbeat. | Decreases heartbeat and restores heartbeat to normal. |

(iii) (a) The process is called **Transpiration**.
(b) **Transpiration** is the process by which **water is lost as water vapour** from the aerial parts of the plant, mainly through the stomata on leaves. The water vapour condenses on the inner surface of the plastic bag, forming water droplets.

(iv) **Regions of the kidney:**
Glomerulus is found in the cortex of the kidney.
Henle's loop is located in the medulla of the kidney.

(v)




**Answer 8.**

(i) Ozone layer depletion increases the amount of ultraviolet (UV) radiation reaching Earth, which can lead to skin cancer, cataracts, reduced crop yields and harms marine life.

(ii) The body features of *Australopithecus*:

1. Chin absent
2. Prognathous (projecting) face
3. Prominent eyebrow ridges

(iii) Identical twins are always of the same gender because they develop from a single fertilised egg, which splits into two embryos with identical genetic material, including sex chromosomes.

(iv) Sharp objects can injure the ear canal or rupture the eardrum, which can cause pain, infection, or even permanent deafness. Hence, they should not be used to remove ear wax.

(v) (a) The tropic movement seen in shoots is Phototropism.

(b) Roots grow downwards because they are positively geotropic and hydrotropic.

(c) The phytohormone that regulates these tropic movements is auxin.

# 1 Sample Paper

## Biology

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answer only.)**

(i) (P) _____ is the name of the earliest hominid species that is considered to be a direct ancestor of (Q) _____.

(a) P – *Homo habilis*, Q – *modern humans*
(b) P – *Australopithecus*, Q – modern humans
(c) P – *Homo neanderthalensis*, Q – *Australopithecus*
(d) P – *Australopithecus*, Q – *Homo habilis*

(ii) Which of the following accurately describes the process of mitosis? **[Recall]**

(a) Mitosis is the division of a diploid cell into two haploid cells.
(b) Mitosis is the division of a cell into two identical daughter cells, each with the same number of chromosomes as the parent cell.
(c) Mitosis is the process by which genetic material is exchanged between homologous chromosomes.
(d) Mitosis is the formation of gametes through meiotic division.

(iii) The basal metabolic rate in body cells is regulated by: **[Analysis]**

(a) Parathyroid gland
(b) Thyroid
(c) Pituitary
(d) Thymus

(iv) Riya tried to match the plant hormones with their effects on the human body. She tabulated the pairs as follows: **[Recall]**

| Plant hormones | Effects on the plant body |
|---|---|
| P | Responsible for fruit ripening and leaf abscission |
| Q | Responsible for the growth of shoot tips and inhibiting lateral bud growth |

Identify the correct pair of hormones.

(a) P – Cytokinin, Q – Ethylene
(b) P – Ethylene, Q – Auxin
(c) P – Gibberellin, Q – Cytokinin
(d) P – Auxin, Q – Gibberellin

**[Understanding & Application]**

(v) A biology teacher asked her students to explain guttation in one line. Four students gave answers as follows:

**Meenu said:** Guttation involves the loss of water in the form of droplets from the margins of leaves.
**Krishi said:** Guttation primarily occurs through the stomata of plant leaves.
**Drishti said:** Guttation is a mechanism plants use to absorb water from the atmosphere.
**Rahul said:** Guttation is the process by which plants release oxygen during photosynthesis.

Who is correct?

(a) Meenu
(b) Krishi
(c) Drishti
(d) Rahul

**[Analysis]**

(vi) **Assertion (A):** Turgor pressure is responsible for the rigidity and firmness of plant cells.

**Reason (R):** Turgor pressure is generated when water enters plant cells, causing the cell to swell and exert pressure on the cell wall.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A)
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(vii) The period between two successive mitotic divisions is: **[Analysis]**
(a) Diakinesis
(b) Interphase
(c) Anaphase
(d) Mitosis

(viii) Which sequence correctly represents the stages of light reaction? **[Recall]**
(a) Photolysis → Formation of ATP → Activation of chlorophyll
(b) ATP formation → Photolysis → Activation of chlorophyll
(c) Activation of chlorophyll → Photolysis → ATP formation
(d) Activation of chlorophyll → ATP formation → Photolysis **[Understanding]**

(ix) A doctor tapped a hammer just below Aryan's knee as shown in the image below, and his lower leg jerked forward automatically.

What type of response did the doctor test?
(a) Voluntary response
(b) Reflex action
(c) Conditioned response
(d) Hormonal response **[Analysis]**

(x) **Assertion (A) :** The proximal convoluted tubule (PCT) of the nephron provides a large surface area for absorption.

**Reason (R):** The PCT is responsible for reabsorbing most of the solutes and water from filtrate.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A)
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A) **[Application]**

(xi) Reena tried to match the stages of human fertilisation and development with their descriptions.

| Stage | Description |
|---|---|
| p – Implantation | Embedding of zygote in uterine lining |
| Q – Fertilisation | Fusion of gametes |
| R – Parturition | Birth of the baby |
| S – Gestation | Period of embryo development |

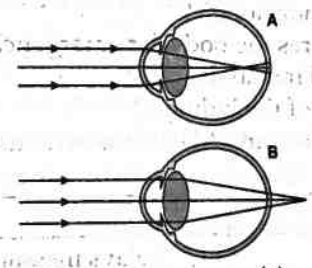
Identify the correct biological sequence:
(a) Q, P, S, R
(b) P, Q, S, R
(c) S, Q, P, R
(d) P, S, Q, R **[Application]**

(xii) Duplicated chromosomes are joined at a point termed:
(a) Centrosome
(b) Centromere
(c) Zygotene
(d) Chromatid **[Understanding]**

(xiii) In a quiz competition, Adil answered a question about India's rising population. He correctly mentioned some effects and solutions.

Identify the correct terms related to population control:
(a) Tubectomy, Vasectomy, Family planning
(b) Vaccination, Pollution, Peristalsis
(c) Gametes, Parturition, Pulse
(d) Mutation, Variation, Thermoregulation **[Analysis & Application]**

(xiv) Identify the two diagrams:

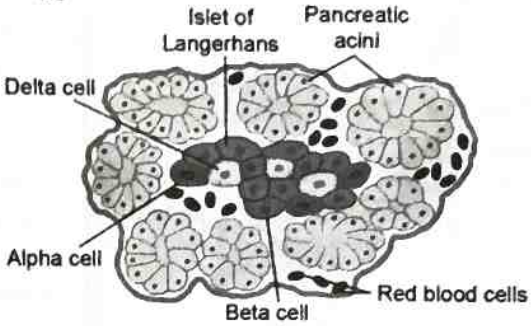



(a) A → Myopia and B → Presbyopia
(b) A → Hypermetropia and B → Myopia
(c) A → Myopia and B → Hypermetropia
(d) A → Hypermetropia and B → Presbyopia **[Analysis]**

(xv) A gardener notices that the stems of his potted plants are bending towards the window where sunlight enters. He wonders why this is happening and suspects that a plant response called geotropism might be involved.
What is the main factor influencing the bending of the stems towards the window?
(a) Phototropism
(b) Thigmotropism
(c) Geotropism
(d) Hydrotropism **[Analysis]**

**Question 2.**
(i) Name the following:
(a) The process of division of cytoplasm of a parent cell.
(b) It is a pore in the periderm of a woody stem. It acts as an organ of gaseous exchange.
(c) It is the phase during which the cell is in rest phase and does not divide.
(d) Naturally occurring organic chemical substances present in plants that control and coordinate their various activities.
(e) Process of removing excretory products from the body by artificial means. **[Recall]**

(ii) Read the information below the diagram and fill in the blanks:
Pancreas is both a duct gland as well as a ductless gland, so it is known as heterocrine gland. As a duct gland it secretes digestive juices which break down nutrients. As a ductless gland, it has Islets of Langerhans, for hormone secretion. These Islets secrete three hormones-insulin, glucagon and somatostatin from different types of cells.

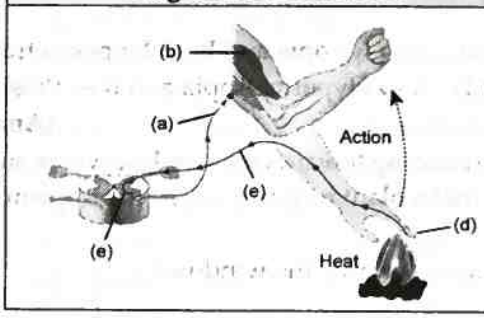



.....(a)..... is a hormone secreted by the .....(b)..... in response to the detection of .....(c)..... blood sugar levels in the body. It enhances cellular uptake and stimulates deposition of extra glucose of the body as .....(d)..... in the liver and muscles. Insufficient secretion of insulin results in ..... (e)..... **[Recall & Application]**

(iii) Identify the odd one out from the following terms and name the category to which other three belong.
(a) Glomerulus, Collecting Duct, Papilla, Bowman's capsule, PCT
(b) Detergent, sewage, X-Rays, Oil spills
(c) Myopia Hypermetropia, Xerophthalmia, Astigmatism Eye disorders
(d) Immigration, Decline in death rate, Emigration, Increase in birth rate
(e) Oxytocin, Insulin, Prolactin Progesterone **[Understanding & Application]**

(iv) At a health awareness seminar, Ishita saw a chart titled "The Body's Chemical Messengers" showing glands and their hormones. She learned how different hormones affect body functions. Help Ishita answer the questions:
(a) Which hormone regulates blood sugar levels by lowering it?
(b) Which gland secretes growth hormone?
(c) Name the hormone that prepares the body for emergencies.
(d) Which hormone controls basal metabolic rate?
(e) Which gland is located on top of the kidneys? **[Application & recall]**

(v) Given below is a diagram of a reflex arc. Match the structures marked (a) to (e) with their correct functions.

| Diagram of a reflex arc | Functions |
|---|---|
|   | (1) Relays messages from sensory to motor neurons |
| | (2) Carries impulses from the spinal cord to the effector muscle |
| | (3) Carries impulses from the receptors to the spinal cord |
| | (4) Receives impulses from the spinal cord to carry out action |
| | (5) Detect the stimulus |

**[Understanding & Analysis]**

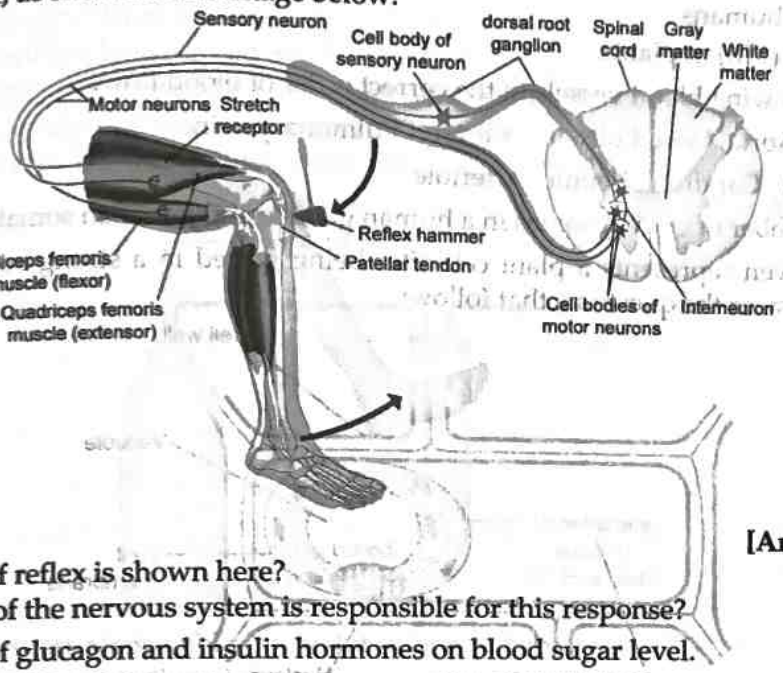
## Section-B (Attempt any four questions from this section)

**Question 3.**

(i) Using only a flowchart write the path of oxygen from nostrils to respiring tissue cells. **[Understanding & creative skill]**

(ii) Mention the symptoms and causes for following case:
(a) Diabetes insipidus
(b) Diabetes mellitus **[Recall]**

(iii) During a physical exam, Dr. Meera tapped her patient's Achilles tendon, causing a reflex contraction of the calf muscle, as shown in the image below:




[Analysis & Application]

(a) What type of reflex is shown here?

(b) Which part of the nervous system is responsible for this response?

(iv) Write the effect of glucagon and insulin hormones on blood sugar level. [Recall]

(v) Draw a neat and well-labelled diagram of the apparatus you would set up to show that oxygen is given out during photosynthesis. [Understanding & creative skill]

Question 4.

(i) State Asexual Reproduction. Can you consider cell division as a type of reproduction in unicellular organisms? Justify. [Recall & Understanding]

(ii) What differences are there in number, structure and activity of the male and female gametes in human ? [Analysis]

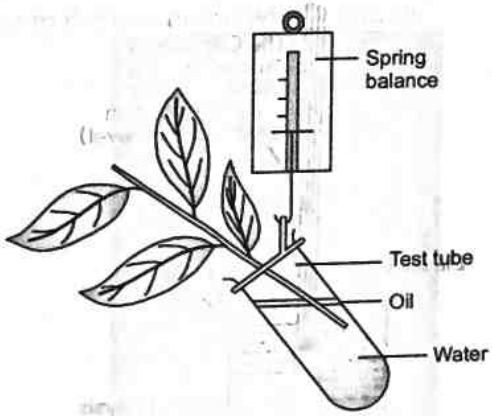
(iii) What is the scientific name of the plant used by Barbara McClintock in her research on transposable elements? [Recall]

(iv) Give one example of the plant part: [Understanding]

(a) which is positively hydrotropic and geotropic.

(b) which is negatively geotropic and positively phototropic.

(v) Given below is a diagram to demonstrate a certain process. Study the same and answer the questions that follow: [Recall & Analysis]




(a) Name the process demonstrated here.

(b) What is the purpose of the spring balance in the set-up?

(c) Suggest a suitable control for this experiment.

Question 5.

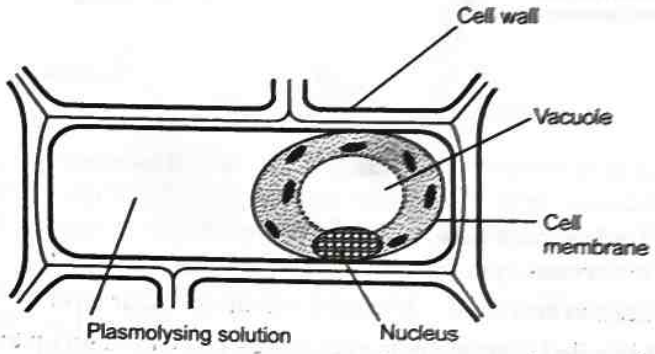
(i) Write in detail 3 main parts of a chromosome. [Recall]

(ii) Mention the significance of the following minerals: [Application]
(a) Iron (Fe) in humans
(b) Manganese (Mn) in plants

(iii) Arrange the following blood vessels in the correct order of blood flow: [Understanding]
(a) Capillary, Aorta, Vein, Pulmonary artery, Pulmonary vein,
(b) Vein, Artery, Capillary, Venule, Arteriole

(iv) Mention the number of chromosomes in a human gamete and a human somatic cell. [Recall]

(v) The diagram given represents a plant cell after being placed in a strong sugar solution. Study the diagram and answer the questions that follow:




(a) What is the state of the cell shown in the diagram?
(b) Name the structure that acts as a selectively permeable membrane.
(c) State any two features of the above plant cell which are not present in animal cells.

**Question 6.** [Analysis and Recall]

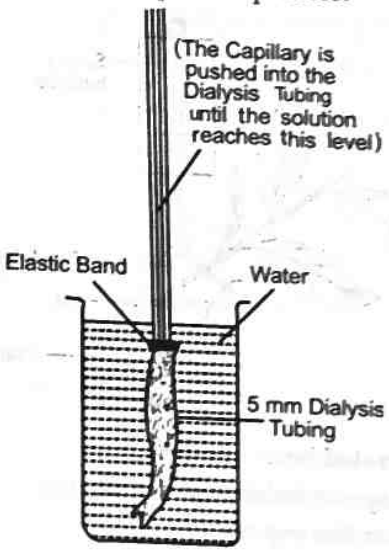
(i) Answer the following : [Recall]
(a) The way phytohormones can interact with one another.
(b) Average heart rate.

(ii) Describe the hormone dependent chemical and natural methods of birth control with example practiced in India. [Understanding]

(iii) Expand the following abbreviations: [Recall]
(a) ADH (b) TSH

(iv) During Mitosis what is the position of chromatids in: [Recall]
(a) Metaphase (b) Anaphase

(v) The apparatus arranged here signifies an important process. [Analysis & Understanding]



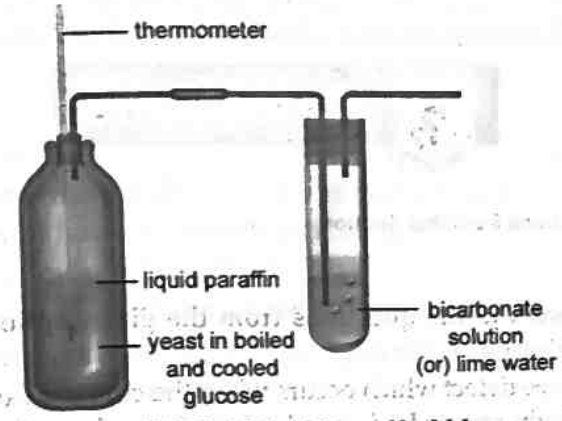

(a) Name the process.
(b) Where does this process occur in plants?
(c) What solution is placed inside the dialysis tubing?

**Question 7.**

(i) What is Parthenocarpy? Give one example. **[Recall]**

(ii) Differentiation between Lamarckism and Darwinism. **[Understanding]**

(iii) During an experiment on respiration, a student observed bubbles being released from a yeast culture, indicating the production of gas. The student ensured that the temperature and pH levels were optimal for the yeast culture. The bubbles were formed as a result of anaerobic respiration occurring in the yeast cells. **[Analysis & Application]**




(a) Name the process responsible for the formation of bubbles.

(b) Define the process mentioned above. **[Recall]**

(iv) State the location of:

(a) Medulla of the kidney

(b) Chordae tendineae

(v) With the help of a ray diagram show the defects of the eye and then their correction after use of lens. **[Understanding & Application]**

**Question 8.**

(i) State the function of aqueous humour. **[Application]**

(ii) State True or False for the following and correct the sentence if False: **[Analysis]**

(a) Cones are the receptor cells in the retina of the eye that are sensitive to the dim light.

(b) The unit of light absorbed by the chlorophyll during photosynthesis is the proton.

(iii) Give reason: **[Analysis]**

(a) In honey bees, the female is diploid and the male is haploid.

(b) Use of CFCs is banned in some countries. **[Analysis]**

(iv) Give reason: All life on earth would come to an end if there were no green plants. **[3]**

(v) Kathak is an Indian classical dance which involves a lot of spinning by the dancers. The learners of this dance experience dizziness in the beginning while spinning.

(a) Name the part of the membranous labyrinth responsible for this dizziness.

(b) Give a suitable reason for your answer. **[Analysis & Application]**

(c) Mention the nerve that carries the impulse for dizziness to the brain. ❑❑

# 2 Sample Paper

## Biology

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answer only.)**

(i) (P) _____ is the eye defect which occurs when the curvature of the cornea or lens becomes (Q) _____, causing light rays to be focused unevenly on the retina. **[Analysis]**

(a) P – Astigmatism, Q – irregular
(b) P – Myopia, Q – regular
(c) P – Myopia, Q – irregular
(d) P – Astigmatism , Q – regular

(ii) Riddhi tried to match the parts of the human ear with their functions. She tabulated the pairs as follows:

| Part of the eye | Function |
|---|---|
| P | Detects changes in air pressure and helps with balance |
| Q | Converts sound waves to electrical impulses that can be perceived by the brain |

Identify the correct pair of part of the eye and its function. **[Understanding & Application]**

(a) P – Semi-circular canals, Q – Cochlea
(b) P – Eustachian tube, Q – Semi-circular canals
(c) P – External auditory canal, Q – Cochlea
(d) P – Cochlea, Q – Eustachian tube

(iii) Which part of the eye is grafted in a needy patient from a donated eye? **[Recall]**

(a) Conjunctiva
(b) Choroid
(c) Cornea
(d) Ciliary muscle

(iv) Four students were asked to draw a flowchart showing the sequence of events in a reflex arc as follows:

Radhika drew: Sensory neuron → Spinal cord → Motor neuron → Effector
Rohan drew: Sensory neuron → Effector → Spinal cord → Motor neuron
Vishal drew: Spinal cord → Sensory neuron → Motor neuron → Effector
Mitali drew: Effector → Sensory neuron → Spinal cord → Motor neuron

Who is/are correct? **[Analysis]**

(a) Radhika and Vishal
(b) Mitali and Rohan
(c) Radhika only
(d) Rohan only

(v) Which structure contains the lowest concentration of urea? **[Application]**

(a) Afferent arteriole
(b) Collecting tubule
(c) Efferent arteriole
(d) Glomerulus

(vi) Which of the following correctly represents the path of blood in systemic circulation?

(a) Right atrium → Right ventricle → Lungs → Body
(b) Left atrium → Left ventricle → Body → Right atrium
(c) Body → Lungs → Heart → Brain
(d) Right ventricle → Body → Lungs → Left atrium **[Understanding]**

(vii) **Assertion (A):** The head of the sperm contains tightly packed chromosomes. **[Recall & Application]**
**Reason (R):** The head of the sperm is primarily responsible for the motility of the sperm.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.

(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A).

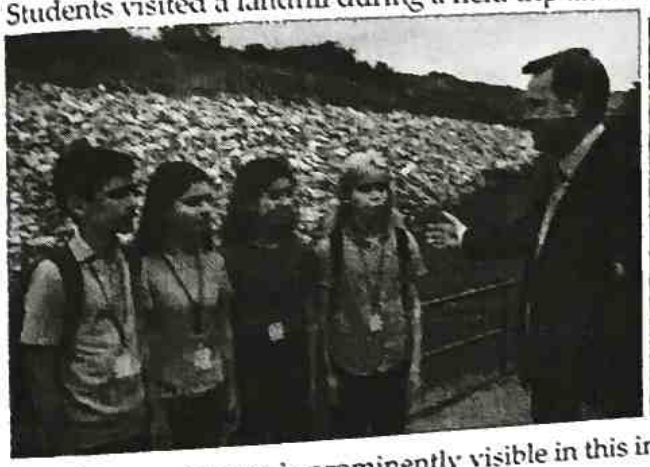
(viii) The space between the cell wall and plasma membrane in a plasmolysed cell is filled with: [Recall]
(a) Isotonic solution
(b) Hypotonic solution
(c) Hypertonic solution
(d) Water

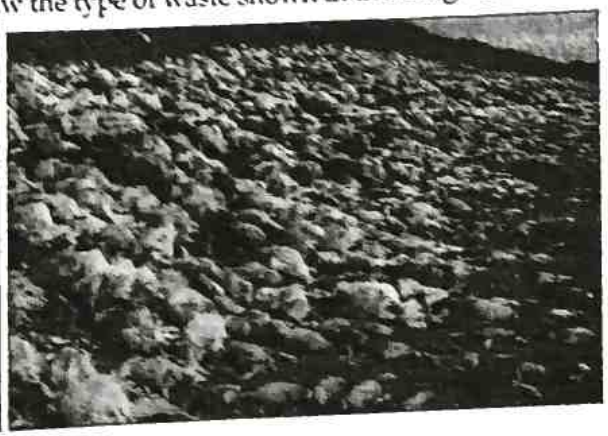
(ix) **Assertion :** Lymph is similar to blood plasma but lacks red blood cells and platelets.
**Reason:** Lymph transports nutrients and oxygen to cells and removes carbon dioxide and metabolic waste. [Understanding & Application]
(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(x) The beating of the heart is heard on the left side, because: [Analysis]
(a) The left ventricle is towards the left side.
(b) Both the ventricles are toward the left side.
(c) Contraction of the heart is powerful at the open which is on the left side.
(d) The dorsal aorta is on the left side.

(xi) Which of the following statements best reflects the critical role of the nephron in kidney function? [Analysis]
(a) The nephron is responsible for regulating the pH of the blood.
(b) The nephron plays a vital role in maintaining water balance in the body.
(c) The nephron primarily functions to filter red blood cells from the blood.
(d) The nephron is responsible for the production of hormones that regulate blood pressure.

(xii) Students visited a landfill during a field trip and saw the type of waste shown in the image below.





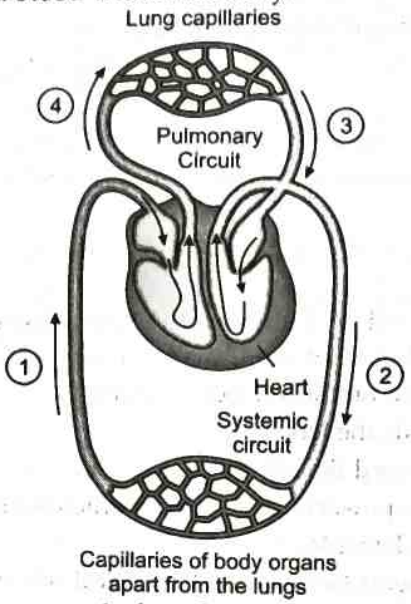
Which type of waste is prominently visible in this image? [Analysis]
(a) Biodegradable
(b) Organic
(c) Non-biodegradable
(d) Biomedical

(xiii) Aadya prepared a table listing steps involved in the movement of water through a plant.

| Stage | Function |
|---|---|
| P – Xylem Conduction | Water rises through stem |
| Q – Root Absorption | Water enters root hairs |
| R – Stomatal Transpiration | Water lost as vapour |
| S – Adhesion & Cohesion | Pulling force generated |

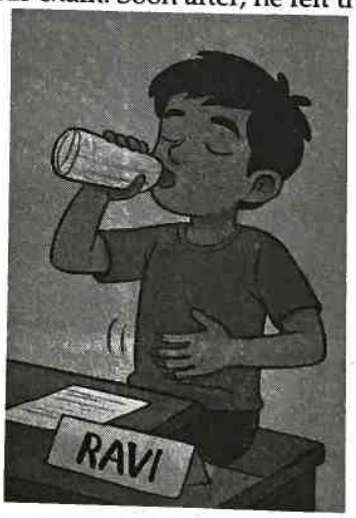
Choose the correct upward water movement sequence: [Application]
(a) Q, P, S, R
(b) P, S, Q, R
(c) S, P, Q, R
(d) R, Q, S, P

(xiv) Study the diagram and choose the correct labelling from the following for double circulation of oxygenated and deoxygenated blood within the body. **[Analysis]**




(a) 1- Aorta to body, 2- Pulmonary vein from lungs, 3- Vena cava from body, 4- Pulmonary artery to lungs
(b) 1- Vena cava from body, 2- Aorta to body, 3- Pulmonary artery to lungs, 4- Pulmonary vein from lungs
(c) 1- Aorta to body, 2- Vena cava from body, 3- Pulmonary vein from lungs, 4- Pulmonary artery to lungs
(d) 1- Vena cava from body, 2- Aorta to body, 3- Pulmonary vein from lungs, 4- Pulmonary artery to lungs

(xv) Ravi drank a lot of water before his exam. Soon after, he felt the urge to urinate.




Identify the correct terms related to the process that helps remove this excess water from his body:
(a) Nephron, Glomerulus, Tubular secretion
(b) Cortex, Ureter, Capillaries
(c) Loop of Henle, Liver, Urethra
(d) Kidney, Urinary bladder, Lymph

**Question 2.** **[Analysis & Application]**

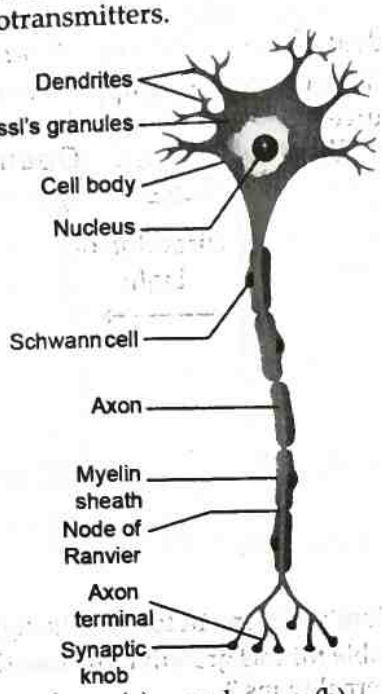
(i) Name the following:
(a) The process by which kidneys regulate the water content of the body.
(b) Nerve which conveys the information related to smell.
(c) The organic ion present in chlorophyll.

(d) Structure present on the leaves through which the exchange of gases occurs. **[Recall]**

(e) It increases blood glucose levels by converting glycogen into glucose.

(ii) Read the information below the diagram and fill in the blanks.

The axon is a long process that arises from the cell body with the branched distal end. Each branch at the distal end of the axon terminates into a bulb like structure called synaptic knob which possesses synaptic vesicles filled with neurotransmitters.




There are two types of axons, namely, ...(a)....and.....(b)..... . The myelinated nerve fibres are enveloped with.....(c)..... , which form a myelin sheath around the axon. The gaps between two adjacent myelin sheaths are called.....(d)..... . .....(e).....is the plasma membrane of Schwann cells. **[Recall & Application]**

(iii) Choose the odd one out from the following terms and name the category to which the others belong.

(a) Eutrophication, Oil spills, Algal bloom, Acid rain Cause or effect of water pollution

(b) Testes, Prostate gland, Seminal vesicle, Cowper's gland Accessory male reproductive organs

(c) Vegetable peels, sewage, DDT, Livestock waste

(d) Oxytocin, Follicle stimulating hormone, Somatotropin, Prolactin.

(e) Absolute bipedalism, forehead receding with ape like head, about 1450 cm3 cranial capacity, reduced hair on body. **[Understanding & Application]**

(iv) Meera, while preparing for her biology practical, saw a labelled model of the human excretory system in the lab. She wanted to revise the structure and function of its parts. Help Meera answer the questions:

(a) Name the organ that filters urea from the blood.

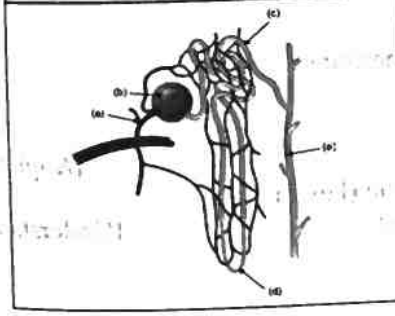
(b) What is the tube that carries urine from the kidneys to the bladder?

(c) Which blood vessel carries oxygenated blood to the kidney?

(d) What is the cup-shaped structure in the nephron called?

(e) What pigment gives urine its yellow colour? **[Application & recall]**

(v) Given below is the structure of a nephron. Match the structures marked (a) to (e) with their correct functions.

| Structure of a nephron | Functions |
|---|---|
|  | (1) Collects urine from the nephrons to pass on to the ureters |
| | (2) Filters the blood |
| | (3) Brings blood to the kidneys for filtration |
| | (4) Reabsorbs essential elements from the filtrate to maintain homeostasis |
| | (5) Helps to reabsorb water and NaCl from the filtrate |

**[Understanding & Analysis]**

## Section-B (Attempt any four questions from this section)

**Question 3.**

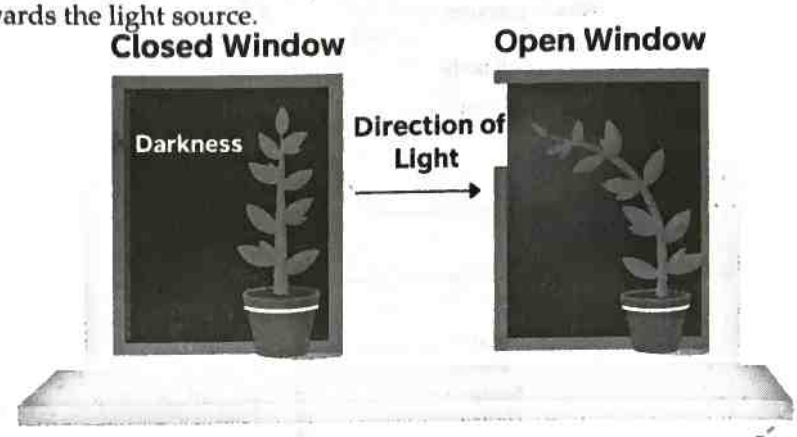
(i) Define Osmoregulation. **[Recall]**

(ii) Classify the following actions as simple reflex or conditioned reflex: **[Analysis]**

(a) Playing a guitar.

(b) Removing your hand suddenly when pricked by a thorn.

(iii) Vikram placed a plant in a box with only one side open to light. After a few days, he observed that the plant bent towards the light source.




**[Analysis & Application]**

(a) What term describes the plant's movement toward the light?

(b) Which hormone is responsible for this growth movement?

(iv) Condition for identical and fraternal twins ? **[Understanding]**

(v) Draw a pie diagram showing the relative contribution of different greenhouse gases to global warming. **[Recall & Analysis]**

**Question 4.**

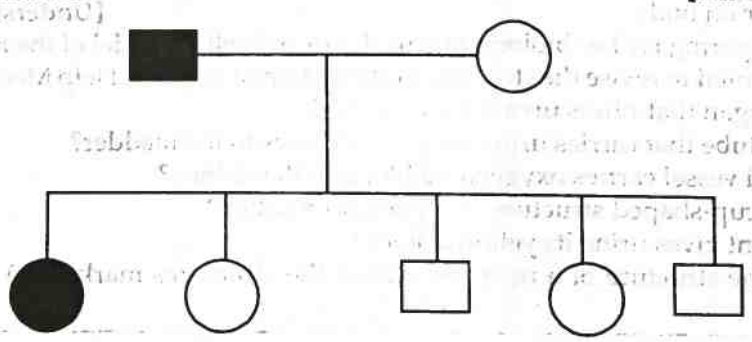
(i) Explain the term – Active transport. **[Recall]**

(ii) Differentiate between Turgor pressure and Wall pressure. **[Analysis]**

(iii) What is the scientific name of the mold used by Alexander Fleming to discover penicillin? **[Recall]**

(iv) Effect of Turgidity and Flaccidity condition on cell. **[Analysis]**

(v) The below pedigree chart shows the inheritance of trait colour-blindness. Study the chart and answer the following questions: **[Analysis & Understanding]**



(a) What does the solid circle indicate in the chart above?

(b) On which chromosome is the gene of this trait located?

(c) Name another trait which follows a similar pattern of inheritance.

**Question 5.**

(i) Define Pollution. **[Recall]**

(ii) Mention the significance of the following minerals: **[Application]**

(a) Sodium (Na): in human (b) Iron (Fe): in plants

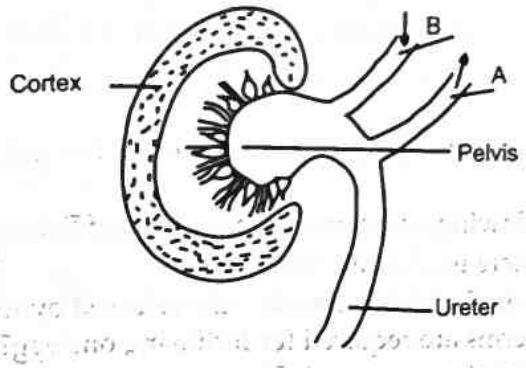
(iii) Arrange the following ecological levels from smallest to largest: **[Understanding]**

(a) Population, Biosphere, Community, Ecosystem, Biome

(b) Habitat, Species, Population, Community, Ecosystem

(iv) Mention the number of days in an average menstrual cycle and the number of phases in it. **[Recall]**

(v) Given below is a simple diagram of the human kidney cut open longitudinally. Answer the following questions : **[Recall]**




(a) Define excretion.

(b) Name the units of the kidney.

(c) Why does the cortex of the kidney show a 'dotted' appearance?

**Question 6.**

(i) Define Biodiversity. **[Recall]**

(ii) Write the condition for Short-sightedness and Long-sightedness. **[Application]**

(iii) Expand the following abbreviations: **[Recall]**

(a) IAA

(b) ABA

(iv) What is the significance of Testes being placed in Scrotal sacs? **[Analysis]**

(v) Study the picture given below and answer the following questions: **[Analysis & Understanding]**

(a) Identify the type of pollution.

(b) Name one pollutant that causes the above pollution.

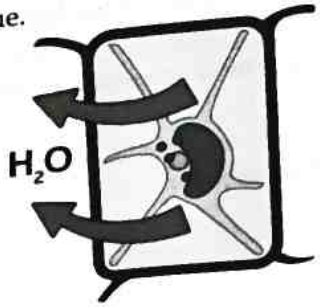
(c) Mention the impact of this pollution on human health.

**Question 7.**

(i) What is the function of the palisade parenchyma in a leaf? **[Application]**

(ii) Differentiate between Autotrophs and Heterotrophs. **[Understanding]**

(iii) A student observed that when a piece of tissue was immersed in a salt solution, it shrank after a few hours, with water moving out of the cells. This happened due to the difference in water concentration between the solution and the tissue.




**[Analysis & Application]**

(a) Name the process that caused the tissue to shrink.
(b) Define the process mentioned above. [Recall]

(iv) Site of synthesis of auxin and cytokinin.

(v) Draw well-labelled diagrams of (a) Artery and (b) Vein, to show the structural difference between them. [Understanding & Creative]

**Question 8.**

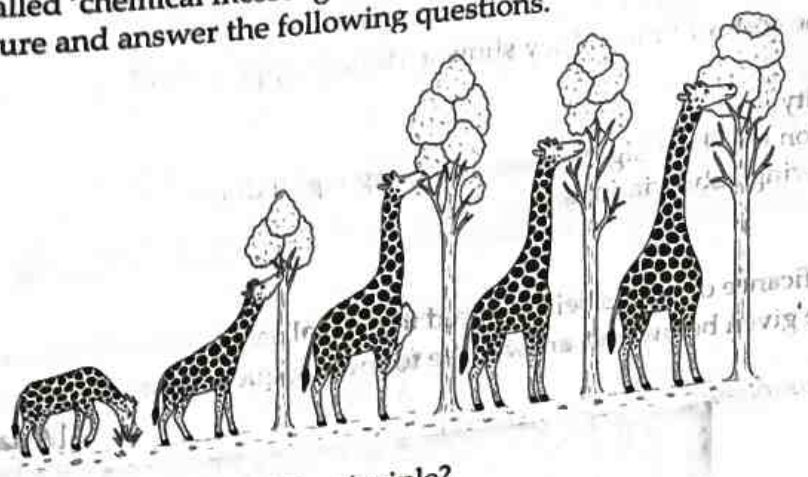
(i) Drops of water on a leaf of a plant like peepal do not enter the leaf by osmosis. Give reason. [Understanding]

(ii) State True/False for the following and correct the sentence if False: [Analysis]
(a) Ozone in the troposphere is a harmful pollutant.
(b) The cilia lining of the oviduct funnel pushes the released ovum into the uterus. [Understanding]

(iii) Why a large number of sperms are required for fertilising one egg? [Understanding]

(iv) Hormones are called 'chemical messengers'. Give reason. [Recall]

(v) Observe the picture and answer the following questions.



(a) The given picture indicates which principle?
(b) Explain the principle.
(c) What is the meaning of acquired characteristics?

□□

# 3 Sample Paper

## Biology [Unsolved]

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answer only.)**

(i) (P) _____ is the driving force behind (Q) _____ in plants, causing water to move from the roots to the upper parts of the plant.

(a) P – Capillarity , Q – Osmotic pressure

(b) P – Turgor pressure, Q – Transpiration pull

(c) P – Transpiration pull, Q – water movement

(d) P – Transpiration pull , Q – Turgor pressure **[Application]**

(ii) During an experiment, plant roots were placed in a solution. The expected effect on water absorption and root pressure was noted as follows:

| Solution | Effects |
|---|---|
| P | Decrease in water absorption and root pressure |
| Q | Increase in water absorption and root pressure |

Identify the pair indicating the correct types of solutions P and Q.

(a) P – Hypertonic solution, Q – Isotonic solution

(b) P – Isotonic solution, Q – Hypertonic solution

(c) P – Hypotonic solution, Q – Hypertonic solution

(d) P – Hypertonic solution, Q – Hypotonic solution **[Understanding & Application]**

(iii) A cardiologist performed an echocardiogram on a patient and noticed that the left ventricle had a thicker muscular wall compared to the right ventricle. The cardiologist wanted to determine the reasons behind this difference.

(a) The left ventricle pumps oxygenated blood to the body, requiring a thicker muscular wall for stronger contractions and higher pressure.

(b) The right ventricle pumps deoxygenated blood to the lungs, allowing for efficient blood flow and gas exchange with a thinner muscular wall.

(c) The left ventricle accommodates and pumps a larger volume of blood from the left atrium, necessitating a thicker muscular wall.

(d) The right ventricle maintains cardiac efficiency with a thinner muscular wall due to its lower oxygen demand. **[Recall]**

(iv) A biology teacher asked her students to tell the expected phenotypic and genotypic ratios of the offspring in a monohybrid cross between two heterozygous individuals (Tt x Tt). Four students gave answers as follows:

Student I said: 1 : 2 : 1 is the expected genotypic ratio.

Student II said: 3 : 1 is the expected phenotypic ratio.

Student III said: 9 : 3 : 3 : 1 is the expected genotypic ratio.

Student IV said: 1 : 1 is the phenotypic genotypic ratio.

Who is/are correct?

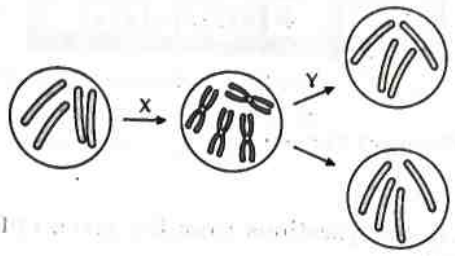
(a) Students I and II

(b) Students III and IV

(c) Student III only

(d) Student II only

(v) The diagram given below shows the formation of new diploid cells. **[Analysis]**




What do arrows X and Y represent?

| | X | Y |
|---|---|---|
| (a) | Duplication of chromosomes | meiosis |
| (b) | Duplication of chromosomes | mitosis |
| (c) | Meiosis | duplication of chromosomes |
| (d) | Mitosis | duplication of chromosomes |

**[Analysis]**

(vi) **Assertion (A):** Hormones are chemical messengers that regulate various physiological processes in the human body.

**Reason (R):** Hormones are secreted by endocrine glands and transported through the bloodstream to target cells, where they bind to specific receptors and initiate a response.

(a) (A) is true and (R) is false.

(b) (A) is false and (R) is true.

(c) Both (A) and (R) are true and (R) is the correct explanation of (A)

(d) Both (A) and (R) are true but (R) is not the correct explanation of (A) **[Recall]**

(vii) Which of the following shows the correct sequence of urine formation in a nephron?

(a) Tubular secretion → Filtration → Reabsorption

(b) Filtration → Tubular secretion → Reabsorption

(c) Filtration → Reabsorption → Tubular secretion

(d) Reabsorption → Filtration → Tubular secretion **[Understanding]**

(viii) At the junction of choroid, and iris, lies the _____.

(a) Fovea centralis

(b) Ciliary body

(c) Optic nerve

(d) Cornea **[Recall]**

(ix) A plant cell may burst when:

(a) Turgor pressure equalizes wall pressure

(b) Turgor pressure exceeds wall pressure

(c) Wall pressure exceeds turgor pressure

(d) None of these **[Understanding]**

(x) Rahul was running a race during sports day. As he completed the race, a health volunteer checked his pulse using two fingers on his wrist, as shown in the image below.

What exactly was the volunteer measuring?

(a) Blood pressure
(b) Pulse rate
(c) Systolic pressure only
(d) Heart sound **[Analysis]**

(xi) The mineral ion needed for the formation of the blood clot is:

(a) Potassium
(b) Calcium
(c) Sodium
(d) Iron **[Recall]**

(xii) Ishaan noted down the events of the cardiac cycle and their descriptions.

| Event | Description |
|---|---|
| P – Ventricular Systole | Contraction of ventricles |
| Q – Atrial Systole | Contraction of atria |
| R – Joint Diastole | Relaxation of both atria and ventricles |
| S – Closure of Valves | Prevents backflow of blood |

Identify the correct sequence of the cardiac cycle events:

(a) Q, P, S, R
(b) R, P, Q, S
(c) Q, P, R, S
(d) P, S, Q, R **[Application]**

(xiii) **Assertion (A):** Industrial waste is a significant contributor to water pollution.

**Reason (R):** Industrial waste often contains hazardous chemicals and heavy metals that can contaminate water bodies and harm aquatic life.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A)
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A) **[Understanding]**

(xiv) Ishaan was trekking at a high altitude. He noticed that he was breathing faster and felt light-headed. His teacher explained the body's response to altitude.

Identify the correct terms:

(a) Hypoxia, Breathing rate, Red blood cells

(b) Pulse, Lymph, Diaphragm
(c) Trachea, Gastric juice, Alveoli
(d) Synapse, Bronchi, Mutation **[Analysis & Application]**

(xv) A student conducted an experiment to investigate the opening and closing of stomata in plant leaves. He observed that the stomata were open during the day but closed at night. He wanted to determine the factors responsible for this phenomenon.

What is the most likely reason for the observed opening and closing of stomata in the plant leaves?

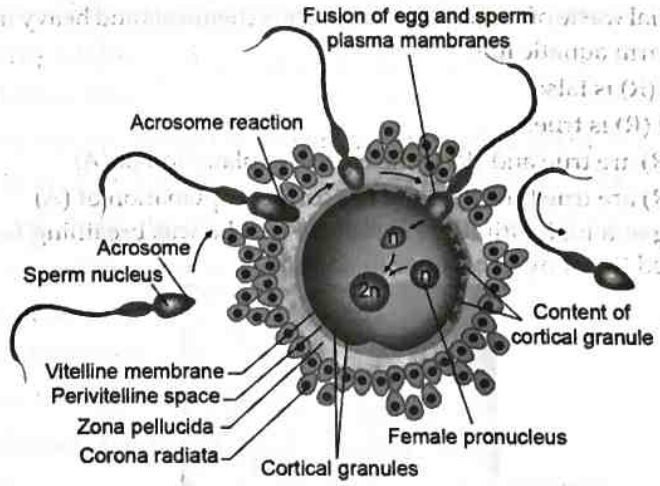
(a) The presence of sunlight and absence of darkness cause stomata to open during the day and close at night.
(b) The accumulation of carbon dioxide during the day causes stomata to open, while its depletion at night causes them to close.
(c) The release of oxygen during photosynthesis causes stomata to open during the day, while its reduction at night causes them to close.
(d) The regulation of water loss through transpiration causes stomata to open during the day and close at night. **[Understanding & Analysis]**

**Question 2.**

(i) Name the following:
(a) A natural phenomenon that becomes harmful due to pollution.
(b) The blood vessel which supplies blood to the liver.
(c) The number of chromosomes present in a nerve cell of a human being.
(d) The layer of the eyeball that forms the transparent cornea.
(e) The wax-like layer on the epidermis of leaves which reduces transpiration. **[Recall]**

(ii) Read the information below the diagram and fill in the blanks.

During copulation (coitus) semen is released by the penis into the vagina (insemination). About 400 million sperms are released in a single ejaculation. The motile sperms swim rapidly, pass through the cervix, enter into the uterus and finally reach the ampullary region of the oviducts (fallopian tube).




The ovum released by the ..... (a)..... is also transported to the ..... (b)..... where fertilisation takes place. Fertilisation can only occur if the ..... (c)..... and ..... are transported simultaneously to the ampullary region. This is the reason why not all copulations lead to fertilisation and ..... (d)..... . The process of fusion of a sperm with an ovum is called..... (e)..... .

**[Recall & Application]**

(iii) Choose the odd one out from the following terms and name the category to which the others belong:
(a) Mitral valve, Coronary artery, Aorta Pulmonary vein.
(b) Uterus, Ureter, Oviduct, Ovaries.
(c) Goitre, Cretinism, Myxoedema, Acromegaly Hormonal disorders related to the thyroid gland

(d) Ovary, Fallopian Tube, Ureter, Uterus Reproductive organs/system

(e) Cohesion, osmosis, adhesion, transpiration pull **[Understanding & Application]**

(iv) Arjun visited a science museum and interacted with a digital model of the human nervous system. Curious about how the body receives and reacts to stimuli, he read an info panel that explained some key parts. Help Arjun answer the questions:

(a) What is the basic structural and functional unit of the nervous system?

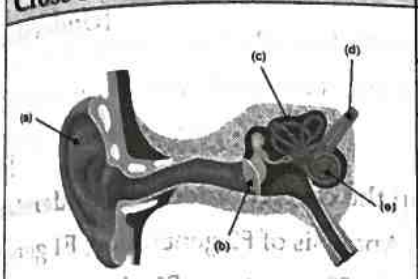
(b) Which part of the brain controls voluntary movements?

(c) Which nerve connects the eye to the brain?

(d) Name the fluid that protects the brain and spinal cord.

(e) What is the pathway taken by a reflex action called? **[Application & recall]**

(v) Given below is a cross section of the human ear. Match the structures marked (a) to (e) with their correct functions.

| Cross section of the Human Ear | Functions |
|---|---|
|   | 1. Sends signals to the brain |
| | 2. Converts sound waves to electrical signals |
| | 3. Collects sound waves from the surroundings |
| | 4. Sends vibrations to inner ear |
| | 5. Helps us maintain balance |

**[Understanding & Analysis]**

## Section-B (Attempt any four questions from this Section)

**Question 3.**

(i) Explain the term 'Tropic hormone'. Give one example of a tropic hormone. **[Recall]**

(ii) Write the characters of Nervous Control and Hormonal Control in human body. **[Recall]**

(iii) While visiting a museum, Raj found a timeline illustrating the stages of human evolution, with skulls of early hominids on display.

**[Analysis & Application]**

(a) Which hominid is considered the earliest ancestor in the timeline?

(b) What characteristic is common to all species in the Homo genus?

(iv) Mention the role of rods and cones in vision. **[Application]**

(v) Sketch and label the ultrastructure of nephron. **[Understanding, creative & skill]**

**Question 4.**

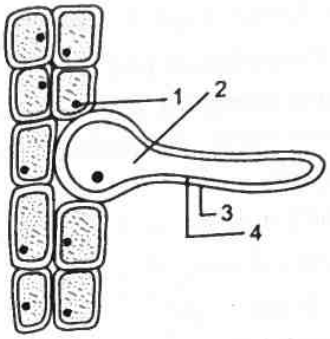
(i) Explain the term pollutant. **[Recall]**

(ii) Differentiate Between Red blood cells and White blood cells. **[Recall]**

(iii) What is the scientific name of the fruit fly used in genetic experiments by Thomas Hunt Morgan? **[Recall]**

(iv) Write the effect of hyposecretion of thyroxine in children and in adults. **[Recall]**

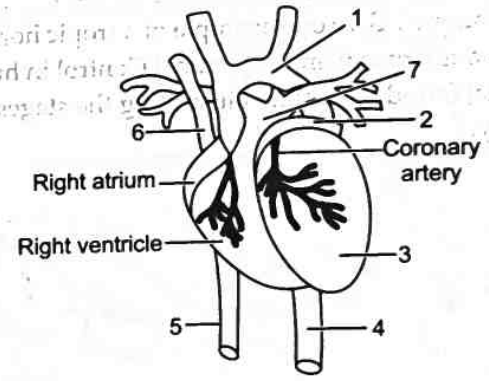
(v) The diagram below shows a root hair. Study the diagram and answer the following questions:




(a) Why is the root hair single-celled?
(b) Name the parts labelled as 1 in the above diagram.
(c) What will happen to the root hair if some fertilizer is added to the soil near the root hair? **[Analysis]**

**Question 5.**

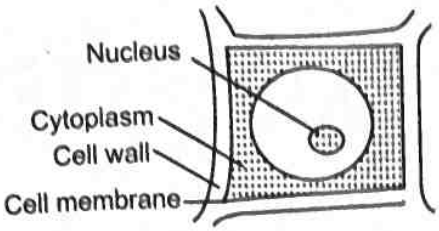
(i) Carbon monoxide is dangerous when inhaled. Explain. **[Understanding]**
(ii) Mention the significance of the following minerals:
Calcium (Ca): in humans
Potassium (K): in plants **[Recall]**
(iii) Arrange the following steps of Mendel's Monohybrid Cross in the correct order: **[Understanding]**
(a) Self-pollination of F1, Parental generation, F2 generation, Analysis of F2 generation, F1 generation.
(b) Recessive trait, Cross-pollination of parents, Dominant trait, F2 genotype, F1 phenotype.
(iv) Mention the number of hormones secreted by the pancreas and the number involved in glucose regulation. **[Recall]**
(v) Given below are the external features of the heart:




(a) What happens if the coronary artery gets an internal clot?
(b) Which type of blood does part 5 carry?
(c) Mention one structural difference between parts 5 and 4. **[Analysis and Application]**

**Question 6.**

(i) Explain the term, Phosphorylation. **[Recall]**
(ii) Name the structures through which Transpiration and Guttation occur in a plant. **[Understanding]**
(iii) Expand the following abbreviations:
(a) HIV
(b) AIDS **[Recall]**
(iv) Where is the placenta located? What is its function? **[Understanding]**
(v) A plant cell is kept in a drop of water was examined under the low power magnification of a microscope, as shown below, and answer the questions that follow:




(a) What would you do to bring this cell back to its original condition?

(b) What scientific term is used for such a condition?

(c) Draw the structure of the same cell if it is kept in a strong sugar solution.

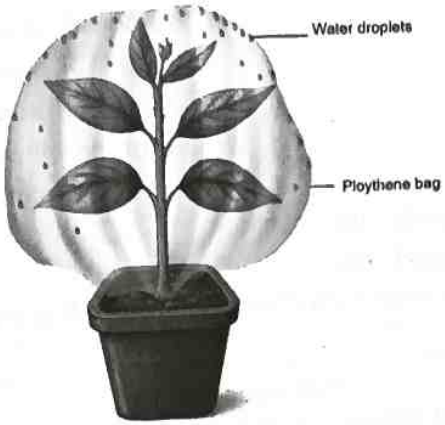
**[Understanding, creative & skill]**

**Question 7.**

(i) Define the terms: (a) Sympathetic nervous system (b) Permanent wilting. **[Recall]**

(ii) Mention two structural differences between an artery and a vein. **[Recall]**

(iii) In an experiment, a student observed that the water droplets on a polythene sheet, when exposed to sunlight, slowly disappear due to evaporation. The heat from sunlight caused the water to change from liquid to gas.




**[Analysis & Application]**

(a) Name the process responsible for this disappearance of water droplets.

(b) Define the process mentioned above.

(iv) How are cytons and axons arranged in the spinal cord for the formation of:

(a) Grey matter **[Analysis]**

(b) White matter

(v) Draw the well-labelled diagram of a duplicate chromosome and label its part. **[Recall, creative skill]**

**Question 8.**

(i) Explain the term cleavage furrow. **[Recall]**

(ii) Given below are two statements which are incorrect. Rewrite the correct statements:

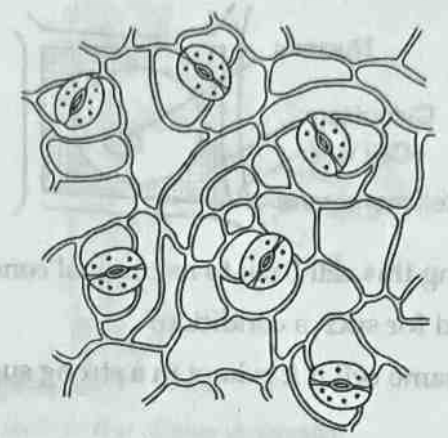
(a) RBCs are of several kinds whereas WBCs are of one kind. **[Analysis]**

(b) Blood group AB is an universal donor. **[Recall]**

(iii) Give reason: Gametes must be produced by meiosis for sexual reproduction. **[Analysis]**

(iv) We cannot distinguish colours in dim lights. Explain giving suitable reasons.

(v) Sam observed a slide containing the lower epidermis of a leaf under a microscope. A number of tiny openings between the epidermal cells were present as shown below in the diagram:



(a) What are these tiny openings called?
(b) Name the cells that regulate the opening and closing of these structures.
(c) Which ion is responsible for the opening and closing of these openings? **[Analysis & Application]**

❑❑

# 4 Sample Paper

## Biology [Unsolved]

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options.**

**(Do not copy the question, write the correct answer only).**

(i) In a reflex arc involving a withdrawal reflex, (P) _____ muscle is responsible for generating the (Q) _____ to move away from a (R) _____.

(a) P – Flexor, Q – Stimulus, R - Response

(b) P – Extensor, Q – Response, R - Stimulus

(c) P – Extensor, Q – Stimulus, R - Response

(d) P – Flexor, Q – Response, R - Stimulus **[Application]**

(ii) The outermost layer of meninges:

(a) Pia mater (c) Grey matter

(b) Arachnoid layer (d) Dura mater **[Recall]**

(iii) Vikas tried to match the parts of the human eye with their functions. He tabulated the pairs as follows:

| Part of the eye | Function |
|---|---|
| P | Refracts light |
| Q | Transmits impulses to the brain |

Identify the correct pair of part of the eye and its function.

(a) P – Optic nerve, Q – Cornea

(b) P – Cornea, Q – Retina

(c) P – Cornea, Q – Optic nerve

(d) P – Retina, Q – Ciliary muscles **[Understanding]**

(iv) Corpus callosum connects:

(a) A bone to another bone (c) Two cerebral hemispheres

(b) The brain to the spinal cord (d) Midbrain to hindbrain **[Recall]**

(v) The release of the ovum from the follicle is called:

(a) Ovulation (c) Capacitation

(b) Oogenesis (d) Menstrual cycle **[Recall]**

(vi) Which is the correct sequence for water movement in a plant?

(a) Root hair → Xylem → Cortex → Leaves

(b) Root hair → Cortex → Xylem → Leaves

(c) Leaves → Xylem → Cortex → Root hair

(d) Xylem → Root hair → Leaves → Cortex **[Understanding]**

(vii) During a hot summer day, Ayush noticed water droplets forming on the edges of a plant's leaves early in the morning, as shown in the image below.

What process is responsible for this phenomenon?

(a) Transpiration
(b) Evaporation
(c) Guttation
(d) Bleeding [Analysis]

(viii) A biology teacher asked her students to quote a method of waste disposal that can control environmental pollution.

Meenakshi said: Recycling
Kiara said: Composting
Druv said: Incineration
Rahul said: Landfilling

Who is/are correct?

(a) Meenakshi and Dhruv
(b) Kiara and Rahul
(c) Meenakshi, Kiara and Rahul
(d) Dhruv only [Analysis]

(ix) Simran made a list of stages in photosynthesis and their basic roles.

| Stage | Description |
|---|---|
| P – Photolysis | Splitting of water molecules |
| Q – Glucose Formation | Combining $CO_2$ and H |
| R – Activation | Chlorophyll absorbs sunlight |
| S – ATP Synthesis | Energy production |

Choose the correct sequence of events during photosynthesis:

(a) Q, R, P, S
(b) R, P, S, Q
(c) R, S, P, Q
(d) P, S, Q, R [Application]

(x) **Assertion (A):** Australopithecus species are considered to be the earliest ancestors of modern humans.

**Reason (R):** They were bipedal and had brain sizes similar to that of modern chimpanzees.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A)
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A) [Understanding]

(xi) Which of the following statements is true about the structure of neurons?

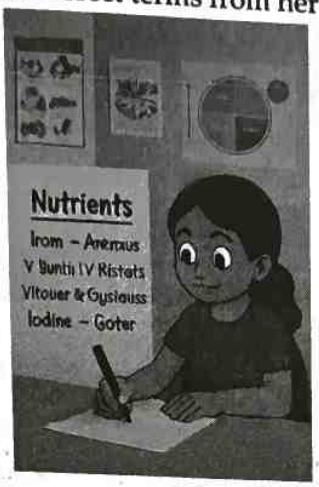
(a) Neurons have a simple and uniform structure, consisting of a cell body and a single long extension called an axon.
(b) The structure of a neuron is primarily composed of glial cells, which provide support and nourishment to the nerve cells.
(c) Neurons have a complex structure with multiple specialised components, including dendrites, cell body, axon, and synaptic terminals.
(d) The structure of a neuron is primarily responsible for the production and secretion of hormones in the body. [Analysis]

(xii) **Assertion (A):** Birth rate is a crucial factor in determining the population density of a region.

**Reason (R):** Population density is calculated based on the number of people living in a unit area of land.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true and (R) is the correct explanation of (A)
(d) Both (A) and (R) are true but (R) is not the correct explanation of (A) **[Recall]**

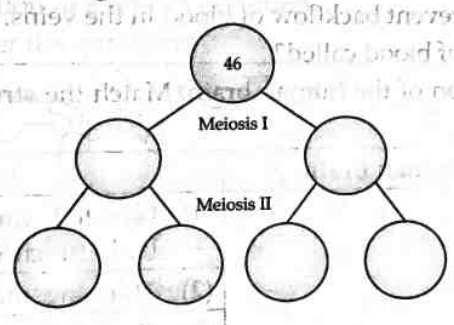
(xiii) During a health workshop, Rani learned about different nutrients. She made a list of nutrients and their deficiency diseases. Identify the correct terms from her notes:




(a) Protein, Kwashiorkor, Marasmus
(b) Carbohydrate, Night blindness, Jaundice
(c) Fat, Anaemia, Sterility
(d) Water, Rickets, Typhoid **[Analysis & Application]**

(xiv) Which of the following is not an effect of ethylene?
(a) Promotes senescence and abscission of plant organs
(b) Breaks seed and bud dormancy
(c) Hastens fruit ripening
(d) Helps to overcome apical dominance **[Application]**

(xv) The diagram given below shows stages of meiosis in a human testis: **[Analysis]**




| | After meiosis I | After meiosis II |
|---|---|---|
| (a) | 46 | 46 |
| (b) | 46 | 23 |
| (c) | 23 | 46 |
| (d) | 23 | 23 |

**Question 2.**

(i) Name the following:
(a) A plant hormone found in tips of roots and shoots, also promote cell division and growth.
(b) A part of the plant showing positive phototropism
(c) The factor that affect the photosynthesis, transpiration, and growth of the plant
(d) A biofertilizer
(e) A gland concerned with the male reproductive system **[Recall]**

(ii) Read the information below the diagram and fill in the blanks.

The thyroid gland is situated in front of the lower neck, immediately below the larynx (voice box) and upper part of trachea in the neck. Thyroxine and calcitonin are the two hormones secreted by this gland.

The gland itself is.....(a)..., *i.e.* it is made up of two oblong lobes facing both sides of the .....(b)..... (windpipe) and attached by a thin band of tissue called the isthmus. It is highly vascular. The gland is in.....(c)..... colour and is shield shaped. .....(d)..... regulates the basal metabolic rate. Maintenance of .....(e)..... balance is also influenced by thyroxine hormone.

**[Recall & Application]**

(iii) Choose the odd one from the following terms and name the category to which the others belong:

(a) TSH, GH, ACTH, ABA.

(b) Coughing, Sneezing, Skating, Blinking.

(c) Industrial wastes, Sewage, X rays, Oil spills.

(d) Tympanum, amnion, cochlea, utriculus, organ of corti.

(e) ACTH, ADH, GH, LH, Glucocorticoids

**[Understanding & Application]**

(iv) Nina, a 14-year-old student, visited a health exhibition where she saw a model of the human heart. She was curious about how blood flows through the body and asked the guide several questions related to the circulatory system. Help Nina answer the questions:

(a) Name the blood vessel that brings oxygenated blood from the lungs to the heart.

(b) Which chamber of the heart receives deoxygenated blood from the body?

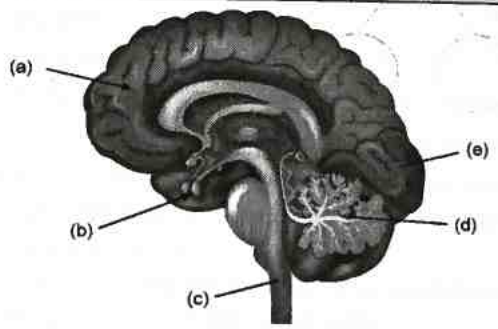
(c) What is the instrument used to measure blood pressure?

(d) Name the valves that prevent backflow of blood in the veins.

(e) What is the liquid part of blood called?

**[Application & recall]**

(v) Given below is a cross section of the human brain. Match the structures marked (a) to (e) with their correct functions.

| Cross section of the Human Brain | Functions |
|---|---|
|   | (1) Secreted various hormones to regulate body functions |
| | (2) Thinking, memory and reasoning |
| | (3) Coordinates body movements and posture |
| | (4) Acts as a visual processing area of the brain |
| | (5) Controls vital processes like heartbeat, breathing, and blood pressure |

**[Understanding & Analysis]**

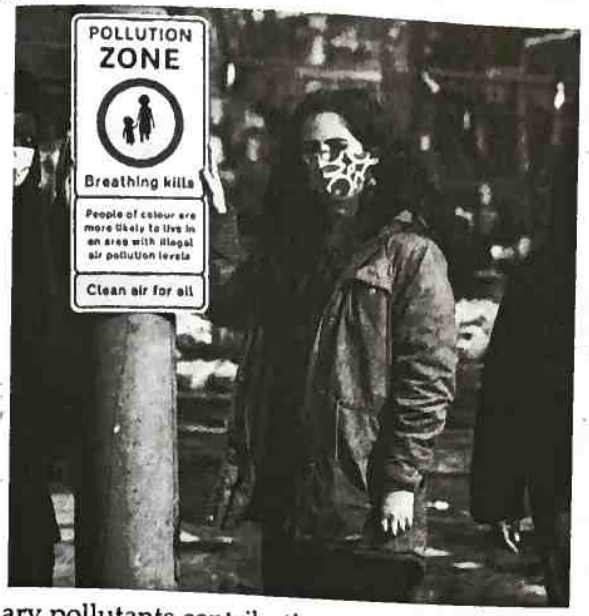
## Section B (Attempt any four questions from this section)

**Question 3.**

(i) Define Alleles. **[Recall]**

(ii) Work of pancreas as: an endocrine gland and an exocrine gland. **[Application]**

(iii) Ananya walked past a busy road and noticed the air felt thick with smoke. She saw a sign that warned of air pollution in the area. **[Analysis & Application]**




(a) What are the primary pollutants contributing to air pollution in cities?
(b) Mention one health issue that results from prolonged exposure to polluted air.

(iv) What are the signs of puberty in human male and female ? **[Analysis]**

(v) Draw a labelled diagram of the front view of the human eye. **[Understanding, Creative & Skill]**

**Question 4.**

(i) A high energy reduced compound formed in the light reaction. **[Understanding]**

(ii) Differentiate between Immigration and Emigration. **[Understanding]**

(iii) What is the scientific name of the bacterium that Robert Koch identified as the cause of tuberculosis? **[Recall]**

(iv) How will you find out the following?
(a) Birth rate
(b) Infant mortality rate **[Understanding]**

(v) Given below is a representation of a type of pollution.
Study the picture and answer the questions:

(a) Name the type of pollution shown in the picture.
(b) Name one source of this pollution.
(c) How does this pollution affect human health ? **[Analysis & Understanding]**

**Question 5.**

(i) What is Hormone? **[Recall]**

(ii) Mention the significance of the following :
(a) Vitamin K: in humans
(b) Chlorophyll : in plants **[Application]**

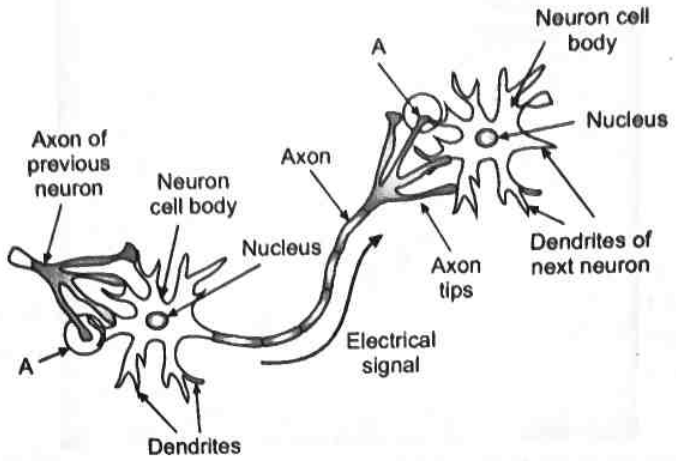
(iii) Arrange the following steps in the process of photosynthesis in the correct order: **[Understanding]**

(a) Thylakoid membrane, Chloroplast, Photosystem I, Stroma, Photosystem II

(b) Chlorophyll, NADPH, Light energy, Glucose, ATP

(iv) Mention the number of types of plant hormones and the number responsible for growth. **[Recall]**

(v) Study the diagram below and answer the following questions:




(a) Name the region labelled as A. Also define it.

(b) Which chemical in A helps to fulfill the transmission of impulses from the axon of one neuron to the dendrites of other neurons?

(c) Name the types of neurons found in the human body. **[Recall & Analysis]**

**Question 6.**

(i) Define: Nitrification. **[Recall]**

(ii) Write the effect for over-secretion of somatotropin (growth hormones) : (a) In children (b) In adults. **[Analysis]**

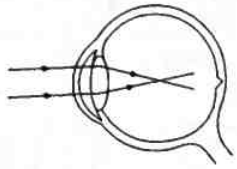
(iii) Expand the following abbreviations:

(a) FSH

(b) LH **[Recall]**

(iv) Where is the bicuspid valve located? What is its function? **[Recall]**

(v) Given below is a diagram depicting a defect of the human eye. Study the diagram and answer the questions below:



(a) Give the scientific term for the defect.

(b) Mention one possible reason for the defect.

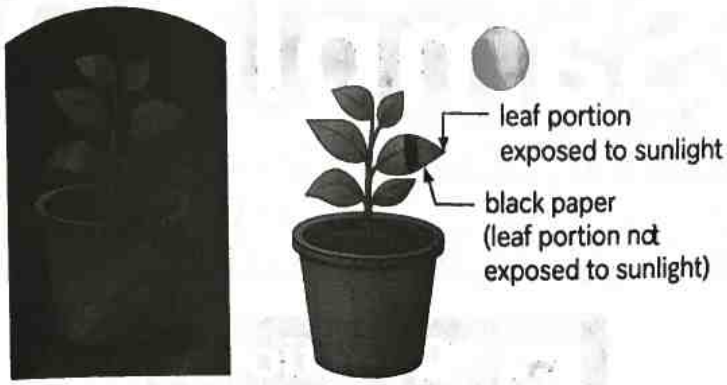
(c) What type of lens can be used to correct the defect? **[Analysis & Understanding]**

**Question 7.**

(i) What is the significance of the lymphatic system in the human body? **[Understanding]**

(ii) Differentiate between Transpiration and Evaporation. **[Understanding]**

(iii) Anita placed a potted plant in a dark room for 24 hours. Afterward, she tested the leaf for starch. She observed that no starch was present, indicating that no photosynthesis occurred during this period. This was due to the absence of light.




he plant is kept a dark room. (b) The plant is kept in sunlight.

[Analysis & Application]

(a) Name the process responsible for the absence of starch in the leaf.
(b) Define the process mentioned above.

iv) State the exact location of: [Recall]
(a) Seminal vesicle (b) Adrenal gland

(v) Draw a digram showing position of valves in human heart. [Understanding & creative]

**uestion 8.** [Application]

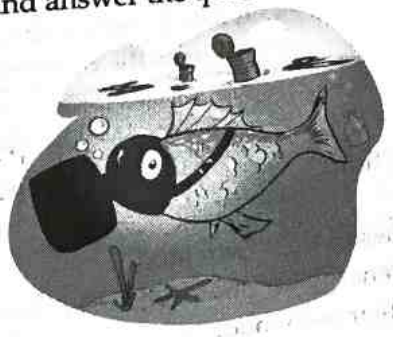
(i) State the functions of: Oxytocin and Prostate gland.

(ii) State True or False for the following and correct the sentence if false:
(a) Sensory nerves and Motor nerves constitute the central nervous system. [Analysis]
(b) The theory of Inheritance of Acquired characters was proposed by Watson and Crick. [Understanding]

iii) Why does the deficiency of vitamin A lead to night-blindness? [Understanding]

iv) A fully grown human embryo respires but does not breathe. Why? [3]

(v) Study the picture given below and answer the questions:



(a) How does water get polluted?
(b) What is the effect of water pollution on human life?
(c) Mention one control measure to stop the pollution of water bodies. [Analysis & Application]

□□

# 5 Sample Paper

## Biology [Unsolved]

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answer only.)**

(i) The (P) _____ of the brain controls voluntary movements, balance, and posture while (Q) _____ is associated with regulating basic life functions such as breathing and heart rate. **[Application]**

(a) P – Medulla oblongata, Q – Cerebellum
(b) P – Cerebrum, Q – Temporal lobe
(c) P – Cerebellum, Q – Medulla oblongata
(d) P – Medulla oblongata, Q – Limbic system

(ii) Vishal tried to match the components related to the human foetus with their significance. He tabulated the pairs as follows:

| Part of the eye | Significance |
|---|---|
| P | It acts as shock absorber and regulates temperature. |
| Q | It forms the outermost layer of the foetal membranes. |

Identify the correct pair.

(a) P – Placenta, Q – Chorion
(b) P – Chorion, Q – Amniotic fluid
(c) P – Amniotic fluid, Q – Chorion
(d) P – Amniotic fluid, Q – Placenta

(iii) Select the correct statement: **[Analysis]**

(a) Heterotrophs do not synthesise their own food.
(b) Heterotrophs utilise solar energy for photosynthesis.
(c) Heterotrophs synthesise their own food.
(d) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates.

(iv) In a synapse, a chemical signal is transmitted from: **[Applicaton]**

(a) Dendritic end of one neuron to the axonal end of another neuron.
(b) Axon to the cell body of the same neuron.
(c) Cell body to the axonal end of the same neuron.
(d) Axonal end of one neuron to the dendritic end of another neuron.

(v) A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. The progeny all bore violet flowers, but almost half of them were short. This suggests that the genetic makeup of tall parent can be depicted as: **[Analysis]**

(a) TTWW (b) TTww (c) TtWW (d) TtWw

(vi) A biology teacher asked the students in her class to tell the key concept that differentiates Lamarckism from Darwinism in terms of evolution. **[Recall]**

**Meenu said:** Acquired traits are passed on to offspring in Lamarckism, while in Darwinism, traits are the result of natural selection.

**Krishi said:** Darwinism emphasises the inheritance of acquired traits, while Lamarckism focuses on random mutations.

**Drishti said:** Both theories propose that species evolve through a process of gradual changes over time.

**Rahul said:** Lamarckism and Darwinism have no significant differences in their understanding of evolution.

Who is correct?

(a) Meenu (b) Krishi (c) Drishti (d) Rahul

(vii) Which of these correctly matches gland → hormone → function?

(a) Thyroid → Insulin → Lowers blood glucose

(b) Pancreas → Glucagon → Lowers blood glucose

(c) Adrenal → Adrenaline → Prepares for emergencies

(d) Pituitary → Thyroxine → Regulates heartbeat **[Understanding]**

(viii) **Assertion (A):** Endocrine glands are ductless and release hormones directly into the bloodstream.

**Reason (R):** Endocrine glands, like the pituitary gland located at the base of the brain, lack ducts and use the circulatory system to reach target organs.

(a) (A) is true and (R) is false.

(b) (A) is false and (R) is true.

(c) Both (A) and (R) are true and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true but (R) is not the correct explanation of (A). **[Recall]**

(ix) This image shows a person exhaling onto a cold surface. The moisture condenses into visible fog.

Which gas in the exhaled air is responsible for this condensation effect?

(a) Nitrogen (c) Carbon dioxide

(b) Oxygen (d) Water vapour **[Analysis]**

(x) Ved listed parts of the nephron and the stages of urine formation.

| Part | Function |
|---|---|
| P – Collecting Duct | Final urine flows here |
| Q – Proximal Tubule | Reabsorption of nutrients |
| R – Glomerulus | Filtration under pressure |
| S – Loop of Henle | Water and salt regulation |

Identify the correct order in which urine formation occurs:

(a) Q, R, S, P (c) S, Q, P, R

(b) R, Q, S, P (d) R, S, Q, P **[Application]**

(xi) **Assertion (A):** The placenta facilitates the transfer of nutrients and oxygen from the mother to the embryo.

**Reason (R):** The placenta is an endocrine gland that produces hormones essential for maintaining pregnancy.

(a) (A) is true and (R) is false.

(b) (A) is false and (R) is true.

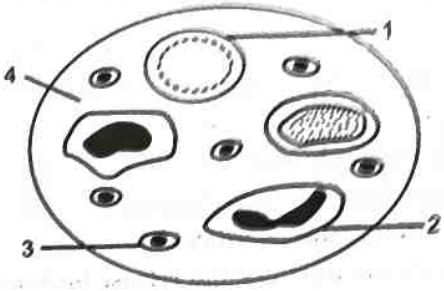
(c) Both (A) and (R) are true and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true but (R) is not the correct explanation of (A). **[Recall]**

(xii) Which of the following groups constitutes a food chain? [Analysis]

(a) Grass, wheat and mango
(b) Grass, goat and human
(c) Goat, cow and elephant
(d) Grass, fish and goat

(xiii) Choose the incorrect match for the labels 1, 2, 3, 4 with their properties. [Analysis & Application]




(a) 1- WBCs destroy damaged cells through phagocytosis
(b) 2-RBCs carry oxygenated bloods to all parts of the body
(c) 3-Platelets are the inhibitors of clotting of blood
(d) 4- Plasma is the liquid squeezed out when fibrin network shrinks to form a clot

(xiv) Arjun's smartwatch tracks his health while jogging. It shows his heart rate and blood flow speed. Identify the correct terms related to the processes involved:

(a) Systole, Pulse, Blood pressure
(b) Clotting, Platelets, Diffusion
(c) Lymph, Capillaries, Hemoglobin
(d) Aorta, Antibodies, Agglutination [Analysis & Application]

(xv) Which of the following is a function of phytohormones in plants? [Application]

(a) Enhancing photosynthetic efficiency
(b) Controlling plant growth and development
(c) Regulating the water content of plant cells
(d) Preventing pest infestation

**Question 2.**

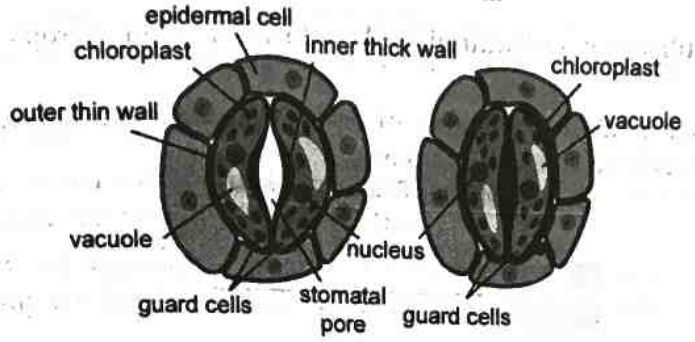
(i) Name the following:

(a) 'V' shaped chromosome having the centromere at the centre.
(b) Vein which starts from an organ and ends in another organ besides the heart.
(c) Inner region of the kidney, which is light in colour and subdivided into conical renal pyramids.
(d) Name the bony box in which the heart is located.
(e) The hormone which abnormally increases urine formation. [Recall]

(ii) Read the information below the diagram and fill in the blanks:

During photosynthesis the stomata of the leaves are wide open essentially for intake of $CO_2$. Sugar produced during photosynthesis in the daytime increases the osmotic pressure. As a result, water

enters the guard cells by endosmosis, making them turgid and causing the stomatal pores to open. But at night osmotic pressure of guard cells decreases because there is no photosynthesis, the stomatal guard cells become flaccid and the stomata remains closed.




Transpiration occurs only when the stomata are .....(a)..... and stops when the stomata .....(b)..... The .....(c)..... in the guard cells voverns the opening and the closing of the stoma. Diffusion of gases in and out is possible only when the stoma is .....(d)..... if the water level of the plants starts falling, the stoma closes because the guard cells turn .....(e)..... **[Recall & Application]**

(iii) Given below are sets of four terms. Choose the odd term and state the category to which the others belong:

(a) Conjunctiva, Cornea, Cochlea, Choroid

(b) Artery, Vein, Portal vein, Locteal

(c) Vasa recta, Collecting duct, Loop of Henle, Bowman's capsule.

(d) Lymphocytes, Erythrocytes, Antibodies, Glucose.

(e) High temperature, sunken stomata, fast blowing wind, low humidity.

**[Understanding & Application]**

(iv) Anil visited a natural history museum with his class. He saw life-size models of early humans and read about their physical features and evolution. Fascinated, he wanted to learn more about early human ancestors.

Help Anil answer these questions:

(a) Which ancestor first made tools?

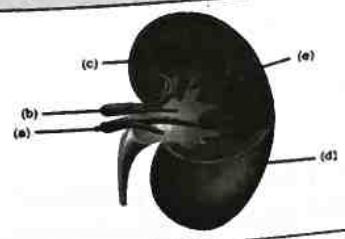
(b) What is the scientific name of modern man?

(c) What is upright walking called?

(d) Who proposed natural selection?

(e) Which ancestor had the largest brain capacity? **[Application & recall]**

(v) Given below is a cross section of a kidney. Match the structures marked (a) to (e) with their correct functions.

| Cross section of a kidney | Functions |
|---|---|
|   | (1) Consists of nephrons which perform blood filtration |
| | (2) Brings blood to the kidney for filtration |
| | (3) Brings back filtered blood to the body |
| | (4) Encloses the entire mass of kidney and protects it |
| | (5) Collects filtered fluid before it is sent to the ureters |

**[Understanding & Analysis]**

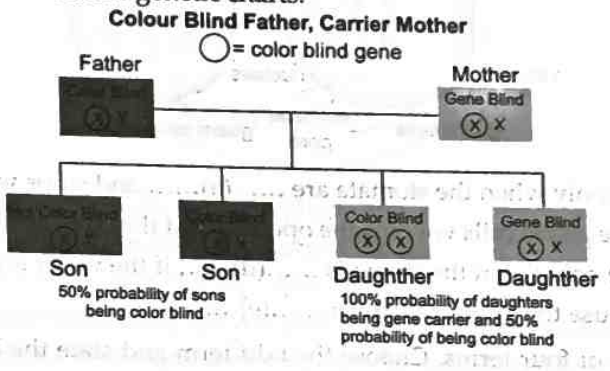
## Section-B (Attempt any four questions from this section)

**Question 3.**

(i) Define: Gene. [Recall]

(ii) Excessive use of fertilizers in agricultural fields reduces the yield of crops. Justify the statement. [Understanding]

(iii) Rani learned that her family has a history of colour blindness, a condition that her brother seems to have inherited. She reviewed her genetic charts.




[Analysis & Application]

(a) What type of inheritance is colour blindness an example of?

(b) Name the chromosome on which the gene for colour blindness is carried.

(iv) Effect of thyms:

(a) In children

(b) In adults. [Application]

(v) Draw a pie diagram showing the global greenhouse gas emission by economic sectors. [Recall & Understanding]

**Question 4.**

(i) What do you mean by phosphorylation? [Recall]

(ii) Differentiate between the following pairs on the basis of what is indicated in the brackets:

(a) Leaf and Liver [form in which glucose is stored].

(b) Hypotonic solution and Hypertonic solution [condition of plant cell when placed in them]. [Understanding]

(iii) What is the scientific name of the bacterium used by Frederick Griffith in his experiment on bacterial transformation? [Recall]

(iv) State the growth pattern in the plant and animals. [Recall]

(v) Study the diagram below and answer the questions that follow: [Analysis]

(a) (b) (c)

(a) Name the diagram labelled as (a).

(b) Name the diagram labelled as (b).

(c) Name the diagram labelled as (c).

**Question 5.**

(i) Briefly answer the following questions:

(a) What is root pressure?

(b) Mention one use of turgidity. [Recall & Application]

[Application]

Mention the significance of the following :

(a) Vitamin A: in humans

(b) Nitrogen (N): in plants

[Understanding]

Arrange the following steps of urine formation in the correct order:

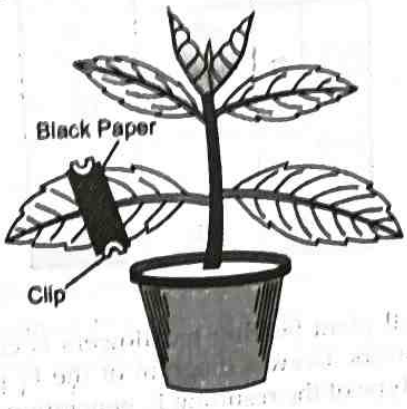
(a) Bowman's capsule, Glomerulus, Proximal convoluted tubule, Distal convoluted tubule, Loop of Henle.

(b) Selective reabsorption, Secretion, Excretion, Ultrafiltration, Formation of urine.

[Recall]

Mention the number of main phases in photosynthesis and the number of molecules of oxygen released per molecule of glucose formed.

The diagram below represents an experiment conducted to prove the importance of a factor in photosynthesis. Study the same and then answer the questions that follow:




(a) Name the factor being studied in this experiment.

(b) Why was the plant kept in a dark room before conducting the experiment?

(c) What will we observe in the experiment leaf at the end of the starch test?

[Analysis & Understanding]

**Question 6.**

(i) Define Biodegradable wastes.

[Recall]

(ii) Answer the following questions:

(a) In the chemical reaction of photosynthesis, which substance is the raw material and the product?

(b) Which kind of signal will get disrupted in case of a spinal injury?

[Understanding & Recall]

(iii) Expand the following abbreviations:

(a) ATP

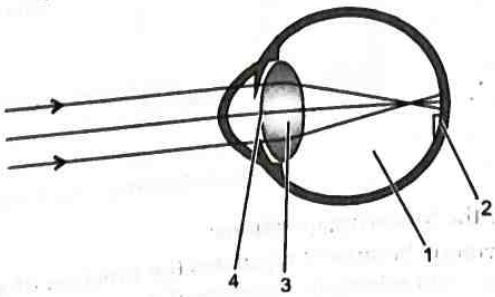
(b) DNA

[Recall]

(iv) Name the accessory glands found in the human male reproductive system. Give their functions also.

[Application]

(v) Given below is a diagram depicting a defect of a human eye. Study the same and answer the questions that follow:




(a) Name the parts labelled 1 – 4.

(b) Name the defect and the lens used to correct the eye defect.

(c) Draw a diagram to show how this defect is corrected by the lens named by you above.

[Analysis & Creative]

**Question 7.**

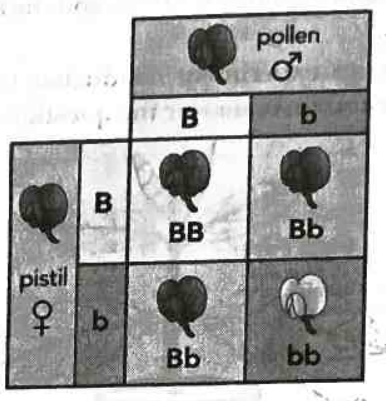
(i) What is transpiration? List its two functions. **[Recall & Application]**

(ii) Differentiate between the following pairs on the basis of what is indicated in the brackets:

(a) ATP and IAA [Abbreviations]. **[Analysis & Application]**

(b) Ureter and Urethra [Functions].

(iii) In a lab experiment on genetics, a student crossed a homozygous dominant plant with a homozygous recessive plant and observed the F1 generation. All the F1 offspring showed the dominant trait. **[Analysis & Application]**




(iv) Where are sperms produced? **[Recall]**

(v) If a dominant homozygous tall plant bearing red flowers is crossed with a recessive homozygous dwarf plant bearing white flowers. Draw a diagram of the $F_1$ plants which are self-pollinated, and write the genotype and phenotype of the resulting $F_2$ generation. **[Understanding, Creative & Skill]**

**Question 8.**

(i) Define Cerebrospinal fluid. **[Recall]**

(ii) Given below are two statements which are incorrect. Rewrite the correct statements:

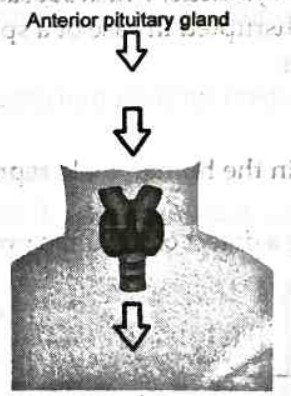
(a) There are 12 pairs of spinal nerves present in human body.

(b) Cones are the receptor cells in the retina of the eye that are sensitive to dim light. **[Analysis]**

(iii) Why does the leaf appear green? **[Understanding]**

(iv) Why non–biodegradable substances persist in the environment for a longer time? **[Understanding]**

(v) The following figure shows the action of an endocrine gland where A, B and C represent the following:




A – A tropic hormone.

B – An endocrine gland.

C – A hormone.

Study the same and answer the following questions:

(a) A is called a tropic hormone because it regulates the function of another endocrine gland (B) by stimulating it to produce and release its hormone (C).

(b) Identify the hormone A.

(c) Defective development of the endocrine gland B causes a disorder in children where they suffer from mental and physical retardation. Name the disorder. **[Analysis & Understanding]**

# 1 Sample Paper

## Biology

### Answers

**ction-A**

**wer 1.**

i) (b) P – Australopithecus, Q – modern humans

**Explanation:**

Australopithecus is widely regarded as one of the earliest hominid species to have walked the Earth, with fossils dating back approximately 4 million years. Characterised by their small brains, ape-like features, and bipedal locomotion, Australopithecus played a crucial role in the evolutionary transition from apes to humans.

ii) (b) Mitosis is the division of a cell into two identical daughter cells, each with the same number of chromosomes as the parent cell.

**Explanation:**

Mitosis is a crucial process for growth, development, and tissue repair. During mitosis, the genetic material, organised into chromosomes, is replicated, and distributed equally between the two daughter cells. Each daughter cell receives an identical set of chromosomes to the parent cell, ensuring genetic continuity.

(iii) (b) Thyroid

**Explanation:**

The thyroid gland produces hormones, mainly thyroxine (T4) and triiodothyronine (T3), which play a crucial role in regulating metabolism. These hormones increase the metabolic activity of cells, thereby influencing the rate at which the body uses energy.

(iv) (b) P – Ethylene, Q – Auxin

**Explanation:**

Ethylene, a gaseous hormone, regulates various physiological processes such as fruit ripening, seed germination, and senescence. On the other hand, auxins are essential for promoting cell elongation, root development, apical dominance, and phototropism. They regulate plant growth by stimulating cell division and differentiation in meristematic tissues.

(v) (a) Meenu

**Explanation:**

Guttation is a process in which plants release excess water through specialised structures called hydathodes. This phenomenon typically occurs during the night when transpiration rates are low, allowing water to accumulate in root tissues and be pushed up through the xylem into the leaves. Hydathodes then open, resulting in the expulsion of droplets containing water, as well as nutrients and other dissolved substances.

(vi) (c) Both (A) and (R) are true and (R) is the correct explanation of (A)

**Explanation:**

Turgor pressure is the pressure exerted by the fluid inside the plant cell against its cell wall. It is generated when water enters the cell through osmosis, causing the cell to swell and become rigid. The turgor pressure is responsible for maintaining the shape and firmness of plant cells, contributing to the overall rigidity of the plant.

(vii) (b) Interphase

**Explanation:**

The interphase is the metabolic phase of the cell in which it obtains nutrients and metabolises them. Further it grows and replicates its DNA in the preparation for mitosis and conducts other normal cell functions.

(viii) (c) Activation of chlorophyll → Photolysis → ATP formation

**Explanation:**

In the light reaction of photosynthesis, chlorophyll is first activated by absorbing light energy. This excites electrons, triggering the photolysis of water (splitting into $H^+$, electrons, and $O_2$). The released electrons pass through the electron transport chain, leading to ATP formation (and NADPH) through photophosphorylation. This sequence provides the energy and reducing power needed for the Calvin cycle in the dark reaction.

(ix) (b) Reflex action

**Explanation:**

The knee-jerk reaction is a classic example of a reflex action, which is an automatic and rapid response to a stimulus. When the doctor taps just below the kneecap, stretch receptors in the tendon are stimulated, sending a message to the spinal cord and immediately back to the leg muscles—without brain involvement. This protects the body by allowing quick reactions to sudden stimuli.

(x) (c) Both (A) and (R) are true and (R) is the correct explanation of (A)

**Explanation:**

Proximal convoluted tubule is the starting region of tubule ('proximal' → nearer to Bowman's capsule). PCT reabsorbs most water (about two-thirds), and much of glucose and sodium chloride ions.

(xi) (a) Q, P, S, R

**Explanation:**

Human development begins with fertilisation (Q)—the fusion of male and female gametes. The resulting zygote then undergoes implantation (P) into the uterine wall. This is followed by gestation (S), the entire period of embryonic and fetal development inside the womb. Finally, the process concludes with parturition (R), which is the birth of the baby.

(xii) (b) Centromere

**Explanation:**

The chromatids are joined together at a region called centromere. Centromere is crucial for the proper segregation of chromosomes during cell division, as it is the attachment site for spindle fibres that pull the sister chromatids apart into daughter cells.

(xiii) (a) Tubectomy, Vasectomy, Family planning

**Explanation:**

Tubectomy (in females) and vasectomy (in males) are surgical methods of birth control that prevent the release of gametes. They are part of family planning strategies to manage population growth. These measures help reduce unintended pregnancies and promote responsible parenthood. The other options include terms related to immunity, digestion, genetics, or temperature regulation — not directly linked to population control.

(xiv) (c) A → Myopia and B → Hypermetropia

**Explanation:**

Diagram 'A' shows Myopia defect because the image forms before the retina and the focal length falls short of retina.

Diagram 'B' shows Hypermetropia defect because the image forms behind the retina and the focal length falls beyond retina.

(v) (a) Phototropism

**Explanation:**

Phototropism is the growth response of a plant to light direction. When a plant stem bends towards a light source, such as sunlight entering through a window, it is exhibiting positive phototropism. This differential growth causes the stem to bend towards the light source, optimising the plant's ability to capture light for photosynthesis.

**Answer 2.**

(i) (a) Cytokinesis
(b) Lenticel
(c) $G_0$
(d) Phytohormones
(e) Dialysis

(ii) (a) Insulin
(b) Beta cells
(c) increased
(d) Glycogen
(e) Diabetes mellitus

(iii) (a) Odd one out: Papilla
Others belong to the category: Parts of the nephron
(b) Odd one out: X-Rays
Others belong to the category: Water pollutants
(c) Odd one out: Xerophthalmia
Others belong to the category: Refractive errors (eye disorders)
(d) Odd one out: Emigration
Others belong to the category: Factors increasing population
(e) Odd one out: Insulin
Others belong to the category: Reproductive hormones

(iv) (a) Insulin
(b) Pituitary gland
(c) Adrenaline
(d) Thyroxine
(e) Adrenal gland

(v) (a) 2 (motor nerve)
(b) 4 (effector muscle)
(c) 3 (sensory nerve)
(d) 5 (receptors in skin)
(e) 1 (relay neuron)

## Section-B

**Answer 3.**

(i) Nostrils → Nasal chamber → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli → Blood capillary → RBC → Haemoglobin → Respiring tissue cell.

(ii) (a) **Diabetes insipidus:**
**Cause:** It is caused due to deficiency of antidiuretic hormone (ADH).

**Symptom:** In this, urination is frequent and copious, resulting in loss of water from the body and the person feels more thirst.

(b) **Diabetes mellitus:**

**Cause:** It is caused due to insufficient secretion of insulin hormone.

**Symptom:** Fatigue, weight loss, slow healing and blurred vision.

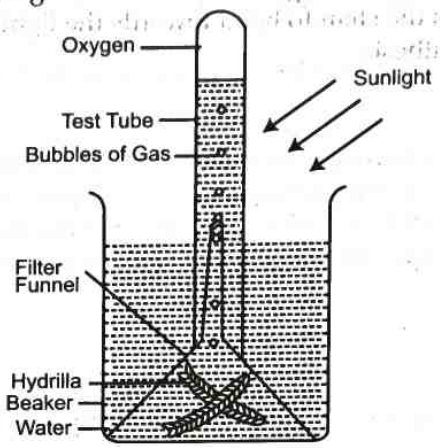
(iii) (a) This is a reflex arc, an involuntary response that involves the spinal cord.

(b) The spinal cord is responsible for this involuntary reflex response.

(iv) **Glucagon:** It increases blood sugar levels by promoting the conversion of stored glycogen in the liver into glucose.

**Insulin:** It decreases blood sugar levels by facilitating the uptake of glucose into cells and promoting the conversion of glucose into glycogen in the liver and muscles.

(v)




**Answer 4.**

(i) The process of producing offspring which involves a single parent without the formation of gametes is called **asexual reproduction**. Yes, cell division can be considered as a type of reproduction in unicellular organisms because through cell division two or more daughter cells are produced from a parent cell.

(ii)

| | Male Gamete (Sperm) | Female Gamete (Ovum) |
|---|---|---|
| (i) **Number** | Millions produced daily. | One released each menstrual cycle. |
| (ii) **Structure** | Small, motile, equipped with a tail. Contains little cytoplasm and many mitochondria. | Larger, non-motile. Contains abundant cytoplasm and nutrients. |
| (iii) **Activity** | Actively swims to reach the egg. | Passively transported through the fallopian tube. |

(iii) *Zea mays* (corn)

(iv) (a) Roots (b) Stem

(v) (a) Transpiration.

(b) The spring balance measures the weight of the test tube before and after the experiment.

(c) A test tube containing water with no leafy twig hanged with a spring balance can be taken as a control.

**Answer 5.**

(i) The three main parts of a chromosome are:

**Centromere:** The constricted region of the chromosome that separates it into two arms and is essential for the movement of chromosomes during cell division.

**Telomeres:** The protective caps at the ends of chromosomes that prevent them from deterioration.

**Chromatids:** The two identical halves of a replicated chromosome, which are joined together by the centromere and separate during cell division to form individual chromosomes in the daughter cells.

(ii) (a) Iron is crucial for humans as it forms a key component of hemoglobin, enabling oxygen transport in the blood, and supports cellular respiration and energy production.

(b) Manganese plays a significant role in photosynthesis, enzyme activation, and the synthesis of chlorophyll, contributing to healthy plant growth and development.

i) (a) Pulmonary artery → Capillary → Pulmonary vein → Aorta → Vein
(b) Artery → Arteriole → Capillary → Venule → Vein
v) 23 in a gamete; 46 in a somatic cell
v) (a) The cell shown in the diagram is in a flaccid [plasmolysed] state.
(b) Plasma membrane acts as a selectively permeable membrane.
(c) Two features of the plant cell which are not present in animal cells are:
1. **Cell Wall:** A rigid outer layer made of cellulose that provides structural support and protection.
2. **Chloroplasts:** Organelles that contain chlorophyll and are the site of photosynthesis.

**wer 6.**
i) (a) Phytohormones, interact with one another in various ways, including synergistic and antagonistic interactions. For example, auxins and cytokinins work together to promote cell division and abscisic acid (ABA) often antagonises the growth-promoting effects of gibberellins and auxins.
(b) The average heart rate for a healthy adult typically ranges from 60 to 100 beats per minute (BPM). Factors such as age, fitness level, activity, and overall health can influence an individual's heart rate. Athletes and people who exercise regularly may have a lower resting heart rate, sometimes as low as 40 to 60 bpm.
ii) **Chemical Methods:** Oral contraceptives, contraceptive injections, and patches.
**Natural Methods:** Rhythm method, withdrawal method.
iii) (a) **ADH:** Antidiuretic Hormone
(b) **TSH:** Thyroid Stimulating Hormone
iv) (a) During metaphase, chromatids are aligned at the metaphase plate (the equatorial plane) of the cell. The centromeres of the chromatids are attached to the spindle fibres from opposite spindle poles.
(b) During anaphase, the chromatids are separated and pulled apart toward opposite poles of the cell. Each chromatid, now an individual chromosome, moves to opposite ends of the cell.
(v) (a) The process is called osmosis.
(b) This process occurs in the root hair cells of plants, where water is absorbed from the soil into the plant.
(c) The solution placed inside the dialysis tubing is typically a strong sugar solution or salt solution, which creates a concentration gradient for osmosis to occur.

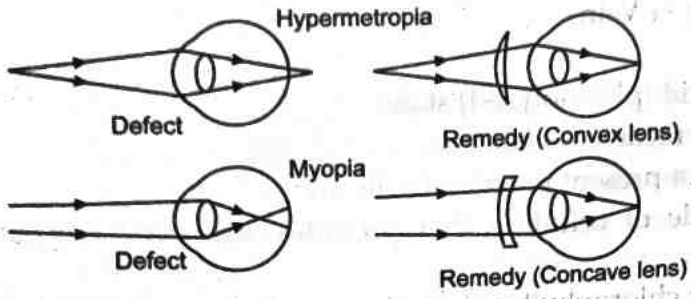
**nswer 7.**
(i) Parthenocarpy is the development of fruit without fertilisation, resulting in seedless fruits. This can occur naturally or be induced artificially.
One example of parthenocarpic fruit is banana.

(ii)

| Lamarckism | Darwinism |
|---|---|
| (i) Lamarck theory of Inheritance of acquired characteristics. | Darwin theory of Natural selection and survival of the fittest. |
| (ii) Organisms change during their lifetime and pass these changes to their offspring. | Organisms produce more offspring than can survive, and only those best adapted to their environment survive and reproduce. |
| (iii) Largely discredited in light of modern genetics. | Widely accepted as the fundamental theory of evolution. |

(iii) (a) The process responsible for the formation of bubbles is anaerobic respiration.
(b) Anaerobic respiration is a form of respiration that occurs in the absence of oxygen. In this process, yeast cells break down glucose into ethanol (alcohol) and carbon dioxide, releasing energy. The carbon dioxide gas produced during anaerobic respiration forms bubbles, as observed in the experiment.
(iv) (a) In the cortex of kidney or in the inner lighter region of kidney.
(b) Chordae tendineae are fibrous cords or tendons that connect the papillary muscles to the atrioventricular valves (mitral and tricuspid valves) in the heart.

(v)




**Answer 8.**

(i) The function of the aqueous humour is to allow light rays to pass into the eye, prevents their refraction and dispersion, and keeps the lens moist.

(ii) (a) False, Cones are the receptor cells in the retina of the eye that are sensitive to the **bright** light.

(b) False, the unit of light absorbed by the chlorophyll during photosynthesis is the **photon** or **quantum.**

(iii) (a) Because in honey bees, females develop from fertilised eggs which are diploid and males develop from unfertilised eggs which are haploid.

(b) The CFCs cause damage to the ozone layer which protects us from the harmful effects of ultraviolet rays present in sunlight. Hence, its use is banned in some countries.

(iv) Green plants are vital for sustaining life on Earth. They produce oxygen, which is essential for the respiration of most living organisms. Green plants also form the base of the food chain, providing the primary source of nutrition for herbivores and, indirectly, for carnivores. Additionally, they absorb carbon dioxide from the atmosphere, helping to regulate the climate and mitigate the effects of climate change. Furthermore, green plants support biodiversity by providing habitats for a wide variety of species.

(v) (a) Semicircular canals.

(b) When a person spins, the movement of the fluid within these canals stimulates the hair cells, which send signals to the brain about the body's rotational movements. This sensation of motion can cause dizziness when the brain receives conflicting signals about the body's position and movement, especially when the spinning stops and the fluid continues to move.

(c) The nerve that carries the impulse for dizziness to the brain is the vestibular nerve, which is a part of the vestibulocochlear nerve (cranial nerve VIII).

# 2 Sample Paper

## Biology

## Answers

### Section-A

**Answer 1.**

(i) (a) P – Astigmatism, Q – irregular

**Explanation:**

In astigmatism, the curvature of the eye lens is irregular, resulting in distorted or blurred vision. This condition occurs when the cornea, the clear front surface of the eye, has an asymmetrical shape; as a result, light rays entering the eye are not focused properly on the retina, causing difficulties in seeing both near and far objects clearly.

(ii) (a) P – Semi-circular canals, Q – Cochlea

**Explanation:**

The three semi-circular canals—horizontal, posterior, and anterior—are filled with fluid and lined with tiny hair cells that detect rotational movements of the head. When the head moves, the fluid in the canals shifts, causing the hair cells to bend and send signals to the brain regarding changes in position and movement. On the other hand, the cochlea is located next to the semi-circular canals and is responsible for converting sound vibrations into electrical signals that are sent to the brain for processing.

(iii) (c) Cornea

**Explanation:**

The cornea is the transparent front part of the eye that covers the iris and pupil. It is commonly transplanted because it is crucial for focusing vision. When damaged, a corneal transplant (keratoplasty) can restore vision by replacing the damaged cornea with a healthy one from a donor.

(iv) (c) Radhika only

**Explanation:**

In a reflex arc, the sequence of events begins with the stimulation of a sensory receptor by a specific stimulus, such as touch or heat. This leads to the generation of an impulse that travels along the sensory neuron towards the spinal cord. Upon reaching the spinal cord, the impulse synapses with an interneuron which then relays it to a motor neuron. The motor neuron carries the impulse from the spinal cord back towards the effector organ, such as a muscle or gland, which produces a response to counteract or remove the original stimulus.

(v) (c) Efferent arteriole

**Explanation:**

The efferent arteriole contains the lowest concentration of urea because it carries blood that has been filtered in the glomerulus, where some urea has been removed. This results in a lower urea concentration compared to the afferent arteriole, glomerulus, and collecting tubule.

(vi) (b) Left atrium → Left ventricle → Body → Right atrium

**Explanation:**

Systemic circulation begins when oxygenated blood flows from the left atrium to the left ventricle, which pumps it to the entire body via the aorta. After delivering oxygen and nutrients, deoxygenated blood returns to the heart through veins and enters the right atrium. This cycle ensures oxygen-rich blood reaches body tissues and waste-rich blood is sent to the lungs via pulmonary circulation.

(vii) (a) (A) is true and (R) is false.

**Explanation:**

Sperm head contains tightly packed chromosomes, carrying essential genetic material for fertilisation. Sperm moves with its tail (flagellum), not with the head. The tail helps to propel the sperm towards the egg, while the head, housing genetic material, doesn't contribute to movement.

(viii) (c) Hypertonic solution

**Explanation:**

In a plasmolysed cell, the space between the cell wall and the plasma membrane is filled with the hypertonic solution from the surrounding environment, which causes the cell to lose water and shrink away from the cell wall.

(ix) (a) (A) is true and (R) is false.

**Explanation:**

Lymph is similar to blood plasma in its composition but does not contain RBCs and platelets. However, the primary function of lymph is to return excess tissue fluid to the bloodstream and aid in the immune response by transporting white blood cells.

(x) (a) The left ventricle is towards the left side.

**Explanation:**

The left ventricle, which pumps blood to the entire body, is located on the left side of the heart and generates strong pressure during contractions, making the heartbeat more noticeable on the left side.

(xi) (b) The nephron plays a vital role in maintaining water balance in the body.

**Explanation:**

The nephron is the functional unit of the kidney. It filters blood, reabsorbs essential nutrients and water, and excretes waste products and excess water as urine, thus playing a crucial role in maintaining the body's water balance.

(xii) (c) Non-biodegradable

**Explanation:**

The image shows waste like plastic bags, bottles, and wrappers, which do not decompose easily and persist in the environment for many years. Such materials are classified as non-biodegradable waste. Unlike organic or biodegradable waste, they cannot be broken down by natural microorganisms and thus contribute to long-term pollution in landfills and natural ecosystems.

(xiii) (a) Q, P, S, R

**Explanation:**

The correct sequence begins with root absorption (Q) where water enters through root hairs. It then travels upward via xylem conduction (P) in the stem. Adhesion and cohesion (S) help maintain a continuous water column and generate the pulling force. Finally, stomatal transpiration (R) results in water loss as vapor, sustaining the upward movement by creating a transpiration pull.

(xiv) (d) 1- Vena cava from body, 2- Aorta to body, 3- Pulmonary vein from lungs, 4- Pulmonary artery to lungs

**Explanation:**

Vena cava - takes blood from body parts to the right auricle, pulmonary vein which brings pure blood from lungs to the left atrium, dorsal aorta which carries blood from heart to body parts, and pulmonary artery which takes impure blood from heart to lungs.

(xv) (a) Nephron, Glomerulus, Tubular secretion

**Explanation:**

When Ravi drinks excess water, the nephrons in his kidneys filter it from the blood. The process begins in the glomerulus, where water and small molecules are filtered. Then, through tubular secretion, additional wastes and excess ions are added to the forming urine. This urine is then passed to the bladder and finally excreted, helping maintain the body's water balance efficiently.

**Answer 2.**

(i) (a) Osmoregulation
(b) Olfactory nerve
(c) Magnesium
(d) Stomata
(e) Glucagon

(ii) (a) Myelinated
(b) Non-myelinated
(c) Schwann cells
(d) Nodes of ranvier
(e) Neurilemma

(iii) (a) Odd one out: Acid rain
Others belong to the category: Cause or effect of water pollution
(b) Odd one out: Testes
Others belong to the category: Accessory male reproductive organs
(c) Odd one out: DDT
Others belong to the category: Biodegradable waste
(d) Odd one out: Somatotropin
Category: Pituitary hormones related to reproduction
(e) Odd one out: Forehead receding with ape-like head
Category: Characteristics of modern humans (Homo sapiens)

(iv) (a) Kidney
(b) Ureter
(c) Renal artery
(d) Bowman's capsule
(e) Urochrome

(v) (a) 3 (afferent arteriole)
(b) 2 (glomerulus)
(c) 4 (DCT)
(d) 5 (loop of Henley)
(e) 1 (collecting duct)

## Section-B

**Answer 3.**

(i) **Osmoregulation:** The process of maintaining a constant osmotic condition in the body by regulating the water and solute concentration of body fluids.

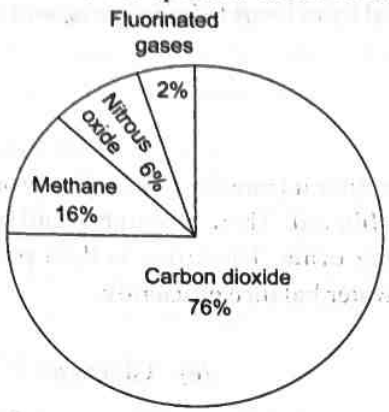
(ii) (a) Conditioned reflex
(b) Simple reflex

(iii) (a) The plant's movement toward the light is called phototropism.
(b) The hormone responsible for this growth movement is auxin, which helps the plant bend toward the light.

(iv) **Identical Twins :** A single fertilised egg may get split and separated into two parts during its early stages of cell division. Each of these two split parts then behaves like an independent egg and produces one complete individual each.

**Fraternal Twins :** Sometimes, two eggs are released from ovaries at a time and both may get fertilised by two different sperms, which resulting in genetically distinct siblings.

(v)




**Answer 4.**

(i) It is the movement of salt or ions across a cell membrane from lower to higher concentration by the use of energy. It occurs against the concentration gradient and require specific transport proteins.

(ii) Turgor pressure and Wall pressure:

| Turgor pressure | Wall pressure |
|---|---|
| (i) It is the pressure applied by the contents of a turgid cell on its wall. | (i) It is the pressure exerted by the cell wall on its content. |
| (ii) Maintains cell rigidity and supports the plant's structure. | (ii) Provides resistance to prevent over-expansion of the cell. |

(iii) *Penicillium notatum*

(iv) **Turgidity:** Cell-wall becomes rigid, can not accommodate any more water.

**Flaccidity:** Cell content is shrunken and cell is no more tight.

(v) (a) The solid circle indicates the daughter is colourblind.

(b) The gene of this trait is located on the X-chromosome.

(c) Another trait which follows the same trait is Haemophilia.

**Answer 5.**

(i) Pollution may be defined as "an undesirable change in the physical, chemical or biological characteristics of the air, water and land that can be harmful to the health, survival or activities of humans or other living organisms."

(ii) (a) Sodium (Na) in humans is essential for maintaining fluid balance, nerve function, and muscle contractions.

(b) Iron (Fe) in plants is crucial for chlorophyll synthesis and is a key component of enzymes involved in respiration and photosynthesis.

(iii) (a) Population → Community → Ecosystem → Biome → Biosphere

(b) Species → Habitat → Population → Community → Ecosystem

(iv) 28 days; 4 phases

(v) (a) Excretion is the process of removal of all harmful and unwanted products especially nitrogenous products from the body of living beings.

(b) The units of the kidney are nephrons.

(c) Malpighian capsule lies in the cortex region of the kidney and is present in large numbers, which give the cortex of the kidney a dotted appearance.

**Answer 6.**

(i) **Biodiversity:** The existence of a wide variety of species of plants, animals, and microbes in a natural habitat within a particular environment is called biodiversity.

(ii) **Short-Sightedness (Myopia):** Inability to see distant objects clearly. Caused by elongation of the eyeball or excessive curvature of the cornea.

Corrected using concave lenses.

**Long-Sightedness (Hypermetropia):** Difficulty in seeing close objects clearly. Caused by a shorter eyeball or a cornea that is too flat.

Corrected using convex lenses.

(iii) (a) **IAA:** Indole-3-acetic Acid

(b) **ABA:** Abscisic Acid

(iv) The scrotum keeps the testes slightly cooler than the body's core temperature, which is necessary for the proper production and maturation of sperm. The temperature regulation is essential because high temperature of body does not permit maturation of sperms.

(v) (a) Water Pollution

(b) Detergents, sewage, oil spills and domestic waste cause water pollution.

(c) Water pollution significantly impacts human health by causing waterborne diseases such as cholera, dysentery, typhoid fever, and hepatitis A. Chemical contaminants like heavy metals, pesticides, and industrial chemicals can lead to neurological issues, kidney damage, cancer, and reproductive problems.

**Answer 7.**

(i) Palisade parenchyma contains a large number of chloroplasts. So, more photosynthesis takes place in the palisade parenchyma.

(ii)

| Autotrophs | Heterotrophs |
|---|---|
| (i) They contain chlorophyll, and hence can produce their own food. | (i) They do not contain chlorophyll and hence cannot produce their own food. |
| (ii) These are primary producers. | (ii) These are consumers, depend on autotrophs or other heterotrophs. |

(iii) (a) The process that caused the tissue to shrink is osmosis.

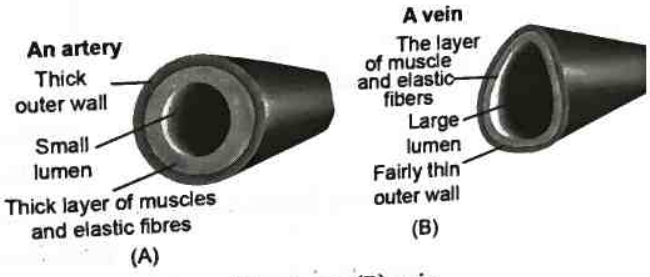
(b) Osmosis is the movement of water molecules from an area of lower solute concentration to an area of higher solute concentration through a selectively permeable membrane. In this case, water moved out of the cells of the tissue into the surrounding salt solution, causing the tissue to shrink.

(iv) **Auxin:** Primarily synthesised in shoot apical meristem and young leaves.

**Cytokinin:** Primarily synthesised in roots and transported to other organs.

(v) (a) Artery

(b) Vein




(A) artery, (B) vein

**Answer 8.**

(i) Osmosis is the movement of water molecules through a selectively permeable membrane from a region of lower solute concentration to a region of higher solute concentration. In the case of water drops on the surface of a leaf, there is no selectively permeable membrane to facilitate the movement of water into the leaf cells. Additionally, the cuticle layer on the leaf surface is hydrophobic (water-repellent), preventing water from entering the leaf.

(ii) (a) True, Ozone in the troposphere is considered a harmful pollutant as it contributes to air pollution and can have adverse effects on human health and the environment.

(b) False, cilia lining of the oviduct funnel push the released ovum into the oviduct.

(iii) The ovum does not exert any distant chemical attraction over the sperms. Hence, to ensure that sperms reach every part of the female reproductive tract so that at least one sperm becomes available to the ovum for its fertilisation, a large number of sperms are required.

(iv) Hormones are referred to as 'chemical messengers' because they are substances produced by endocrine glands and transported through the bloodstream to target organs or tissues, regulating various physiological processes such as growth, metabolism, reproduction, and mood. Hormones facilitate communication between different parts of the body, ensuring that the body functions in a coordinated and balanced manner.

(v) (a) The picture indicates the Lamarckian principle of use and disuse.

(b) According to Lamarck's theory, organs that are used more become stronger or more developed, while those not used may diminish. He proposed that these changes (acquired characteristics) are passed on to the next generation.

(c) Acquired characteristics are traits or changes developed by an organism during its lifetime due to use, disuse, or environmental influence. According to Lamarck, these traits can be inherited by offspring (though this has been scientifically disproven).

□□

# Specimen Question Paper

(The format of the same as followed in the ICSE year 2025 examination)

## Computer Applications

*Maximum Marks: 100*
*Time allowed: Two hours*

### General Instructions

*Answers to this Paper must be written on the paper provided separately.*
*You will **not** be allowed to write during the first **15** minutes.*
*This time is to be spent in reading the question paper.*
*The time given at the head of this Paper is the time allowed for writing the answers.*
*This Paper is divided into two sections.*
*Attempt **all** questions from **Section A** and **any four** questions from **Section B**.*
*The intended marks for questions or parts of questions are given in brackets [ ].*

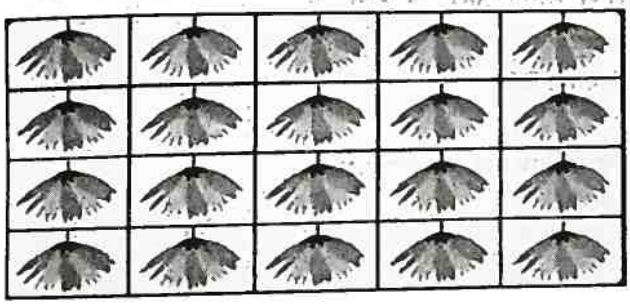
### Questions

**Section-A** (Attempt all questions from this Section)

**Question 1.** [20]

**Choose the correct answers to the questions from the given options.**
**(Do not copy the question, write the correct answers only.)**

(i)



Name the above structure:

(a) One dimensional array
(b) Two Dimensional array with 4 rows and 5 columns
(c) Three dimensional array
(d) Two Dimensional array with 5 rows and 4 columns [Analysis]

(ii) "Java compiled code (byte code) can run on all operating systems"—Name the feature.

(a) Robust and Secure
(b) Object Oriented
(c) Platform Independent
(d) Multithreaded [Understanding]

(iii) The size of '\n' is:

(a) 2 bytes
(b) 4 bytes
(c) 7 bytes
(d) 16 bytes [Recall]

(iv) Identify the operator that gets the highest precedence while evaluating the given expression:

a + b % c * d – e

(a) +
(b) %
(c) –
(d) *

[Analysis]

(v) Which of the following is a valid java keyword?

(a) If
(b) BOOLEAN
(c) static
(d) Switch

[Understanding]

(vi) The output of the following code is:

System.out.println(Math.ceil(6.4)+Math.floor(–1–2);

(a) 3.0
(b) 4
(c) 3
(d) 4.0

[Analysis]

(vii) Which of the following returns a String?

(a) length()
(b) charAt(int)
(c) replace(char, char)
(d) indexOf(String)

[Understanding]

(viii) Which of the following is not true with regards to a switch statement?

(a) checks for an equality between the input and the case labels
(b) supports floating point constants
(c) break is used to exit from the switch block
(d) case labels are unique

[Understanding]

(ix) Consider the array given below:

char ch[ ]={'A', 'E', 'I', 'O', 'U'};

Write the output of the following statements:

System.out.println(ch[0]*2); :

(a) 65
(b) 130
(c) 'A'
(d) 0

[Analysis]

(x) To execute a loop 10 times, which of the following is correct?

(a) for (int i=11;i<=30;i+=2)
(b) for (int i=11;i<=30;i+=3)
(c) for (int i=11;i<=20;i++)
(d) for (int i=11;i<=21;i++)

[Analysis]

(xi) A single dimensional array has 50 elements, which of the following is the correct statement to initialize the last element to 100.

(a) X[51]=100
(b) X[48]=100
(c) X[49]=100
(d) X[50]=100

[Analysis]

(xii) Method prototype for the method compute which accepts two integer arguments and returns true/false.
(a) void compute (int a, int b)
(b) boolean compute (int a, int b)
(c) Boolean compute (int a, b)
(d) int compute (int a, int b) **[Understanding]**

(xiii) The statement that brings the control back to the calling method is:
(a) break
(b) System.exit(0)
(c) continue
(d) return **[Recall]**

(xiv) The default value of boolean variable is:
(a) False
(b) 0
(c) false
(d) True **[Recall]**

(xv) The method to convert a lowercase character to uppercase is:
(a) String.toUpperCase( )
(b) Character.isUppercase(char)
(c) Character.toUpperCase(char)
(d) toUpperCase( ) **[Recall]**

(xvi) **Assertion (A):** Integer class can be used in the program without calling a package.
**Reason(R):** It belongs to the default package java.lang.
(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is true and Reason (R) is false
(d) Assertion (A) is false and Reason (R) is true **[Application]**

(xvii) A student executes the following code to increase the value of a variable '*x*' by 2.
He has written the following statement, which is incorrect, $x = +2$;
What will be the correct statement?
A. $x+= 2$;
B. $x = 2$;
C. $x = x + 2$;
(a) Only A
(b) Only C
(c) All the three
(d) Both A and C **[Analysis]**

(xviii) The statement used to find the total number of Strings present in the string array String s[ ] is:
(a) s.length
(b) s.length()
(c) length(s)
(d) len(s) **[Analysis]**

(xix) Consider the following program segment in which the statements are jumbled, choose the correct order of statements to swap two variables using the third variable.

```
void swap(int a, int b)
{   a = b;    → (1)
    b = t;    → (2)
    int t = 0; → (3)
```

```
    t = a;          → (4)
}
```

(a) (1) (2) (3) (4)
(b) (3) (4) (1) (2)
(c) (1) (3) (4) (2)
(d) (2) (1) (4) (3) **[Analysis]**

(xx) **Assertion (A):** An argument is a value that is passed to a method when it is called.
**Reason (R):** Variables which are declared in a method prototype to receive values are called actual parameters.
(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion(A)
(c) Assertion (A) is true and Reason (R) is false
(d) Assertion (A) is false and Reason (R) is true **[Application]**

**Question 2.**

(i) Rewrite the following code using single if statement. **[2]**

```
if (code == 'g')
System.out.println ("GREEN");
else if (code == 'G')
System.out.println ("GREEN");
```

**[Understanding]**

(ii) Evaluate the given expression when the value of a = 2 and b = 3 **[2]**

```
b *=a++ – ++b+++a;
System.out.println ("a="+a);
System.out.println("b="+b);
```

**[Analysis]**

(iii) A student executes the following program segment and gets an error. Identify the statement which has an error, correct the same to get the output as WIN. **[2]**

```
boolearn x = true;
switch(x)
{   case 1: System.out.println ("WIN"); break;
    case 2: System.out.println ("LOOSE");
}
```

**[Analysis]**

(iv) Write the Java expression for $\sqrt[3]{x} + \sqrt{y}$ **[2]**

**[Understanding]**

(v) How many times will the following loop execute? Write the output of the code: **[2]**

```
int x=10;
while(true){
System.out.println(x++ * 2);
if (x%3==0)
break;
}
```

**[Analysis]**

(vi) Write the output of the following String methods: **[2]**

```
String x= "Galaxy", y= "Games";
```

(a) System.out.println (x.charAt(O)==y.charAt(O));
(b) System.out.println (x.compareTo(y)); **[Analysis]**

(vii) Predict the output of the following code snippet: **[2]**

```
char ch='B';
char chr= Character.toLowerCase(ch);
int n=(int) chr-10;
System.out.println((char)n+"\t"+chr);
```

(viii) A student is trying to convert the string present in x to a numerical value, so that he can find the square root of the converted value, However the code has an error. Name the error (syntax / logical / runtime). Correct the code so that it compiles and runs correctly. **[2]**

```
String x= "25";
int y=Double.parseDouble (x);
double r=Math.sqrt (y);
System.out.println (r);
```

**[Analysis]**

(ix) Consider the following program segment and answer the questions below: **[2]**

```
class calculate
{
    int a; double b;
    calculate( )
    {
    a=0;
    b=0.0;
    }
    calculate(int x, double y)
    {
    a=x;
    b=y;
    }
    void sum()
    {
    System.out.println(a*b);
    }
}
```

**[Analysis]**

Name the type of constructors used in the above program segment?

(x) Consider the following program segment and answer the questions given below: **[2]**

intx[] [] = { {2,4, 5,6}. {5,7,8,1}, {34, 1,10, 9}};

(a) What is the position of 34?

(b) What is the result ofx[2][3] + x[1][2]? **[Analysis]**

## Section-B (Answer any four questions from this Section)

*The answers in this section should consist of the programs in either BlueJ environment or any program environment with java as the base.*

*Each program should be written using variable description/mnemonic codes so that the logic of the program is clearly depicted.*

*Flowcharts and algorithms are not required.*

*Buffered Reader/Data Inut stream should not be used in the programs.*

**Question 3.** **[15]**

Define a class with the following specifications:

Class name: Bank

Member variables:

double p : stores the principal amount

double n: stores the time period in years

double r: stores the rate of interest

double a: stores the amount

member methods:

void accept(): input values for p and n using Scanner class methods only.

void calculate( ) :calculate the amount based on the following conditions:

| Time in (Years) | Rate % |
|---|---|
| Upto ½ | 9 |
| > ½ to 1 year | 10 |
| > 1 to 3 years | 11 |
| > 3 years | 12 |

$$a = p\left(1+\frac{r}{100}\right)^n$$

void display(): display the details in the given format.

| Principal | Time | Rate | Amount |
|---|---|---|---|
| xxx | xxx | xxx | xxx |

**[Understanding/Application]**

Write the main method to create an object and call the above methods.

**Question 4.** **[15]**

Define a class to search for a value input by the user from the list of values given below. If it is found display the message "Search successful", otherwise display the message "Search element not found" using Binary search technique. **[Understanding/Application]**

5.6, 11.5, 20.8, 35.4, 43.1, 52.4, 66.6, 78.9, 80.0, 95.5.

**Question 5.** **[15]**

Define a class to accept a string and convert the same to uppercase, create and display the new string by replacing each vowel by immediate next character and every consonant by the previous character. The other characters remain the same.

Example: Input : #IMAGINATION@2024 **[Understanding/**

Output : #JLBFJMBSJPM@2024 **Application]**

**Question 6.** **[15]**

Define a class to accept values into a 4 × 4 array and find and display the sum of each row.

**Example:**

A[][]={{1 ,2, 3, 4}, { 5, 6, 7, 8}, {1,3,5,7}, {2,5,3,1}}

Output:

sum of row 1 =10 (1+2+3+4)

sum of row 2= 26 (5+6+7+8)

sum of row 3=16 (1+3+5+7)

sum of row 4= 11 (2+5+ 3+ 1) **[Understanding/Application]**

**Question 7.** **[15]**

Define a class to accept a number and check whether it is a SUPERSPY number or not. A number is called SUPERSPY if the sum of the digits equals the number of the digits.

Example 1:

Input: 1021

output: SUPERSPY number [SUM OF THE DIGITS = 1+0+2+1= 4, NUMBER OF DIGITS = 4]

Example 2:

Input: 125

output : Not an SUPERSPY number [1+2+5 is not equal to 3]

**Question 8.** **[Understanding/Application]** **[15]**

Define a class to overload the method display() as follows:

void display(): To print the following format using nested loop

```
1 2 1 2 1
1 2 1 2 1
1 2 1 2 1
```

void display(int n, int m): To print the quotient of the division of m and n if m is greater than n otherwise print the sum of twice n and thrice m.

double display(double a, double b, double c) - to print the value of z where

$$z = p \times q$$

$$p = \frac{a+b}{c} \quad q = a+b+c$$

**[Understanding Application]**

# Answers

## Section-A

**Answer 1.**

(i) (b) Two Dimensional array with 4 rows and 5 columns

**Explanation :**

Given structure is two dimensional array with 4 rows and 5 columns.

(ii) (c) Platform Independent

**Explanation :**

In Java, the feature of platform independence allows compiled code (bytecode) to run on all operating systems. This is achieved by compiling source code into an intermediate form called bytecode, which is then interpreted by the Java Virtual Machine (JVM) specific to each system. Write once, run anywhere.

(iii) (a) 2 bytes

**Explanation :**

The size of '\n' is considered 2 bytes because, in some systems and encodings (like UTF-16), each character, including the newline character, is stored using 2 bytes.

(iv) (b) %

**Explanation :**

The modulus operator % has the highest precedence in the given expression a + b % c * d - e because multiplication (*), division (/), and modulus (%) have higher precedence than addition (+) and subtraction (-), and % is evaluated before * due to left-to-right associativity.

(v) (c) static

**Explanation :**

The valid Java keyword is static because Java keywords are case-sensitive, and static is correctly spelled and formatted as per Java's syntax rules. The other options either have incorrect casing or are not valid Java keywords.

(vi) (d) 4.0

**Explanation :**

Math.ceil(6.4), the result is 7.0

Math.floor(–1–2), the result is Math.floor(–3)

Math.floor(–3), the result is –3.0

7.0 + (–3)

4.0

(vii) (c) replace(char, char)

**Explanation :**

The replace(char, char) method returns a new String with all occurrences of the first character replaced by the second character. The other methods return either an int or a char, not a String.

(viii) (b) supports floating point constants

**Explanation :**

Switch statements in Java do not support floating-point constants in case labels, making option (b) false. All other options are true regarding the behaviour of switch statements in Java.

(ix) (b) 130

**Explanation :**

The statement accesses the ASCII value of 'A' (which is 65) from the array and multiplies it by 2, resulting in 130, making option (b) the correct choice.

(x) (a) for (int i= l l;i<=30;i+=2)

**Explanation :**

This loop initializes i to 11 and iterates until i is less than or equal to 30, incrementing i by 2 in each iteration. Since it increments by 2, it will iterate 10 times, covering the range from 11 to 29 inclusive, executing the loop 10 times.

(xi) (c) x[49]=100

**Explanation :**

Arrays are zero-indexed in most programming languages, including Java.

Since the array has 50 elements, the last element is at index 49.

Thus, x[49] corresponds to the last element, and assigning it the value 100 initializes the last element to 100.

(xii) (b) boolean compute (int a, int b)

**Explanation :**

Option (b) is the correct choice because it explicitly specifies the return type as "boolean," indicating that the method will return a boolean value (true or false) based on the computation result, aligning with the requirement.

(xiii) (d) return

**Explanation :**

The "return" statement exits the current method and transfers control back to the calling method, making it the appropriate choice for returning control to the caller.

(xiv) (c) false

**Explanation :**

Boolean variables default to "false" because they represent binary logic, where "false" signifies the absence or negation of a condition.

(xv) (c) Character.toUpperCase( char )

**Explanation :**

Option (c) is the correct choice because the Character class in Java provides a static method toUpperCase(char) specifically designed to convert a lowercase character to its uppercase equivalent. This method takes a character as input and returns its uppercase counterpart.

(xvi) (a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)

**Explanation :**

The Integer class can indeed be used in a program without explicitly importing a package because it belongs to the default package java.lang, which is automatically imported into all Java programs. Therefore, Assertion (A) is true, and Reason (R) correctly explains why Assertion (A) is true.

(xvii) (d) Both A and C

**Explanation :**

A: x += 2; is the compound assignment operator, which increments the value of 'x' by 2.

C: x = x + 2; directly adds 2 to the current value of 'x', achieving the desired result.

(xviii) (a) s.length

**Explanation :**

Option (a) is correct because in Java, arrays have a length property that directly provides the number of elements in the array, without requiring parentheses. Therefore, s.length retrieves the total number of Strings in the array s[ ].

(xix) (b) (3) (4) (1) (2)

**Explanation :**

Initialize the temporary variable t.

Assign the value of a to t.

Assign the value of b to a.

Assign the value of t (which originally held the value of a) to b.

(xx) (c) Assertion (A) is true and Reason (R) is false

**Explanation :**

Assertion (A) accurately defines an argument. Reason (R) incorrectly describes actual parameters, which are the values passed to a method, not the variables in the method prototype.

**nswer 2.**

(i) if (code == 'g' || code == 'G' )
System.out.println("GREEN");

(ii) a++: a++ returns the current value of a (2), then increments a to 3.
++b: ++b increments b to 4, then returns its new value (4).
++a: ++a increments a to 4, then returns its new value (4).
Substitute values, b *= 2 - 4 + 4;
b *= 2 - 4 + 4 = b *= 2 - 4 + 4 = b *= 2.
Multiply the current value of b (3) by 2: b = 3 * 2 = 6.
Now, let's print the values of a and b
System.out.println("a=" + a); // Output: a= 4
System.out.println("b=" + b); // Output: b= 6

iii) Statement with error : boolean x=true ; To get the required output : int x = 1

iv) Math.cbrt(x) + Math.sqrt(y)

(v) Loop is executed two times
20
22

(vi) (a) true
(b) – 1

(vii) X b

**Explanation :**

The character with ASCII value 88 is 'X' so '(char)n' gives 'x', and 'chr' is 'b'.

(viii) Syntax error
Statement with error : int y = Double. parseDouble(x);
Correct statement : double y = Double.parseDouble(x);

(ix) Default constructor, Parameterized constructor

(x) (a) x[2][0]
(b) 17(9+8)

## Section-B

**Answer 3.**

```
import java. util. *;
class bank
{
    double p,n,r,a;
    Scanner ob = new Scanner(System.in);
    void accept()
    {
        System.out.println("Enter principal");
        p=ob.nextDouble();
        System.out.println("Enter number of years");
        n=ob.nextDouble();
    }
    void calculate()
    {
    if(n<=0.5)
    r=9;
    else
    if(n>0.5&&n>=l)
    r=10;
    else
    if(r> l&&n<=3)
    r=11;
    a=p*Math.pow(l +r/100,n);
}
void display()
{
    System.out.println("Principal"+"\t"+"Rate"+"\t"+"Time"+"\t"+"Amount");
    System.out.println(p+"\t"+r+"\t"+n+"\t"+a);
}
void main()
{
    bank b = new bank();
    b.accept()
```

```
    b.calculate();
    b.display();
  }
}
```

Answer 4.

```
class binary
{
    double x[ ]= {5.6, 11.5, 20.8, 35.4, 43.1, 52.4, 66.6, 78.9, 80.0, 95.5};
    double n;
    binary(double z)
    {
        n=z;
    }
    void search( )
    {
        int f=0, l = x.length,m;
        while(f<=l)
        {
        m=(f+l)/2;
        if(x[m]==n)
        {
          System.out.println("Search Successful");
          System.exit(0);
        }
        if(x[m]<n)f=m+1;
        if (x[m]>n)l=m-1
    }
    System.out.println("Search Unsuccessful");
}
```

Answer 5.

```
class convert
{
    String s;
    convert (String z)
    {
        s=z;
    }
    void convert()
    {
        int i, l= s.length()·char ch; String ns="";
        for(i=0;i<l:i++)
        {
        ch=s.charAt(i);
        if( Character.isLetter( ch))
        {
        if("AEIOUaeiou" .indexOf(ch)>=O)
            ns=ns+(char)( ch+ 1);
```

```
            else
                ns=ns+(char)(ch-1);
            }
            else
                ns=ns+ch;
            }
            System.out.print(ns);
        }
    }
```

**Answer 6.**

```
    class sumrow
    {
      int x[ ][ ]=new int[4][4];
      sumrow(int z[ ] [ ])
      {
         x=z;
      }
      void calculate()
      {
         int r, c, s=0;
         for(r=0;r<4;r++)
         {
         for(c=0;c<4 ;c++)
         {
           s=s+x[r] [ c ];
         }
         System.out.println(" sum of row="+r+"="+s );
         s=0;
      }
    }
}
```

**Answer 7.**

```
class superspy
{
   int n;
   superspy(int x)
   {
     n=x;
   }
   boolean superspy( )
   {
  int d, s=0,c=0
  while(n>0)
  {
    d=n%10;
    s=s+d;
    c++;
    n=n/10;
```

```
}
if(s==c)
return true;
else
return false;
}
}
```

**Answer 8.**

```
class overload
{
  void display( )
  {
    int r,c;
    for(r=1;r<=3;r++)
    {
      for(c=1;c<=5;c++)
      {
        if(c%2=0)
        System.out.print(2);
        else
        System.out.print(1);
      }
      System.out.println( );
    }
  }
  void display(int m,int n)
  {
    if(m>n)
    System.out.println(m/n);
    else
    System.out.println(2*n+3*m);
  }
  void display(double a, double b, double c)
  {
    double z, p, q;
    p=(a+b)/c;
    q=a+b+c;
    z=p*q;
    System.out.println(z);
  }
}
```

□□

# 1 Sample Paper

## Computer Applications

## Questions

### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers and write the correct option.**
**(Do not copy the question,write the correct answers only.)**

(i)

In the above image, the lady is playing various roles in her daily life. What is the feature it depicts in OOP? **[Analysis]**

(a) Encapsulation
(b) Inheritance
(c) Abstraction
(d) Polymorphism

(ii) Conditional operator is an alternate to _____ block of statements. **[Understanding]**

(a) If else
(b) If else if else
(c) Nested if
(d) All of them

(iii) Modulus operator, %, can be applied to: **[Understanding]**

(a) Integers
(b) Floating–point numbers
(c) Both Integers and floating – point numbers
(d) None of the above

(iv) Math. ceil(46.6) output is? **[Analysis]**

(a) 46.5 (b) 46.6 (c) 46.0 (d) 47.0

(v) Encapsulation means: **[Understanding]**

(a) Binding of all functions and attributes together
(b) Adding a function to a class
(c) Deleting a method from a class
(d) None of these

(vi) Which of the following are not keywords? **[Understanding]**

(a) NULL (b) Implements (c) Protected (d) None of these

(vii) A protected member of a class is accessible in: [Recall]
(a) class only
(b) class and package
(c) class, subclass and package
(d) None of these

(viii) Which of the following are primitive data types? [Understanding]
(1) double (2) String (3) Char (4) Integer
(a) (1) and (3) (b) (2) and (3) (c) Only (3) (d) (1) and (4)

(ix) Alternative way to send multiple values from a function is : [Understanding]
(a) Arrays (b) Lists (c) Tuples (d) None of these

(x) The total size of the given array is _____ bytes. [Analysis]
char vowel[] = new char[5];
(a) 5 (b) 10 (c) 20 (d) 0

(xi) Defining two or more methods in the same class with same name is called_____. [Recall]
(a) Constructor overloading
(b) Function overloading
(c) Static function
(d) None of these

(xii) A user defined function in Java can return _____ number of values. [Recall]
(a) 2 (b) 3 (c) 1 (d) None of these

(xiii) The following code will give output : [Understanding]

```
void sum( int n)
{
    if (n % 2 == 0)
    print(Math.pow(n, 2));
    else
    print(Math.pow(n, 3));
}
    void main()
    {
        sum(7);
    }
```

(a) 343 (b) 342 (c) 49 (d) 149

(xiv) In general, how many types of constructors are available for: [Recall]
(a) 5 (b) 2 (c) 3 (d) 4

(xv) Whenever an object is created, which among the following is called first automatically? [Understanding]
(a) New
(b) Class
(c) Constructor
(d) Trigger

(xvi) Among the following Statements, Which are true about Constructors? [Understanding]
I. A new operator automatically calls them.
II. They cannot be private.
III. They cannot be virtual.
(a) I and III (b) I and II (c) II and III (d) All of these

(xvii) **Assertion (A):** The compiler provides its default constructor to build the object. [Application]
**Reason (R):** The programmer creates no constructor in the class.
(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xviii) Read the following text, and choose the correct answer: [Analysis]
In the given statement, there is an error:
System.out.print(Computer Application+Java);

(a) Compile time error
(b) Logical error
(c) Runtime error
(d) No error

(xix) Given the following loop: [Application]

```
for(k = 5; k < 20; k += 7)
if(k %6 == 0)
continue;
```

**Assertion (A):** The loop runs 3 times and the final value is 26.
**Reason (R):** There is no effect of continue statement in the loop.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xx) Which token is a Character Literal ? [Understanding]
(a) public (b) 'a' (c) = (d) { }

**Question 2.**

(i) Evaluate the following expression if the value of $x = 2$, $y = 3$ and $z = 1$. [Analysis]

$$v = x + - - z + y{+}{+} + y$$

(ii) Write down the suitable Java expression for : [Analysis]

$$z = \frac{\sin x}{\cos x - 1} + 1$$

(iii) Rewrite the following using ternary operator: [Understanding]

```
if(n1 > n2)
r = true;
else
r = false;
```

(iv) Convert the following if else if construct into switch case: [Understanding]

```
if(var == 1)
System.out.println("good");
elseif(var == 2)
System.out.println("better");
elseif(var == 3)
System.out.println("best");
else
System.out.println("invalid");
```

(v) How many times will the following loop execute? What value will be returned? [Analysis]

```
int x = 2, y = 50;
do
{
++x;
y -= x++;
}
while(x <= 10);
return y;
```

(vi) char ch = '9';
res = Character.isDigit(ch);

(a) What is the data type of res? [Analysis]

(b) What is the value of res? [Analysis]

(vii) Solve : Math.pow (36, 0.5) + Math.cbrt (125) [Analysis]

(viii) Differentiate between boxing and unboxing. [Analysis]

(ix) [Analysis]

```
class MyClass{
    int num;
    MyClass() {
        num=50;
    }
    public static void main (String[] args){
    MyClass obj = new MyClass();
    System.out.println("Value of num : "+obj.num);
    }
}
```

What will be the output of the program?

(x) Given array[ ] = {1,9,8,5,2}; [Analysis]

(a) What is array.lenght() ? [Analysis]

(b) What is array[2] ? [Analysis]

## Section-B (Attempt any four questions from this Section)

*The answers in this section should consist of the programs in either BlueJ environment or any program environment with java as the base.*

*Each program should be written using variable description/mnemonic codes so that the logic of the program is clearly depicted.*

*Flowcharts and algorithms are not required.*

**Question 3.**

Stock Exchange rates the company against points scored (out of 100) by the company over a period of month as per the following category : **[Understanding/Application]**

| Points earned | Grade awarded | Remark |
|---|---|---|
| 0–20 | D | Poor for investment |
| 21–50 | C | Average for investment |
| 51–90 | B | Good for investment |
| 91–100 | A | Best for investment |

Write a Java program to design a class named Stock with the following class description :

**Class name :** Stock

**Member variable :** String CmpName – to store the name of the company

int points – to store the total points earned over the month

char grd – to store the grade

String rem – to store the remarks for investment

**Member functions :** parameterized constructor to assign company name and points earned through parameter and grd ='\u0000', rem=null.

void calculate() – to find the grade and remarks and assign them acc.

void display( ) – to display all the detail.

In the main method, create an object of the above class 'Stock' and call all the member functions accordingly.

**Question 4.**

Define a class to store 10 numbers in an integer array and sort them in descending order using selection sort. Display the original as well as the sorted array element. **[Understanding/Application]**

**Question 5.**

Write a program in JAVA to accept a string in upper case and find the frequency of each vowel present in the string.

**Sample Input:** "WE ARE LIVING IN COMPUTER WORLD."

**Sample Output:** Frequency of 'A' = 1
" " 'E' = 3
" " 'I' = 3
" " 'O' = 2
" " 'U' = 1

**[Understanding/Application]**

**Question 6.**

Define a class to store numbers in 3 x 3 array and print the boundary elements.

Example: A[][]={{ 1 ,2, 3}, { 4 ,5, 6}, { 7, 8, 9}};

Output: 1 2 3
4 5 6
7 8 9

**[Understanding/Application]**

**Question 7.**

**Amicable Number Definition:** The number n is amicable if it belongs to an amicable pair. Two numbers n and m are called an amicable pair if the sum of all positive divisors of n and the sum of all positive divisors of m are equal to (n + m).

**First ten such numbers:**

220, 284, 1184, 1210, 2620, 2924, 5020, 5564, 6232, 6368.

Declare a class named Numbers contain a method **AmicableNos(int, int)** that will check both the numbers are of Amicable pairs or not. Appropriate error message should be given in case.

**[Understanding/Application]**

**Question 8.**

Define a class to overload the method compute as follows:

compute(int r) – to print the volume of a sphere using the formula $V = \frac{4}{3}\pi r^3$

compute(int a, int b, int c) – to print the volume of a cuboid using the formula V = a x b x c

**[Understanding/Application]**

□□

# 2 Sample Paper

## Computer Applications

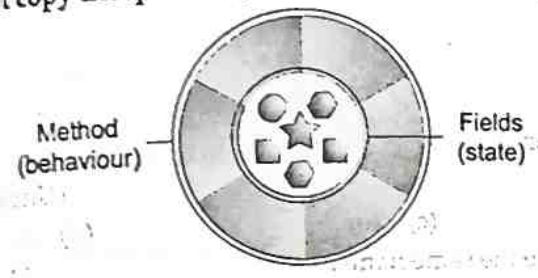
### Questions

**Section-A** (Attempt all questions from this Section)

Question 1.

Choose the correct answers to the questions from the given options.
(Do not copy the question, write the correct answers only.)

(i)




What is the above image showcasing regarding the features of OOP? **[Analysis]**
(a) Encapsulation (c) Abstraction
(b) Inheritance (d) Polymorphism

(ii) Relational operators are : **[Understanding]**
(a) Unary operator (c) Ternary operator
(b) Binary operator (d) Conditional operator

(iii) The keyword used to return a value from a function is : **[Recall]**
(a) returns (b) return (c) send (d) None of these

(iv) Default constructor requires how many parameters? **[Recall]**
(a) 3 (b) 0 (c) 2 (d) 1

(v) What is the final value stored in variable x ? **[Analysis]**
double x = Math.pow("345".index of ('5'), 3);
(a) 8.0 (b) 7.0 (c) 16 (d) 4

(vi) Which of the following is not a java feature? **[Understanding]**
(a) Dynamic (c) Use of pointers
(b) Arichitecture Neutral (d) Object-Oriented

(vii) Which of the following is invalid access modifier? **[Analysis]**
Class, public, private, protected
(a) protected (b) private (c) Class (d) public

(viii) Multiple branches is used by _____ statement. **[Recall]**
(a) Break (b) Switch (c) Continue (d) Loop

(ix) Which has same name as of class? **[Understanding]**
(a) Data (b) Object (c) Sub class (d) Constructor

(x) Given an integer array [3, 2, 7, 6, 9] of size 5, the last index will be: **[Understanding]**
(a) $0^{th}$ index (b) $2^{nd}$ index (c) $4^{th}$ index (d) $5^{th}$ index

(xi) How many times 'Hello' is printed? **[Analysis]**
Public static void main(String args[])

```
{
    for(i = 0; i < 5; i++)
    {
        System.out.println("hello");
        break;
    }
}
```

(a) 5 (b) 4 (c) 1 (d) 0

(xii) What is the type and value of the following expression? (Notice the integer division) **[Analysis]**
– 4 + 1/2 + 2*–3 + 5.0
(a) int -5 (b) double -4.5 (c) int -4 (d) double –5.0

(xiii) What is the way to come out of or Quit any Loop suddenly? **[Understanding]**
(a) quit; statement
(b) leave; Statement
(c) break; statement
(d) continue; Statement

(xiv) The members of a class are defined inside: **[Understanding]**
(a) ( ) (b) { } (c) [ ] (d) None of these

(xv) Function prototype means **[Understanding]**
(a) Return value of a function
(b) Name of the function
(c) Return type of the function
(d) Return type, Name and Inputs to a function

(xvi) A _____ is a exit control loop in Java. **[Understanding]**
(a) Do while (b) while (c) for (d) switch

(xvii) **Assertion (A):** In Java, no two identifiers can use the same name. **[Application]**
**Reason (R):** Identifiers are case sensitive.
(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xviii) Read the statement and choose the correct answer: **[Understanding]**
Function overloading is the only way to exhibit polymorphism in Java.
What is Polymorphism?
(a) To exhibit in more than one form.
(b) Inheriting the features of one class by another class.
(c) Binding data and methods into one unit.
(d) Hiding the background details from the user.

(xix) **Assertion (A):** Constructors are used to initialise the data members at the time of object creation.
**Reason (R):** Constructors cannot be called explicitly. **[Applicatio**
(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertio (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xx) setChar() is used to : **[Reca**
(a) replace the original string values with the new one
(b) convert any of the iterable to the sequence of iterable elements with distinct elements
(c) returns a reference to this Java. lang
(d) None of the above

Question 2.

(i) Evaluate the given Java expression, if x = 3.0 and y = 2.0 :

y += ++x + ++x + 5; **[Analysis]**

(ii) Write Java expression for :

$\sqrt{((a+b)^3 / |a-b|)}$ **[Analysis]**

(iii) Rewrite the following condition without using logical operators :

```
if (a > b || a > c)
System.out.println(a);
```

**[Understanding]**

(iv) Rewrite the following loop using for loop :

```
while (true)
System.out.println("*");
```

**[Understanding]**

(v) Give the output of following code and mention how many times the loop will execute ? **[Analysis]**

```
int i;
for(i=5; i >= 1; i - - )
{
    if(i % 2 == 1)
    continue;
    System.out.println(i+ "");
}
```

(vi) Given the following string:

```
String str="Programming";
```

(a) What will be the output of the code?

```
System.out.println(str.charAt(4));
```

(b) Explain what the 'charAt' method does in this context. **[Analysis]**

(vii) "MISSISSIPPI".indexOf('S') + "MISSISSIPPI".lastIndexOf('I') **[Analysis]**

(viii) Define ternary operator with example. **[Analysis]**

(ix) Consider the following program and answer the question given below : **[Understanding]**

```
public class Constructor3
{
    int birds = 10;
    Constructor3()
    {
        this(20);
    }
    Constructor3(int birds)
    {
        System.out.println("Birds=" + birds);
    }
    public static void main(String[] args)
    {
        Constructor3 con = new Constructor3();
    }
}
```

**[Analysis]**

What is the output of the above program?

(x) Consider the following array and answer the following given question:

String a[ ] = { cat, dog, lion, mouse, elephant, rabbit, giraffe }

(a) What is the position of elephant ? [Analysis]

(b) What is the size of an array ? [Analysis]

## Section-B (Attempt any four questions from this Section)

*The answers in this section should consist of the programs in either Blue] environment or any program environment with java as the base.*

*Each program should be written using variable description/mnemonic codes so that the logic of the program is clearly depicted.*

*Flowcharts and algorithms are not required.*

**Question 3.**

Define a class named BoxOffice with the following description : **[Understanding/Application]**

**Data Members :**

String title — to store the title of the movie.

float revenue — to store the revenue earned in a month.

String star — to store the rating of the movie.

**Member Methods :**

void accept( ) — to input and store the title of the movie and revenue.

void compute() — to compute the star awarded for the month as per the following criteria :

| Revenue (in ₹) | No. of Stars |
|---|---|
| 0 – 99999 | * |
| 100000 – 499999 | ** |
| 500000 – 1500000 | *** |
| Above 1500000 | **** |

void display( ) — to display the movie title along with the revenue earned and star awarded in the following format :

Title of the Movie Revenue earned Star Awarded

..... ..... .....

Write the main( ) method to create an object of the class and invoke the above member methods accordingly.

**Question 4.**

Write a program to accept a list of 20 integers. Sort the first 10 numbers in ascending order and next the 10 numbers in descending order by using 'Bubble Sort' technique. Finally, print the complete list of integers. **[Understanding/Application]**

**Question 5.**

Design a class to accept a string (one word) and convert it into uppercase. Now check and print if it is a 'No vowel' word or not. A word is a 'No vowel' word, if it does not contain any vowel in it.

Input: rhythm

Output: RHYTHM

No Vowel word

**[Understanding/Application]**

**Question 6.**

Define a class to accept values into a 3 × 3 array and check if it is a special diagonal array. An array is a special diagonal array if the sum of the left diagonal elements = sum of the right diagonal elements.

Example: A[][]={{ 4 ,2, 4}, { 1 ,3, 6}, { 5, 2, 5}};

Sum of left diagonal elements = 4+3+5 =12

Sum of right diagonal elements= 4+3+5=12

**[Understanding/Application]**

**Question 7.**

Define a class to accept a 4-digit number and check whether it is an Armstrong number or not.

**Note:** A number is an Armstrong number if the sum of all its digits to the power of the total number of digits in that number equals the number itself. **[Understanding/Application]**

**Example 1:**

Input: 154

Output: Invalid

**Example 2:**

Input: 1634

Output: Armstrong number

**Question 8.** **[Understanding/Application]**

Define a class to overload the method display as follows:

display(int n) – method to print the following pattern for 'n' times :

**Example:**

if n = 4

@@@@

@@@

@@

@

display(int a, int b) – method to print the square of all the numbers from a to b

**Example:**

if a=3 and b=6

9

16

25

36

□□

# 3 Sample Paper

## Computer Applications [Unsolved]

## Questions

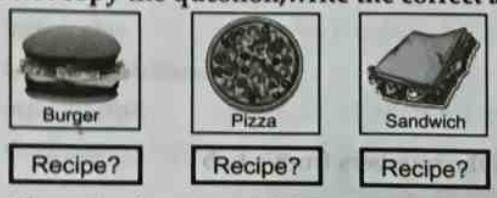
### Section-A (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers and write the correct option.**

**(Do not copy the question,write the correct answers only.)**

(i)




Name the features of OOP depicted through the above image. **[Analysis]**

(a) Encapsulation
(b) Inheritance
(c) Abstraction
(d) Polymorphism

(ii) Logical operators are used in combination with _____operator to form a single conditional statement. **[Understanding]**

(a) arithmetic (b) relational (c) increment (d) decrement

(iii) The region within which a variable/piece-of-code is accessible called _____. **[Recall]**

(a) area of variable
(b) place of variable
(c) instance of variable
(d) scope of variable

(iv) The operator that deallocates the memory occupied by an object and deletes the object is _____. **[Recall]**

(a) remove (b) deallocate (c) delete (d) None of these

(v) "This" keyword is used to: **[Recall]**

(a) Passing itself to a method of the same class
(b) Passing itself to another method
(c) Calling another constructor
(d) None of these

(vi) **[Analysis]**

```
public class TestConstructor
{
    void TestConstructor()
    {
        System.out.println("London");
    }
        TestConstructor()
    {
        System.out.println("America ");
    }
        public static void main(String[] args)
    {
        TestConstructor tc = new TestConstructor();
    }
}
```

(a) America
(b) London
(c) Compile time error
(d) No output

(vii) In Java, you can pass _____ variables from one constructor to another overloaded constructor. **[Understanding]**

(a) local variables
(b) static variables
(c) non-static variables
(d) local and static variables

(viii) Which Java keyword stores the address of the currently - calling object? **[Recall]**

(a) void (b) this (c) return (d) replace

(ix) What is the initial quantity of the ArrayList list? **[Analysis]**
ArrayList list = new ArrayList();

(a) 100 (b) 10 (c) 0 (d) 5

(x) In the given statement, the use of the new keyword is as follows: **[Analysis]**
int [] array = new int [5];

(a) create an object
(b) clears the memory
(c) allocates memory
(d) assign values

(xi) Which datatype is primitive datatype ? **[Understanding]**

(a) int (b) arrays (c) classes (d) public

(xii) Identify the statements listed below as assignment : **[Analysis]**

(a) System.out.println("Java");
(b) costPrice = 457.70;
(c) Car hybrid = new Car();
(d) petrolPrice++;

(xiii) What is the return data type of the given function log( )? **[Understanding]**

(a) float (b) int (c) char (d) double

(xiv) Which of the following is not binary operator ? **[Understanding]**

(a) ++ (b) ? (c) >= (d) ||

(xv) The method to convert a string to lower case is: **[Recall]**

(a) toLowerCase(char)
(b) toLOWERCASE(String)
(c) toLowerCase(String)
(d) tolowercase(String)

(xvi) The element in x[2] of the array {2,56,7,8,90,24,3,6} is: **[Analysis]**

(a) 7 (b) 56 (c) 2 (d) 8

(xvii) **Assertion (A):** Use of escape sequence becomes necessary in programs at a certain point in time.
**Reason (R):** Certain non-graphic characters cannot be typed directly through the keyboard. **[Application]**

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xviii) Read the following text, and choose the correct answer: **[Analysis]**
We need to use Math class methods for mathematical expression in Java programs but, we do not need to import any package in our program because the package where the Math class is defined, is available by default.
What is the package available to all the programs by default?

(a) java.io (b) java.util (c) (c) java.lang (d) (d) java.net

(xix) **Assertion (A):** The default constructor is a constructor that does not need any parameter.
**Reason (R):** The default constructor initialise the data members with their default values. **[Application]**

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xx) The function that modifies its parameters is called a: [Recall]

(a) Virtual function
(b) Pure function
(c) Impure function
(d) None of these

**Question 2.**

(i) Evaluate the expression : [Analysis]

$z = ++x * (y) - y$

where, $x = 20, y = 10, z;$

(ii) Write an expression in Java for $y = \cos x + \sqrt{a^2 + b^2}$ [Analysis]

(iii) Rewrite the following program segment using logical operators: [Understanding]

```
if(x > 5)
if(x > y)
System.out.println (x + y);
```

(iv) Convert following do-while loop into for loop. [Understanding]

```
int i = 1;
int d = 5;
do
{
    d = d * 2;
    System.out.println(d);
    i++;
} while(i <= 5);
```

(v) How many times does the body of the loop gets executed? What is the output of the same? [Analysis]

```
for(int m = 5; m <= 20; m += 5)
{
    if(m % 3 == 0)
    break;
    else if(m % 5 == 0)
    System.out.println(m);
    continue;
}
```

(vi) Given the strings: [Analysis]

String str 1 = "Hello";
String str 2 = "World";

(a) What will be the output of the code?

System.out.println(str1.concat(" ").concat(str2));

(b) Describe the purpose of 'concat' method.

(vii) What is the data type returned by the library functions:- compareTo(), equals()? [Understanding]

(viii) Declare an array of type double and size 12. [Understanding]

(ix) Given the code : [Analysis]

```
int Change(int p,int q)
{
    p = p * q;
    return p;
}
```

Which datatype is used in above code?

(x) Consider String x[] = {"Artificial intelligence", "IOT", "Machine learning", "Big data"}; [Analysis]

Give the output of the following statements:

(a) System.out.println(x[3]);
(b) System.out.println(x.length);

## Section-B (Attempt any four questions from this Section)

*The answers in this section should consist of the programs in either Blue] environment or any program environment with java as the base.*

*Each program should be written using variable description/mnemonic codes so that the logic of the program is clearly depicted.*

*Flowcharts and algorithms are not required.*

**Question 3.**

Anshul transport company charges for the parcels of its customers as per the following specifications given below :

Class name : A transport

Member variables :

String name – to store the name of the customer

int w – to store the weight of the parcel in kg

int charge – to store the charge of the parcel

Member functions :

void accept() – to accept the name of the customer, weight of the parcel from the user (using Scanner class)

void calculate()– to calculate the charge as per the weight of the parcel as per the following criteria.

| Weight in kg | Charge per kg |
|---|---|
| Upto 10 kgs | ₹ 25 per kg |
| Next 20 kgs | ₹ 20 per kg |
| Above 30 kgs | ₹ 10 per kg |

(using Scanner class)

A surcharge of 5% is charged on the bill.

void print()– to print the name of the customer, weight of the parcel, total bill inclusive of surcharge in a tabular form in the following format :

| Name | Weight | Bill amount |
|---|---|---|
| ..... | ..... | ..... |

Define a class with the above-mentioned specifications, create the main method, create an object and invoke the member methods. **[Understanding/Application]**

**Question 4.**

Write a program to input name and percentage of 35 students of class X in two separate one dimensional arrays. Arrange students details according to their percentage in the descending order using bubble sort method. Display name and percentage of first ten toppers of the class. **[Understanding/Application]**

**Question 5.**

Write a program in Java to accept a word in lower case and replace the alphabet e, with*. **[Understanding/Application]**

Sample Input :percentage Sample Output :p*rc*ntag*

**Question 6.**

Define a class to accept values into 3 x 3 integer array (matrix) and display the transpose of it. Transpose of a matrix is swapping the row elements with the column elements in the array.

For example, if the matrix is 1 2 3
4 5 6
7 8 9

The transpose will be

```
1 4 7
2 5 8
3 6 9
```

**Question 7.** **[Understanding/Application]**

WAP in Java to enter a number. Display the sum of the Original number and the reversed number.

*e.g.*, Original number = 345

Sum = 888

reversed = 543

**Question 8.** **[Understanding/Application]**

Define a class to overload the method display as follows:

display(int x, int y) - To Print the value of Z, where $Z = \frac{x^y}{y^x}$

display(int n) - To print the Floyd's triangle with N rows

Example:

If N = 5,

Output :

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

**[Understanding/Application]**

□□

# 4 Sample Paper

## Computer Applications [Unsolved]

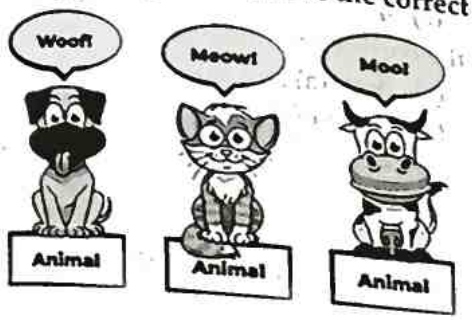
### Questions

**Section-A** (Attempt all questions from this Section)

Question 1.

Choose the correct answers and write the correct option.
(Do not copy the question, write the correct answers only.)

(i)




The above image showcases one important feature of OOP. What is it? [Analysis]

(a) Encapsulation
(b) Inheritance
(c) Abstraction
(d) Polymorphism

(ii) In Java, the order of precedence of the given operators is: [Understanding]
*, +, >, =

(a) *, +, >, =
(b) *, >, +, =
(c) >, *, +, =
(d) =, *, +, >

(iii) The object cannot be_____. [Understanding]

(a) passed by value
(b) passed by copy
(c) passed by function
(d) passed by reference

(iv) What is the Size of integer in Java Programming? [Recall]

(a) 8 Bytes
(b) 1 Byte
(c) 2 Bytes
(d) 4 Bytes

(v) What is the result of the expression float a = 35 / 0? [Analysis]

(a) Infinity
(b) Run time exception
(c) Not a number
(d) 0

(vi) If a user wants to execute a loop 10 times, which of the following statement will be used? [Analysis]

(a) for(i = 6; i < = 26; i = i + 2)
(b) for(i = 3;i < = 30; i = i + 3)
(c) for(i = 0; i < 10; i = i++)
(d) All of these

(vii) Give the value of the following expression: [Analysis]
6 – 2 + 10% 4 + 7

(a) 13
(b) 10
(c) 12
(d) 14

(viii) What is known as an object factory? [Understanding]

(a) instance
(b) class
(c) data
(d) functio

(ix) Which statement is True? [Analysis]

(a) An instance method can access only instance variables
(b) An instance method can access only static variables
(c) An instance method can access both static and non static data members
(d) None of the above

(x) The total size of the given array will be: [Analysis]

int mat[][] = new int[3][3];

(a) 6 bytes (b) 9 bytes (c) 18 bytes (d) 36 bytes

(xi) To delete an object obj the statement is _____. [Recall]

(a) delete obj; (b) del obj; (c) remove obj; (d) delete [ ] obj;

(xii) A deceleration can occur _____ in a body of a JAVA method. [Recall]

(a) in the beginning (c) anywhere
(b) in the middle (d) at the end

(xiii) Static functions can access: [Understanding]

(a) Static data members (c) Both static and non-static data members
(b) Non-static data members (d) None of these

(xiv) A User Defined Function can have _____ number of parameters. [Recall]

(a) 2 (b) 3 (c) 4 (d) Any number

(xv) To receive an array arr of size 10 in a function result() the correct prototype is: [Understanding]

(a) void result( int arr[])
(b) void result( int arr[10])
(c) Both (a) and (b)
(d) None of these

(xvi) The statement to call the function quadratic is: [Analysis]

```
void Quadratic(int n)
{
for(int p = 1; p <= 10; p++)
if(n % p == 0)
System. out.println(p);
}
```

(a) Quadratic(10) (c) Quadratic(20.5)
(b) Quadratic(10,10) (d) None of these

(xvii) **Assertion (A):** Increment operator increases the value of an operand by 1. [Application]

**Reason (R):** Increment operator works on only variables as an operator.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xviii) Read the following text, and choose the correct answer: [Understanding]

When two or more operators in the expression have the same precedence in Java, whichever comes first will be evaluated first. What is this feature known as?

(a) Operator precedence (c) Operator Associativity
(b) Operator Alignment (d) Operator Continuity

(xix) **Assertion (A):** An object is an instance of a class and every object has the same properties defined in the class.

**Reason (R):** Class is a template from which several objects can be created. [Application]

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xx) What is the final value stored in variable x ? [Analysis]

```
double a = -5.35;
double x = Math.abs(Math.floor(a));
```

(a) 9.0 (b) 7.0 (c) 6 (d) 7

Question 2.

(i) Evaluate the expression : int y = 10 then find int z = (++y * (y++ + 5)); [Analysis]

(ii) Write the Java expressions for: [Analysis]

$$\frac{a^2+b^2}{2ab}$$

(iii) Rewrite the following using ternary operator: [Understanding]

```
if(x % 2 == 0)
System.out.print("EVEN");
else
System.out.print("ODD");
```

(iv) Convert the following while loop to the corresponding for loop: [Understanding]

```
int m = 5, n = 10;
while(n >= 1)
{
System.out.println(m * n);
n--;
}
```

(v) Give the output of following code and mention how many times the loop will execute? [Analysis]

```
int i;
for(i = 5; i >= 1; i--)
{
if(i % 2 == 1)
continue;
System.out.print(i+"");
}
```

(vi) Given the strings:

```
String str 1 = "Java";
String str 2 = "java";
```

(a) What will be the output? [Analysis]

```
System.out.println(str1.equals (str2);
```

(b) What the 'equals' method does. [Analysis]

(vii) Write down the prototype for the function named Compare which takes two strings as argument and return a boolean value. [Understanding]

(viii) Write down the working principle of bubble sort method. [Analysis]

(ix) State the Java concept that is implemented through: [Understanding]

a superclass and a subclass.

(x) ) If int x[ ] = {4, 3, 7, 8, 9, 10}; what are the values of p and q? [Analysis]

(a) p = x.length

(b) q = x[2] + x[5] * x[1]

## Section-B (Attempt any four questions from this Section)

*The answers in this section should consist of the programs in either BlueJ environment or any program environment with java as the base.*

*Each program should be written using variable description/mnemonic codes so that the logic of the program is clearly depicted.*

*Flowcharts and algorithms are not required.*

**Question 3.**

Define a class Faculty described as below : **[Understanding/Application]**

**Data Members :**

int fCode
String Name
String Category
int YOE (Total experience in years)
double basicSal
double gradePay
double grossSal

**Member methods :**

(i) To accept the code, name, category and year of experience of a faculty.
(ii) To display the details of the faculty.
(iii) To compute the basic salary, grade pay (50% of basic) as per the given rule and finally the gross salary (basic + grade pay).

| Category | YOE | Basic |
|---|---|---|
| PRT | Less than 10 years | 15000 |
| | 10 years or above | 17500 |
| TGT | Less than 10 years | 20000 |
| | 10 years or above | 35000 |
| PGT | Less than 10 years | 30000 |
| | 10 years or above | 45000 |

Write a main method to create object of a class and call the above member method.

**Question 4.**

A one dimensional array contain 100 elements. Each element is an integer. Write a program to read the array and find the mean element of the array. Find the position of the element which has the maximum deviation from the mean. **[Understanding/Application]**

**Question 5.**

Write a program to input a sentence and convert it into uppercase and count and display the total number of words starting with a letter 'A'. **[Understanding/Application]**

**Example:**

**Sample Input:** ADVANCEMENT AND APPLICATION OF INFORMATION TECHNOLOGY ARE EVER CHANGING.

**Sample Output:** Total number of words starting with letter 'A' = 4.

**Question 6.**

Define a class to declare a 2-dimensional integer array of size 3 x 3 and store numbers. Now add all the elements of each column separately. Display the sum. **[Understanding/Application]**

Example: A[][] = {{ 1 ,2, 3}, { 4 ,5, 6}, { 7, 8, 9}};

Output: 12 15 18

**Question 7.**

Happy Number is a number where if the number is reduced to a single digit by adding of the square of each digit of the number and the reduced digit is equal to 1. For example take the number 139.

**[Understanding/Application]**

$N = 139$

$1^2 + 3^2 + 9^2 = 1 + 9 + 81 = 91$

$9^2 + 1^2 = 81 + 1 = 82$

$8^2 + 2^2 = 64 + 4 = 68$

$6^2 + 8^2 = 36 + 64 = 100$

$1^2 + 0^2 + 0^2 = 1 + 0 + 0 = 1$

**Hence, 139 is a Happy Number.**

**Write a program in java to accept one number form the user and check it is a Happy Number or not. Print appropriate message on the screen.**

**Question 8.**

**Define a class to overload the method display as follows:** **[Understanding/Application]**

**display() – method to print the following pattern:**

**Example:**

```
123456789
2345678
34567
456
5
```

**display(int a, int b) – method to print the pattern of '*' with a rows and b columns**

**Example:**

**if a=3 and b=6**

```
******
******
******
```

□□

# 5 Sample Paper

## Computer Applications [Unsolved]

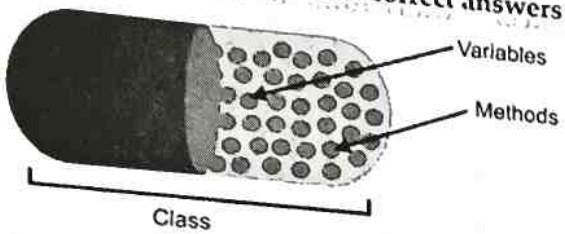
### Questions

**Section-A** (Attempt all questions from this Section)

**Question 1.**

**Choose the correct answers and write the correct option.**
**(Do not copy the question,write the correct answers only.)**

(i)




The above image showcases one important feature of OOP. What is it?
(a) Encapsulation (b) Inheritance (c) Abstraction (d) Polymorphism **[Analysis]**

(ii) break statement used inside if block only if
(a) it is inside a loop (b) it is inside a switch (c) it is inside a nested if (d) it is inside a function **[Understanding]**

(iii) The comma operator is used with:
(a) if-else statement (b) do-while loop (c) for statement (d) None of these **[Understanding]**

(iv) A package can be accessed using _____ statement.
(a) copy (b) import (c) access (d) merge **[Understanding]**

(v) Which of the following is not a property of objects ?
(a) state (b) behaviour (c) identity (d) None of these **[Understanding]**

(vi) A program segment is as follows:
Char a;
a = "tdmalhotra".charAt(4);
What will be the result of the segment ?
(a) m (b) 1 (c) a (d) None of these **[Analysis]**

(vii) The string Hello boys contains _____ characters :
(a) 10 (b) 9 (c) 11 (d) None of these **[Analysis]**

(viii) An array element is accessed:
(a) using dot operator (b) using an index number (c) using an element (d) All of these **[Understanding]**

(ix) Different variables used in the list of parameters are separated by:
(a) . (b) , (c) ; (d) : **[Understanding]**

(x) The correct syntax to declare a 2-dimensional array of 3 rows and 4 columns is: **[Understanding]**
(a) int array[][] = new int[3x4];
(b) int array[][] = new int[3,4];
(c) int array[][] = new int[3][4];
(d) int array = new int[3][4];

(xi) The word case is used in a switch statement. The word is a_____. **[Recall]**
(a) keyword in Java
(b) function in Java
(c) datatype in Java
(d) method in Java

(xii) Give the output of the following : **[Analysis]**
int a, b =10 ;
a = 15/3 * b ;
System.out.println("a = " + a);
(a) 50 (b) 49 (c) 53 (d) 52

(xiii) Which method is used to compare two strings in Java, ignoring case considerations? **[Understanding]**
(a) equals()
(b) compareTo()
(c) equalsIgnoreCase()
(d) compareToIgnoreCase()

(xiv) What is the value of 100 % 13 ? **[Analysis]**
(a) 3 (b) 5 (c) 6 (d) 9

(xv) If a = 20 then ++a = ? **[Analysis]**
(a) 20 (b) 22 (c) 21 (d) None of these

(xvi) What is the precision of double data type ? **[Understanding]**
(a) 5 digits (b) 7 digits (c) 15 digits (d) 10 digits

(xvii) **Assertion (A):** If no access specifier is declared for a class data member, the compiler adds that with a default access specifier. **[Application]**
**Reason (R):** The default access specifier allows the data member to be accessed outside the class as public, but it cannot work outside the package.
(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xviii) Read the following text, and choose the correct answer: **[Understanding]**
In a program, when a number has been divided by zero, the error that is being generated is called:
(a) Logical error
(b) Syntax error
(c) Semantic error
(d) Run-time error

(xix) **Assertion (A):** Constructor is invoked at the time of instantiation of an object. **[Application]**
**Reason (R):** Constructor cannot be called explicitly like a regular method in a program.
(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
(c) Assertion (A) is false and Reason (R) is true
(d) Assertion (A) is true and Reason (R) is false

(xx) Attributes of an object is also known as its : **[Recall]**
(a) state (b) method (c) behaviour (d) procedure

**Question 2.**

(i) Evaluate the following expression, if x = 3, y = 5, and z = 10: **[Analysis]**
++z + y - y + z + x++

(ii) Write down java expression for: **[Analysis]**

$$T = \sqrt{A^2 + B^2 + C^2}$$

(iii) Rewrite the following using ternary operator: **[Understanding]**
if(bill > 1000)
discount = bill * 10.0/100;
else
discount = bill * 5.0/100;

(iv) Convert the following if else if construct into switch case: [Understanding]

```
if(var == 1)
System.out.println("good");
else if(var == 2)
System.out.println("better");
elseif(var == 3)
System.out.println("best");
else
System.out.println("invalid");
```

(v) Give the output of the following program segment and also mention the number of times the loop is executed: [Analysis]

```
int a, b;
for(a = 6, b = 4; a <= 24; a = a + 6)
{
    if(a % b == 0)
    break;
}
System.out.println(a);
```

(vi) Given the string:

String str = "banana";

(a) What will be the output:

System.out.println(str.replace('a','o'));

(b) Explain the functionality of the 'replace' method. [Understanding]

(vii) Differentiate between : compareTo() and equals() methods. [Understanding]

(viii) What is the use of 'continue' in loop ? [Understanding]

(ix) Consider the following class:

```
public class myClass
{
    public static int x = 3, y = 4;
    public int a = 2, b = 3;
}
```

Name the variable for which each object of the class will have its own distinct copy. [Analysis]

(x) Consider the following String array and give the output:

String arr[] = {"DELHI", "CHENNAI", "MUMBAI", "LUCKNOW", "JAIPUR"};

(a) System.out.print(arr[0].length() > arr[3].lenght());

(b) System.out.print(arr[4].substring(0, 3)); [Analysis]

## Section-B (Attempt any four questions from this Section) [Analysis]

*The answers in this section should consist of the programs in either Blue] environment or any program environment with java as the base.*

*Each program should be written using variable description/mnemonic codes so that the logic of the program is clearly depicted.*

*Flowcharts and algorithms are not required.*

**Question 3.**

Define a class named Book with the following description :

**Data members :**

int year – to store the year of printing the book

String title – to store the title of the book

float rating – to store the popularity rating of the book based on the number of copies sold. (Minimum rating = 0.0 and Maximum rating = 5.0)

**Member methods :**

void accept() – to input and store the year, title and rating.

void display() – to display the title of the book along with a message based on the rating as given below :

| Rating | Message |
|---|---|
| 0.0 to 2.0 | Average |
| 2.1 to 3.4 | Fair |
| 3.5 to 4.5 | Good |
| 4.6 to 5.0 | Excellent |

Write the main() method to create an object and call the methods accordingly.

**[Understanding/Application]**

**Question 4.**

Write a program to accept the year of graduation from school as an integer value from the user. Using the Binary Search technique on the sorted array of integers given below, Output the message "Record exists" If the value input is located in the array. If not, output the message "Record does not exist".

{1982, 1987, 1993, 1996, 1999, 2003, 2006, 2007, 2009, 2010} **[Understanding/Application]**

**Question 5.**

Write a program to accept a string and print all the palindrome words present there.

A Palindrome string is a string that reads the same from left to right and vice-versa.

e.g., MADAM, ARORA, ABBA, etc. **[Understanding/Application]**

**Question 6.**

Define a class to declare a 2-dimensional integer array of size 3 x 3 and store numbers. Now replace all the even numbers with their cube and odd numbers with their square. Print the final array as given below: **[Understanding/Application]**

Example:

Input: 1 2 3
4 5 6
7 8 9

Output:

| | | |
|---|---|---|
| 1 | 8 | 9 |
| 64 | 25 | 216 |
| 49 | 512 | 81 |

**Question 7.**

Define a class to accept a number and check and print whether it is a Harsad number or not. A number is said to be a Harsad number if it is divisible by the sum of its digit. For example, if the number is 156, then the sum of its digit will be 1 + 5 + 6 = 12. Since 156 is divisible by 12. So, 156 is a Harshad number.

**[Understanding/Application]**

**Question 8.**

Define a class to overload the method add as follows:

add(char, char) : to add the ASCII values of both the characters, if they are alphabets otherwise, join them.

add(String, String) : to concat the smaller string at the end of the bigger string by their length.

add(int, int) : to add both the numbers if they are even else add the next even numbers, if they are odd. **[Understanding/Application]**

# 1 Sample Paper

## Computer Applications

## Answers

### Section-A

**Answer 1.**

(i) (d) Polymorphism

**Explanation :**

Polymorphism means "many forms" also means a single action can be performed in different ways.

(ii) (d) all of them

**Explanation :**

Conditional operator can replace by simple if-else, some if-else. if-else and nested if for two way decisions.

(iii) (c) Both Integers and floating – point numbers

**Explanation :**

Modulus operator can be applied to both integers and floating point numbers.

(iv) (d) 47.0

**Explanation :**

The Math.ceil() function always rounds a number up to the next largest integer.

(v) (d) None of these

(vi) (a) NULL

(vii) (c) class, subclass and package

(viii) (a) (1) and (3)

(ix) (a) Arrays

(x) (a) 5

(xi) (b) Function overloading

(xii) (c) 1

(xiii) (a) 343

**Explanation :**

The function checks the parameter is odd or even and returns square or cube of the parameter, since 7 is odd, it returns $7^3 = 343$.

(xiv) (b) 2

**Explanation :**

Two types of constructors are defined generally, default constructor and parameterized constructor. Default constructor is not necessary to be defined always.

(xv) (c) Constructor

**Explanation :**

Constructors are the member functions which are called automatically whenever an object is created.

(xvi) (a) I and III

**Explanation :**

Virtual constructors don't make sense, it is meaningless to the C++ compiler to create an object. Constructors are automatically called by new operator.

(xvii) (d) Assertion (A) is true and Reason (R) is false.

**Explanation :**

Both (A) and (R) are different statement since programmer can create constructor in the class.

(xviii) (a) Compile time error

**Explanation :**

The error is a compile-time error due to missing quotation marks around "Computer Application", violating Java syntax for string literals.

(xix) (c) Assertion (A) is false and Reason (R) is true.

**Explanation :**

The loop iterates twice, not three times and the continue statement does not alter the total iterations.

(xx) (b) 'a'

**Answer 2.**

(i) = x + – – z + y++ + y
= 2 + 0 + 4 + 3
= 9

(ii) double z = ((Math.sin(x))/(Math.cos(x) – 1.0)) + 1.0;

(iii) r = n1 > n2 ? true : false;

(iv)
```
switch(var)
{
    case 1: System.out.println("good");
    break;
    case 2: System.out.println("better");
    break;
    case 3: System.out.println("best");
    break
    default: System.out.println("invalid");
}
```

(v) Loop will execute 5 times and y will be returned as 15.

(vi) (a) Data type of res is boolean.
(b) Value of res is true.

(vii) 6.0 + 5.0 = 11.0

(viii) **Boxing :** converting, primitive datatype to object is called boxing.
**Unboxing :** converting an object to its corresponding primitive datatype is called unboxing.

(ix) Value of num : 50

(x) (a) 5
(b) 8

## Section-B

**Answer 3.**

```
import java.util.Scanner;
class Stock
```

```
{
    String CmpName;
    int points;
    char grd;
    String rem;
    Stock (String cp, int p)
    {
        CmpName = cp;
        points = p;
        grd = '\u0000';
        rem=null;
    }
    void calculate()
    {
        if(points <= 20)
        {
            grd = 'D';
            rem = "Poor for investment";
        }
        else if(points <= 50)
        {
            grd = 'C';
            rem= "Average for investment";
        }
        else if(points <= 90)
        {
            grd = 'B';
            rem = "Good for investment";
        }
        else
        {
            grd = 'A';
            rem = "Best for investment";
        }
    }
    void display()
    {
        System.out.println("Company name \t Points earned \t Grade \t Remarks ");
        System.out.println(CmpName+"\t"+points+"\t"+grd+"\t"+rem);
    }
    public static void main()
    {
        Stock ob = new Stock("ABC Ltd.", 85);
        ob.calculate();
        ob.display();
    }
}
```

**Answer 4.**

```
import java.util.*;
class SelectionDes
{
    public static void main(String ar[])
    {
        Scanner sc = new Scanner(System.in);
        int array[] = new int[10];
        int i,j , temp;
        System.out.println("Enter 10 elements for the array");
        for(i = 0; i < 10; i++)
        {
            array[i] = sc.nextInt();
        }
            for(i = 0;i < 9; i++)
        {
            int p = i;
            for(j = i+1; j < 10; j++)
        {
            if(array[j] > array[p])
        {
            p = j;
        }
    }
    temp = array[i];
    array[i] = array[p];
    array[p] = temp;
    }
    for(i = 0; i < 10; i++)
    {
            System.out.print(array[i]+" ");
        }
    }
}
```

**Answer 5.**

```
import java.util.*;
class Count
{
    char ch;
    String s;
    int i, l, ca = 0, ce = 0, ci = 0, co = 0, cu = 0;
    void display()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a sentence");
        s = sc.nextLine();
        l = s.length();
        for(i = 0; i < l, i++)
        {
            ch = s.charAt(i);
```

```
            if(ch == 'A')
            {
                ca++;
            }
            else if(ch == 'E')
            {
                ce++;
            }
            else if(ch == 'I')
            {
                ci++;
            }
            else if(ch == 'O')
            {
                co++;
            }
            else if(ch == 'U')
            {
                cu++;
            }
        }
        System.out.println("Frequency of A = " + ca);
        System.out.println("Frequency of E = " + ce);
        System.out.println("Frequency of I = " + ci);
        System.out.println("Frequency of O = " + co);
        System.out.println("Frequency of U = " + cu);
    }
}
```

**Answer 6.**

```
import java.util.Scanner;
class BoundaryMat
{
    public static void main(String ar[])
    {
        Scanner sc = new Scanner(System.in);
        int A[][] = new int[3][3];
        int i, j;
        for(i = 0; i < 3; i++)
    {
    for(j = 0; j < 3; j++)
    {
        System.out.println("Enter a number");
        A[i][j] = sc.nextInt();
    }
}
for(i = 0; i < 3; i++)
{
    for(j = 0; j < 3; j++)
```

```
    {
        if(i == 0 || i == 2 || j == 0 || j == 2)
        System.out.print(A[i][j(int)]+" ");
        else
        System.out.print("  ");
    }
        System.out.println();
    }
}
```

Answer 7.

```
import java.io.*;
class Amicable2
{
    public static void AmicableNos(int m, int n)
    {
        int i,f1 = 0,f2 = 0;
        for(i = 1; i < m; i++)
        {
            if(m%i= =0)
            f1 += i;
        }
        for(i=1; l<n; i++)
        {
            if(n%i= =0)
            f2 += i;
        }
        f((f1+f2) = = (m+n))
            System.out.println("Amicable pair:"+m+","+n);
        else
            System.out.println("Both are not amicable pair");
    }
    public static void main()
    {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
            System.out.println("Enter 2 numbers");
            int m = Integer.parseInt(br.readLine());
            int n = Integer.parseInt(br.readLine());
            AmicableNos(m,n);
    }
}
```

Answer 8.

```
class OverloadCom
{
void compute(int r)
```

```
    {
        double v = 4.0/3.0*3.142*Math.pow(r, 3);
        System.out.println("Volume of sphere "+v);
    }
    void display(int a, int b, int c)
    {
        int v = a*b*c;
        System.out.println("Volumn of cuboid "+v);
    }
}
```

# 2 Sample Paper

## Computer Applications

### Answers

## Section-A

**Answer 1.**

(i) (a) Encapsulation

**Explanation :**

Encapsulation binds data and methods into one single unit called class.

(ii) (b) Binary operator

**Explanation :**

Relational operator compares two operands and returns true or false.

(iii) (b) return

(iv) (b) 0

**Explanation :**

Default constructors have no parameters, but they can have parameters with default values.

(v) (a) 8.0

**Explanation :**

Index of ('5') in 345 is 2, then by applying power function, it give $2^3 = 8$, which is represented as 8.0 in double.

(vi) (c) Use of pointers

**Explanation :**

Pointers are not a feature of Java.

(vii) (a) protected

**Explanation :**

The access modifiers are public, private and protected.

(viii) (b) Switch

**Explanation :**

Branching statements allow the flow execution to jump to a different part of the program. The common branching statements used within other control structures include: break, continue, return and go to.

(ix) (d) Constructor

**Explanation :**

Constructor always has same name class.

(x) (c) 4th index

**Explanation :**

The index starts from 0 so the last index comes at 4.

(xi) (c) 1

**Explanation :**

It is printed one time only because break; will terminate the current loop.

(xii) (d) double -5.0

**Explanation :**

The execution goes on like this:
– 4 + 1/2 + 2*-3 + 5.0;
– 4 + 0 + -6 + 5.0; // integer division: 1/2 truncates .5
– 10 + 5.0; // higher type is double 5.0, so -10 is casted to double
– 5.0; // finally, double -5.0.

(xiii) (c) break; statement

(xiv) (b) { }

(xv) (d) Return type, Name and Inputs to a function

(xvi) (a) Do while

**Explanation :**

Exit control loop is loop in which condition is checked after the execution of the body of the loop.

(xvii) (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)

**Explanation :**

Both (A) and (R) are two different statements.

(xviii) (a) To exhibit in more than one form

**Explanation :**

Polymorphism is exhibited in Java only through function overloading.

(xix) (a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)

**Explanation :**

As constructors cannot be called explicitly, they are invoked only at the time of object creation.

(xx) (a) replace the original string values with the new one

**Answer 2.**

(i) 16.0

(ii) Math.sqrt(Math.pow(a + b, 3)/Math.abs(a – b)));

(iii)
```
if(a > b)
System.out.println(a);
if(a > c)
System.out.println(a);
```

(iv)
```
for(int i = 0; ;i++)
{
    System.out.print("*");
}
```

(v) 42

The loop will get executed 5 times.

(vi) (a) r

(b) The 'chaAt(int index)' method returns the character at the specified index. Here, it returns the char at index 4, i.e., 'r'.

(vii) 2 + 10 = 12

(viii) Ternary operator is used as an alternative for if-else statement to evaluate conditions.
*e.g.* : large = a > b ? a : b;

(ix) Birds=20

**Explanation :**

You can pass parameters to another constructor so when parameter is passed as 20 using this it will initialize birds as 20.

(x) position = 4
Size = 7

## Section-B

**Answer 3.**

```
import java.util.*;
class BoxOffice
{
    String title;
    float revenue;
    String star;
    void accept()
    {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the title of the movie : ");
        title = sc.nextLine();
        System.out.print("Enter the revenue : ");
        revenue = sc.nextFloat();
    }
    void compute()
    {
        if(revenue < 100000)
        {
            star = "*";
        }
        else if(revenue < 500000)
        {
            star = "**";
        }
        else if(revenue < 1500000)
        {
            star="***";
        }
        else
        {
            star="****";
        }
```

```
    }
    void display()
    {
        System.out.println("Title of the Movie \t Revenue earned \tStar Awarded");
        System.out.println(title+"\t"+revenue+"\t"+star);
    }
    public static void main(String args[])
    {
        BoxOffice ob = new BoxOffice(); //creating object of the class BoxOffice
        ob.accept();
        ob.compute();
        ob.display();
    }
}
```

**Answer 4.**

```
import java.util.Scanner;
public class BubbleSort
{
    public static void main(String args[])
    {
        Scanner in = new Scanner(System.in);
        int arr[] = new int[20];
            System.out.println("Enter 20 numbers:");
        for(int i = 0; i < arr.length; i++) {
        arr[i] = in.nextInt();
    }
    //Sort first half in ascending order
    for(int i = 0; i < arr.length / 2 - 1; i++)
    {
        for(int j = 0; j < arr.length / 2 - i - 1; j++)
        {
            if(arr[j] > arr[j + 1])
            {
                int t = arr[j + 1];
                arr[j + 1] = arr[j];
                arr[j] = t;
            }
        }
    }
    //Sort second half in descending order
    for (int i = 0; i < arr.length / 2 - 1; i++)
    {
        for(int j = arr.length / 2; j < arr.length - i - 1; j++)
```

```
        {
            if(arr[j] < arr[j + 1])
            {
                int t = arr[j + 1];
                arr[j + 1] = arr[j];
                arr[j] = t;
            }
        }
    }
    //Print the final sorted array
    System.out.println("\nSorted Array:");
    for(int i = 0; i < arr.length; i++)
    {
        System.out.print(arr[i] + " ");
    }
}
```

**OUTPUT :**

```
Enter 20 numbers:
50
10
0
-5
-1
23
35
11
12
8
75
83
54
59
90
82
71
77
63
80
Sorted Array :
-5
-1
0
8
10
```

11
12
23
35
50
90
83
82
80
77
75
71
63
59
54

**Answer 5.**

```
import java.util.Scanner;
class NoVowel
{
    public static void main(String ar[])
{
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter a word");
    String str=sc.next().toUpperCase();
    int c = 0;
    for(int i=0;i<str.length();i++)
{
    char ch = str.charAt(i);
     if("AEIOU".indexOf(ch) != -1)
    c++;
}
    System.out.println(str);
if(c == 0)
    System.out.println("No vowel word");
     else
        System.out.println("Word contains vowel");
    }
}
```

**Answer 6.**

```
import java.util.Scanner;
class LeftRightDiagonal
{
public static void main(String []args)
{
```

```
    Scanner sc = new Scanner(System.in);
    int A[][] = new int[3][3];
    int i,j;
    for(i = 0; i < 3; i++)
    {
    for(j = 0; j < 3; j++)
    {
    System.out.println("Enter a number");
        A[i][j] = sc.nextInt();
    }
}
    int lsum = 0, rsum = 0;
    for(i = 0;i < 3;i++)
{
    for(j = 0;j < 3; j++)
{
    if(i == j)
    lsum += A[i][j];
    if(i+j == 2)
    rsum+= A[i][j];
    }
}
     if(lsum == rsum)
    System.out.println("Special diagonal array");
else
     System.out.println("Non a special diagonal array");
}
}
```

**Answer 7.**

```
import java.util.Scanner;
class Armstrong
{
public static void main(String [] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter a 4-digit number");
    int n = sc.nextInt();
    if(n >= 1000 && n <= 9999)
    {
        int sum = 0;
        int t = n;
        while(t > 0)
    {
        sum += (int)Math.pow(t%10,4);
        t = t/10;
```

```
        }
        if(sum==n)
        System.out.println("Armstrong no.");
        else
        System.out.println("Non armstron no.");
        }
        else
        System.out.println("Invalid");
        }
    }
```

**Answer 8.**

```
    class OverloadPat
    {
    void display(int n)
    {
        for(int i = 4;i >=1; i--)
        {
        for(int j = 1;j <=i; j++)
        {
            System.out.print("@");
        }
            System.out.println();
        }
    }
    void display(int a, int b)
    {
    for(int i = a; i <=b; i++)
    {
            System.out.println(i*i);
        }
    }
}
```

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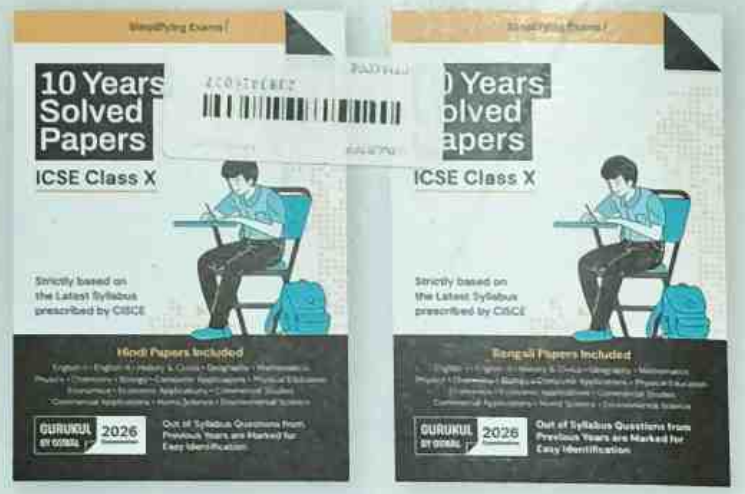


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