

PM SHRI KENDRIYA VIDYALAYA ARARIA

AUTUMN BREAK HOLIDAY HOMEWORK



From

15 October 2026

to

25 October 2026



Schools will reopen on
26th October 2026

EXPLORE

LEARN

CREATE

GROW

EXCEL

SCIENCE

MATHEMATICS

SOCIAL SCIENCE

ENGLISH

HINDI

Learn
Grow
Be Better
😊

Good
Things
Take
Time
❤️

Make this autumn a season of learning, discovery and lasting memories.

ENGLISH

Q1. Informal Letter Writing

Write a letter to your friend describing how you celebrated your birthday with your family.

Q2. Tenses

Write five sentences using different tenses. Mention the tense used in each sentence.

Q3. Forms of Verbs

Write the three forms (V1, V2, V3) of the following verbs and make one meaningful sentence using each verb.

- | | | | | |
|----------|----------|-----------|----------|------------|
| 1. Write | 2. Speak | 3. Choose | 4. Break | 5. Teach |
| 6. Bring | 7. Catch | 8. Think | 9. Build | 10. Forget |

Q4. Paragraph Writing

Write a paragraph of 100–120 words on “How Can We Make Our School a Better Place?”

Q5. Literature Revision

Revise all the chapters and poems taught in class.

Q6. Antonyms

Write the antonyms of the following words.

- | | | | | |
|------------|-----------|-------------|--------------|------------|
| 1. Ancient | 2. Brave | 3. Expand | 4. Honest | 5. Include |
| 6. Victory | 7. Accept | 8. Generous | 9. Permanent | 10. Scarce |

Q7. Synonyms

Write the synonyms of the following words.

- | | | | | |
|---------------|-----------|--------------|-------------|----------------|
| 1. Courageous | 2. Happy | 3. Begin | 4. Rapid | 5. Intelligent |
| 6. Beautiful | 7. Silent | 8. Difficult | 9. Precious | 10. Assist |

Q8. Answer the following questions.

1. Your friend finds a wallet in the school playground. What would you advise your friend to do? Why?
2. You notice some students wasting water at school. What steps would you take to stop this practice?
3. Your classmate is finding a lesson difficult to understand. How would you help them?

Note: Complete all the work neatly in your English notebook.

HINDI

- 1) पाँच पेज सुलेख लिखें ।
- 2) ‘समय का महत्त्व’ पर अनुच्छेद लिखें ।
- 3) ग्राहक और फलवाले के बीच हुई बातचीत पर संवाद लिखिए ।
- 4) प्रतिदिन 5 नए शब्द उनके अर्थ सहित लिखें एवं वाक्यों में प्रयोग करें ।
- 5) अपने विद्यालय के प्राचार्य को बीमारी के कारण अवकाश प्राप्त करने हेतु प्रार्थना-पत्र लिखिए ।
- 6) संज्ञा और सर्वनाम की परिभाषा, प्रकार एवं उनके उदाहरण लिखें ।

MATHEMATICS

General Instructions

1. Complete everything in your Mathematics notebook. There is no need to maintain a separate notebook.

2. These questions are meant to serve as a tool for revision and recap of everything that has been covered so far.
3. Solve a part of the homework every day and revise the related chapter simultaneously.
4. Go through the chapters once again to develop comprehension skills.
5. Practise the problems from “Figure it Out” on a daily basis.
6. A PDF with some basic questions is attached. It needs to be solved fully in your regular notebook.

Drive Link for Questions

<https://drive.google.com/file/d/1ay44b0n-oF8dPHDrxWd-chpcFP-4NUp/view?usp=drivesdk>

SOCIAL SCIENCE

General Instructions

1. Complete all written work neatly in your Social Science notebook.
2. Do map work on outline maps and project work on A4 sheets or in a scrapbook.
3. Write answers in your own words and use examples from daily life.
4. Complete the activities independently and submit the work on the first working day after the holidays.
5. Revise all chapters taught during October.

A. MAP SKILLS AND GEOGRAPHY

Chapters: Locating Places on the Earth; Oceans and Continents; Landforms and Life (as applicable to the October syllabus)

1. Draw a neat diagram of the globe and mark the Equator, Prime Meridian, Tropic of Cancer, Tropic of Capricorn, Arctic Circle and Antarctic Circle.
2. On a world map, locate and label the seven continents and five oceans.
3. On an outline map of India, mark the Himalayas, Northern Plains, Thar Desert, Deccan Plateau, and the Western and Eastern Ghats.
4. Explain the difference between latitude and longitude with suitable diagrams.
5. Write five points explaining how mountains, plains and plateaus influence human life.

Competency-based question: A traveller wants to locate a place using its latitude and longitude. Explain how these coordinates help the traveller identify the exact location.

B. HISTORY

Chapters: Timeline and Sources of History; India, That Is Bharat (as applicable to the October syllabus)

1. Differentiate between archaeological sources and literary sources of history. Give two examples of each.
2. Prepare a timeline showing five important events from Indian history that you have studied.
3. Write a short note on the significance of the name “Bharat” in Indian history and tradition.
4. Explain why historians use different sources to understand the past.
5. Draw or paste pictures of any three historical sources and write two lines about each.

Competency-based question: An archaeologist discovers an old coin and a pottery fragment at an excavation site. What information might these objects reveal about the people who lived there?

C. FAMILY, COMMUNITY AND DEMOCRACY

Chapters: Family and Community; Grassroots Democracy – Part 1: Governance; Part 2: Local Government in Rural Areas; Part 3: Local Government in Urban Areas (assign only the chapters covered in October)

1. Explain the importance of family and community in our lives.
2. Write five functions of a Gram Panchayat.
3. Differentiate between a Gram Panchayat and a Municipality.

4. Explain the meaning of governance and why rules are necessary in society.
5. Prepare a chart showing three public services provided by the local government.

Experiential learning activity: Find out from an elder or a local representative who is responsible for drinking water, street lighting and waste collection in your area. Write your findings in 100 words.

D. ECONOMIC LIFE

Chapters: The Value of Work; Economic Activities Around Us (as applicable to the October syllabus)

1. Differentiate between paid work and unpaid work with three examples of each.
2. Explain why every type of work deserves dignity and respect.
3. Identify five economic activities carried out in your neighbourhood.
4. Prepare a table showing the occupation, work performed and contribution to society of five people in your locality.
5. Explain the difference between goods and services with suitable examples.

Competency-based question: A family member cooks food at home without receiving a salary. Explain why this work is valuable even though no money is paid for it.

E. PROJECT WORK

Topic: “My Community, My Responsibility”

Prepare a project of 4–5 A4 pages containing:

1. Introduction to your neighbourhood.
2. Important public facilities available in your area.
3. Roles of the local government in providing public services.
4. Three problems faced by your community.
5. Practical suggestions to solve these problems.
6. Drawings, photographs or illustrations related to your topic.
7. Conclusion: How can students contribute to community welfare?

F. ART-INTEGRATED ACTIVITY

Prepare a colourful poster on “Unity in Diversity – India Our Pride.” Include:

- Different languages, festivals and traditions of India.
- Examples of unity among people.
- A suitable slogan.

G. REVISION AND SELF-ASSESSMENT

1. Revise the textbook chapters taught in October.
2. Complete the in-text questions and exercises of the assigned chapters.
3. Prepare ten multiple-choice questions from the chapters covered in October, with four options and the correct answer.
4. Write five new facts you learned while completing this homework.

Submission Date: First working day after the holidays.

SCIENCE

General Instructions

- Do the homework neatly in a separate Science Homework Notebook (or on A4 sheets with a cover page).
- Write the question number before each answer. Draw neat, labelled diagrams wherever asked.
- Revise Chapters 1 to 7 from the textbook *Curiosity* before starting.
- Do your own work. Presentation, handwriting and originality will be assessed.

Section A: Multiple Choice Questions

1. Riya noticed that plants kept near the window grow bent towards the light. She guessed that plants need light to grow properly. Her guess is called _____.
(a) Conclusion (b) Observation (c) Hypothesis (d) Result
2. A student sees a leaf with parallel veins. Which of these plants is it most likely to belong to?
(a) Mango (b) Grass (c) Peepal (d) Rose
3. A child eats only chips and cold drinks daily and feels tired, with weak muscles. Which change in diet will help him most?
(a) More sugar (b) More fried snacks (c) Dal, milk, eggs, fruits and vegetables (d) Skipping meals
4. Aman has an unmarked bar magnet. He hangs it freely with a thread. It comes to rest pointing roughly north–south. He concludes that:
(a) The magnet is broken
(b) The end pointing north is its north-seeking pole
(c) The magnet has no poles
(d) Magnets cannot rotate
5. A girl measures the length of her notebook starting from the 1 cm mark of the scale and reads 22 cm at the other end. The correct length of the notebook is:
(a) 22 cm (b) 23 cm (c) 21 cm (d) 20 cm

Section B: Assertion–Reason Questions

Choose: (a) Both A and R are true, and R explains 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.

6. **Assertion (A):** Cactus has thick, fleshy stems and spines instead of leaves.
Reason (R): This helps the cactus to reduce loss of water in a desert habitat.
7. **Assertion (A):** A magnet attracts all metals.
Reason (R): Only materials like iron, nickel and cobalt are magnetic.
8. **Assertion (A):** A clinical thermometer should be shaken before use.
Reason (R): Shaking brings the mercury level down below the normal body temperature mark.

Section C: Long Answer Questions

1. What is a balanced diet? Why should we avoid eating too much junk or ultra-processed food?
2. Write the deficiency disease caused by a lack of Vitamin C, Vitamin D, iron and iodine. Name one food source for each.
3. Describe how a magnetic compass helps us find directions. Draw a neat, labelled diagram of a bar magnet showing its poles.
4. Why do we need standard units of measurement? Name the SI unit of length and write its multiples and sub-multiples used in daily life.
5. Which materials are soluble in water and which are insoluble? Give three examples of each. Why is it important to choose the right material for making an object (for example, a cooking vessel or a window)?
6. Draw a neat, labelled diagram of a clinical thermometer. State two precautions to be taken while using it.

Section D: Case Study

Students of Class 6 made a kitchen garden in their school. They planted spinach, tomato, mint, sugarcane, a curry leaf plant and a lemon tree. Spinach and mint are soft and green with thin stems. The curry leaf plant has many branches from near the base. The lemon tree has a thick, strong trunk. The students collected vegetables and fruits from the garden for a healthy school lunch.

- a) Which part of each plant (root, stem, leaf or fruit) is eaten in spinach, sugarcane and tomato?

- b) Name one nutrient and one deficiency disease that can be prevented by eating lemon and spinach regularly.
- c) A classmate says, "Plants in the kitchen garden are not useful for living things other than humans." Do you agree? Give two reasons.

Section E: Real-Life Application and Activity (Choose any ONE)

1. **Project:** Make a chart on "My Healthy Plate" showing a balanced meal using pictures or drawings. Label the nutrients and their functions.
2. **Model:** Make a working model of a compass using a needle, a magnet, a cork and water. Write the procedure and observation in your notebook.
3. **Experiment:** Collect 10 household objects. Test them for transparency, solubility (where possible) and whether a magnet attracts them. Record your results in a table and write your conclusion.
4. **Survey:** Record the temperature (using a thermometer or from the weather report) every day of the break for 7 days and draw a line graph. Write what you observed.

SANSKRIT

ऑटम ब्रेक गृहकार्य (Autumn Break Homework)

विषय: संस्कृत | कक्षा 6 (Class 6)

- (1) पाठ 1 से पाठ 4 तक दोहराएँ।
- (2) अपनी पाठ्यपुस्तक से कोई एक श्लोक लिखो।
- (3) दस गृह-वस्तुओं के नाम लिखो।
- (4) उदाहरणानुसार समय-संख्या लिखें –
(उदाहरण) पादोन सप्तवादनम् = ६:४५ (6:45)

- (1) सार्ध दशवादनम् = _____
- (2) दशवादनम् = _____
- (3) सपाद षड्वादनम् = _____
- (4) चतुर्वादनम् = _____
- (5) एकादशवादनम् = _____

- (5) वर्ण-वियोग लिखें –

(उदाहरण) अजः = अ + ज् + अ + ः

(1) राम = _____

(2) हरिः = _____

(3) देवाः = _____

(4) वधूः = _____

(5) अजाः = _____

(6) चटका = _____

ENGLISH

Part 1: Informal Letter Writing

1. Write a letter to your friend describing how you spent your Autumn Break holidays and telling them about a new skill or hobby you learned during this time. (100–120 words)

Part 2: Idioms and Phrases

Read each idiom and its meaning. Then make your own original sentence for each idiom.

1. **Break the ice** — Meaning: To make people feel comfortable and start a conversation.
2. **Once in a blue moon** — Meaning: Very rarely; not often.
3. **Piece of cake** — Meaning: Something very easy to do.
4. **Burn the midnight oil** — Meaning: To work or study late into the night.
5. **Spill the beans** — Meaning: To reveal a secret.
6. **Under the weather** — Meaning: Feeling ill or unwell.
7. **Cost an arm and a leg** — Meaning: To be very expensive.
8. **Hit the nail on the head** — Meaning: To say or do exactly the right thing.
9. **Bite the bullet** — Meaning: To face a difficult situation bravely.
10. **A blessing in disguise** — Meaning: Something that seems bad at first but turns out to be good.

Part 3: Vocabulary and Synonyms

Write two synonyms for each word:

- | | | | | |
|------------|-------------|---------|----------------|---------------|
| 1. Ancient | 2. Brave | 3. Calm | 4. Delight | 5. Eager |
| 6. Famous | 7. Generous | 8. Huge | 9. Intelligent | 10. Plentiful |

Part 4: Paragraph Writing

1. Write a paragraph of 100–120 words on “The Importance of Trees in Our Neighbourhood.”

Part 5: Competency-Based Questions

1. **Conflict Resolution:** During a group school project, your teammate accidentally ruins a poster that you spent two days making. What two actions would you take to resolve the problem and complete the project on time?
2. **Environmental Awareness:** Your neighbourhood generates a large amount of plastic waste every day. Suggest three practical steps to reduce plastic usage.
3. **Digital Literacy and Ethics:** Your younger sibling spends hours scrolling on a smartphone late at night and wakes up tired for school. Give three pieces of advice to help manage screen time.

Part 6: Tenses Exercise

Write one sentence for each tense:

- | | |
|-------------------------|-----------------------------|
| 1. Simple Present Tense | 2. Present Continuous Tense |
| 3. Simple Past Tense | 4. Present Perfect Tense |
| 5. Simple Future Tense | |

HINDI

- 1) पाँच पेज सुलेख लिखें ।
- 2) ‘पर्यावरण संरक्षण’ विषय पर 150 शब्दों में अनुच्छेद लिखें ।
- 3) प्रतिदिन 5 नए शब्द उनके अर्थ सहित लिखें एवं वाक्यों में प्रयोग करें ।
- 4) संज्ञा, सर्वनाम एवं विशेषण की परिभाषा लिखें और प्रत्येक के 10-10 उदाहरण लिखें ।
- 5) विद्यालय के पुस्तकालय में नई पुस्तकें मँगवाने हेतु प्राचार्य को पत्र लिखिए ।

6) 10 विलोम शब्द, 10 पर्यायवाची शब्द तथा 10 मुहावरे अर्थ सहित लिखिए एवं याद कीजिए ।

MATHEMATICS

General Instructions

- Complete this assignment neatly in a separate thin homework notebook or assignment file.
- Questions are strictly curated based on Chapters 1 to 8 of the NCERT curriculum.
- Write step-by-step solutions, correct formulae and geometric reasoning for all problems.
- Activities and figures must be neat, self-drawn and properly labelled.
- **Submission Date:** On the reopening day of the Vidyalaya after the Autumn Break.

SECTION A: CHAPTER-WISE PRACTICE QUESTIONS

Chapter 1: Large Numbers Around Us

Q1. Answer the following based on the Indian and International Number Systems:

- (a) Write the number name of 7,08,45,210 in both the Indian and International systems of numeration.
- (b) Insert commas properly and arrange in descending order: 8432501, 8423501, 8435201, 8342501.
- (c) Estimate the sum $(48,329 + 31,745)$ and the difference $(87,214 - 43,892)$ to the nearest thousand.

Chapter 2: Arithmetic Expressions

Q2. Simplify each of the following expressions step by step using the order of operations (BODMAS):

- (a) $45 - [38 - \{60 \div 3 - (6 - 9 \div 3)\}]$
- (b) $120 \div [18 - \{16 - (12 - 4 - 2)\}]$
- (c) $25 + 14 \div (5 - 3) \times 4$

Chapter 3: A Peek Beyond the Point

Q3. Decimals and Place Value Applications:

- (a) Write in expanded form using decimal place values: 435.078 and 20.005.
- (b) Evaluate: $42.08 - 18.735 + 9.5$.
- (c) A roll of ribbon measuring 24.75 m is cut into 15 pieces of equal length. Find the length of each piece in metres.

Chapter 4: Expressions using Letter-Numbers

Q4. Form algebraic expressions using variables, constants and operations:

- (a) 7 added to three times the product of x and y.
- (b) One-fifth of a number p subtracted from the sum of a and b.
- (c) If $x = 3$ and $y = -2$, find the value of the algebraic expression $3x^2 - 2xy + 5y$.

Chapter 5: Parallel and Intersecting Lines

Q5. Geometric Angles and Transversals:

- (a) Two straight lines AB and CD intersect at point O. If $\angle AOC = 48^\circ$, determine the measures of $\angle BOD$, $\angle AOD$ and $\angle BOC$ with reasons.
- (b) Line l is parallel to line m ($l \parallel m$) and a transversal t intersects them. If one interior angle is 65° , determine the other seven angles formed.
- (c) Define complementary and supplementary angles, with one example of each.

Chapter 6: Number Play

Q6. Divisibility, Prime Factors and Patterns:

- (a) Check the divisibility of 8,54,392 by 4, 6, 8, 9 and 11 using divisibility rules, without direct division.
- (b) Find the HCF and LCM of 84, 126 and 140 using the prime factorisation method.
- (c) Find the values of the letters A and B in the cryptarithm: $3A + 25 = B2$.

Chapter 7: A Tale of Three Intersecting Lines

Q7. Triangles and Angle Properties:

- (a) In a triangle, the interior angles are in the ratio 2 : 3 : 5. Find the measure of each angle and classify the triangle.
- (b) An exterior angle of a triangle measures 110° , and one of its interior opposite angles is 45° . Find the measures of the remaining angles.
- (c) Can a triangle have side lengths 5 cm, 7 cm and 13 cm? Justify using the triangle inequality property.

Chapter 8: Working with Fractions

Q8. Fraction Operations and Problem Solving:

- (a) Solve: $3\frac{2}{5} + 2\frac{1}{4} - 1\frac{7}{10}$
- (b) Evaluate: $\frac{5}{12} \div 1\frac{1}{4} \times 2\frac{2}{3}$
- (c) A container holds $18\frac{3}{4}$ litres of milk. If small bottles of capacity $\frac{3}{4}$ litre each are filled from it, how many small bottles can be filled?

SECTION B: PRACTICAL MATHS ACTIVITIES

Activity 1: Paper-Folding and Cut-out Geometry (Chapters 5 and 7)

- **Objective:** Verify practically that parallel lines cut by a transversal form equal alternate interior angles and corresponding angles.
- **Material required:** Coloured craft paper, tracing paper, ruler, protractor, a pair of scissors, glue stick.
- **Procedure:** Draw two parallel lines intersected by a transversal. Trace and cut out one angle, superimpose it on the alternate interior angle and the corresponding angle, paste it on a sheet, and record your findings.

SECTION C: NUMBER PUZZLES

Q9. Magic Square Challenge: Construct a 3×3 magic square in which each row, column and diagonal adds up to 45, using distinct whole numbers from Chapter 6.

SOCIAL SCIENCE

General Instructions

1. Complete the written work neatly in your Social Science notebook.
2. Use A4 sheets or a scrapbook for map work, charts and project activities.
3. Attempt all questions independently and write answers in your own words.
4. Use maps, diagrams, timelines and illustrations wherever required.
5. Revise the chapters taught during October and complete the related textbook activities.

A. HISTORY

Chapter: The Gupta Era – An Age of Tireless Creativity (if covered in October)

1. Write a short note on the Gupta Empire and its important rulers.
2. Explain any five achievements of the Gupta period in science, mathematics, literature, art or architecture.
3. Prepare a timeline of important events associated with the Gupta period.
4. Make a colourful, illustrated chart showing the contributions of the Gupta period to Indian civilisation.
5. Write a paragraph of about 100–120 words on “Why Is the Gupta Period Remembered as an Important Period in Indian History?”

B. GEOGRAPHY

Chapter: Geographical Diversity of India / Climates of India (as per the October syllabus)

1. On an outline political map of India, locate and label the Himalayas, Thar Desert, Deccan Plateau, Western Ghats, Eastern Ghats and the Ganga Plains.
2. Explain how geographical diversity influences people's food, clothing, houses and occupations.
3. Differentiate between weather and climate, giving two examples of each.
4. Prepare a chart showing the major factors that influence the climate of India.
5. Observe the weather in your locality for seven days and record the conditions in a table.

C. SOCIAL AND POLITICAL LIFE

Chapter: The Constitution of India – An Introduction / Types of Governments (as per the October syllabus)

1. Explain the meaning and importance of a Constitution.
2. Write any five key features or values of the Indian Constitution.
3. Differentiate between democracy and monarchy, giving suitable examples.
4. Prepare a chart on the Fundamental Rights of Indian citizens.
5. Write a short paragraph on “The Role of Students in a Democratic Society.”

D. ECONOMICS

Chapter: From Barter to Money / Understanding Markets (as per the October syllabus)

1. What is the barter system? Explain its limitations with examples.
2. Describe the important functions of money.
3. Differentiate between a weekly market and a shopping mall.
4. Visit a nearby market with your parent or guardian and record the names of ten goods, their prices and the types of sellers.
5. Draw a flow chart showing how goods move from producers to consumers.

E. COMPETENCY-BASED LEARNING ACTIVITIES

1. **Case Study:** A village has no proper road, drinking water facility or waste-management system. Identify three problems and suggest practical solutions involving the local government.
2. **Critical Thinking:** How might India's history, geography and economy be different if the Himalayas did not exist? Write five points.
3. **Art Integration:** Prepare a poster on “Unity in Diversity: India Our Pride.”
4. **Experiential Learning:** Interview an elder in your family about one historical place, traditional practice or local market. Write five facts you learned.

F. PROJECT WORK

Prepare a short project on “India: A Land of Diversity and Heritage.” Include:

- Introduction
- Geographical diversity of India
- One important historical contribution
- Constitutional values and unity in diversity
- Pictures, drawings or a map
- Conclusion

Length: 4–5 A4 pages.

Submission Guidelines

- Submit the completed homework on the first working day after the holidays.
- Bring the notebook, map work and project file for assessment.
- Be prepared to explain your project orally in class.

SCIENCE

Instructions

- Do all questions neatly in your Science notebook.
- Draw diagrams in pencil and label them properly.
- Write answers in your own words with examples from daily life.

Acidic, Basic and Neutral Substances

1. What are acids, bases and neutral substances? Give two examples of each from your kitchen.
2. What are indicators? Name any three natural indicators.
3. What happens when turmeric paste is put on a soap solution? Why does this happen?
4. What is neutralisation? Explain with two examples from daily life (for example: an ant bite, indigestion).

Metals and Non-metals

1. Write any four physical properties of metals.
2. Differentiate between metals and non-metals (any four points).
3. Why are cooking utensils made of metals, but their handles made of plastic or wood?
4. What is rusting? Write two ways to prevent the rusting of iron.

Electricity

1. Draw the symbols of an electric cell, a battery, a bulb, a switch (open and closed) and a connecting wire.
2. Differentiate between conductors and insulators, with two examples of each.
3. Draw a circuit diagram having a cell, a switch and a bulb. When will the bulb glow?
4. Write any three safety measures that we should follow while using electricity.

Adolescence

1. What is adolescence? Write the age group in which it usually happens.
2. Write any three changes that take place in our body during adolescence.
3. Why are personal hygiene and a balanced diet important during adolescence?

SANSKRIT

ऑटम ब्रेक गृहकार्य (Autumn Break Homework)

विषय: संस्कृत | कक्षा 7 (Class 7)

- (1) पाठ 1 से पाठ 3 तक दोहराएँ।
- (2) सूर्यनमस्कार के बारह आसनों के नाम लिखो।
- (3) अपनी पाठ्यपुस्तक से कोई एक श्लोक लिखो।
- (4) 1 से 50 तक की गिनती संस्कृत में लिखो।
- (5) किन्हीं दस वस्तुओं के नाम संस्कृत में लिखो।
- (6) 'फल' शब्द के रूप सभी विभक्तियों एवं सभी वचनों में लिखो।

ARTIFICIAL INTELLIGENCE

AI Holiday Homework – Class VII Artificial Intelligence

Chapters: Statistics, AI Domains, NLP, Basic Computer

Instructions

- Do all questions neatly in your holiday homework notebook.
- Draw graphs and diagrams in pencil and colour them.

- Write answers in your own words with examples.

Statistics

1. What is statistics? What is data? Give two examples of data from your daily life.
2. Find the mean and mode of the following numbers: 5, 7, 9, 7, 12.
3. Draw a bar graph for the favourite fruits of students in a class:

Fruit	Number of students
Apple	8
Mango	12
Banana	5
Grapes	7

AI Domains

1. Name the three domains of Artificial Intelligence and give one real-life example of each.
2. What is Computer Vision? Write any two places where it is used.

Natural Language Processing (NLP)

1. What is NLP? Write its full form and explain it in two or three lines.
2. Write any three examples of NLP that we use in daily life (for example: voice assistants, chatbots).

Basic Computer

1. What is a computer? Write any three characteristics of a computer.
2. Differentiate between input devices and output devices. Write three examples of each.
3. Differentiate between hardware and software, with two examples of each.

ENGLISH

A. TENSES

1. Write one example sentence for each of the 12 tenses.
2. Rohan usually walks to school, but yesterday he travelled by bus. Write two sentences describing his routine and yesterday's journey, and one sentence about what he will do tomorrow.

B. SUBJECT-VERB AGREEMENT

1. Write 10 original sentences using Subject-Verb Agreement rules.
2. A notice says, "Every student have to bring their notebook." Identify the error, rewrite the sentence correctly, and explain your correction.

C. FORMAL LETTER

Write a formal letter to the Principal suggesting one practical step to reduce plastic waste in school. Explain why it is needed and how students can help.

D. PARAGRAPH WRITING

Write a paragraph of 100–120 words on "How Can Students Make Their School Environment-Friendly?" Include practical actions and their benefits.

E. LITERATURE – CHAPTER REVISION

Revise all the literature chapters taught in class. From each chapter, write only five difficult words. Do not write summaries or question-answers.

F. IDIOMS AND PHRASES

Create one original sentence for each idiom using the meaning given below:

1. **A piece of cake** — Something very easy.
2. **Once in a blue moon** — Very rarely.
3. **Break the ice** — To start a conversation and make people feel comfortable.
4. **A blessing in disguise** — Something that seems bad at first but turns out to be good.
5. **Spill the beans** — To reveal a secret.
6. **Under the weather** — Feeling unwell.
7. **Hit the nail on the head** — To say exactly the right thing.
8. **The ball is in your court** — It is your turn to take action or make a decision.
9. **Better late than never** — Doing something late is better than not doing it at all.
10. **Burn the midnight oil** — To work or study late into the night.

HINDI

- 1) पाँच पेज सुलेख लिखिए ।
- 2) 'विद्यार्थी और अनुशासन' विषय पर 150 शब्दों में अनुच्छेद लिखिए ।
- 3) अर्धवार्षिक परीक्षा का प्रश्न-पत्र हल कीजिए ।
- 4) 'जल संरक्षण' विषय पर एक आकर्षक पोस्टर बनाइए तथा एक प्रभावशाली नारा लिखिए ।
- 5) 20 पर्यायवाची शब्द, 20 विलोम शब्द तथा 10 मुहावरे अर्थ सहित लिखिए ।
- 6) अपने क्षेत्र में टूटी हुई सड़क की मरम्मत करवाने हेतु संबंधित अधिकारी को पत्र लिखिए ।

MATHEMATICS

General Instructions

1. Complete everything in your Mathematics notebook. There is no need to maintain a separate notebook.
2. These questions are meant to serve as a tool for revision and recap of everything that has been covered so far.
3. Solve a part of the homework every day and revise the related chapter simultaneously.
4. Go through the chapters once again to develop comprehension skills.
5. Practise the problems from “Figure it Out” on a daily basis.
6. A PDF with some basic questions is attached. It needs to be solved fully in your regular notebook.

Drive Link for Questions

https://drive.google.com/file/d/1EzhzzuHQZ_gyb4xaB2CY8zPXchThSeEn/view?usp=drivesdk

SOCIAL SCIENCE

Instructions for Learners

- Complete the work neatly in your Social Science notebook.
- Attempt all competency-based questions using reasoning and real-life examples.
- Complete the Multidisciplinary Project (MDP) and update your Learner’s Diary daily.
- Use maps, diagrams and tables wherever required.
- Submit all work on the first working day after the Autumn Break.

10-Day Homework Plan

Day	Topic and Homework	Competency-Based Question
1	Natural Resources: Classify renewable and non-renewable resources with two examples each.	Your locality receives abundant sunlight but faces power cuts. How can solar energy help?
2	Resource Conservation: Write three ways to conserve water and electricity.	A local pond is polluted by waste. Suggest two practical measures to restore it.
3	Reshaping India's Political Map: Prepare a timeline of four important developments and complete the textbook-based map work.	Why might political boundaries change over time? Give one reason.
4	The Rise of the Marathas: Write five key facts about Chhatrapati Shivaji Maharaj.	Identify one leadership quality of Shivaji Maharaj and explain how it is useful today.
5	The Colonial Era in India: Write two effects of colonial rule on Indian people or livelihoods.	How might a local craftsman be affected by competition from cheaper factory-made goods?
6	Resistance and Change: Describe one example of resistance discussed in the chapter.	Why might people oppose an unfair policy? Give one reason based on the chapter.
7	Universal Franchise and India's Electoral System: Define universal adult franchise.	What democratic principle is violated if an eligible citizen is denied voting rights because of gender or income?
8	The Parliamentary System: Explain the roles of the legislature and the executive.	Why should a proposed public rule be discussed before implementation? Give two reasons.

9	Factors of Production: Name the four factors of production with examples.	Identify any two factors of production used by a shopkeeper or farmer in your locality.
10	Revision and Reflection: Revise the completed work and write five lines about your learning.	How can responsible resource use, local livelihoods and democratic participation improve your neighbourhood?

Multidisciplinary Project (MDP)

Theme: Our Neighbourhood: Resources, Livelihoods and Responsible Citizenship

Prepare a short project of 3–4 pages connecting:

- **Social Science:** Local resources, livelihoods and public services.
- **Science:** Water or energy conservation.
- **Mathematics:** A simple data table or bar graph.
- **English/Hindi:** A paragraph or slogan promoting responsible citizenship.

Conclude with three suggestions for improving your neighbourhood.

Learner's Diary

Maintain a daily record containing:

Date/Day	Task Completed	One Thing Learned	Parent's Initials
Day 1			
Day 2			
Day 3			
Day 4			
Day 5			
Day 6			
Day 7			
Day 8			
Day 9			
Day 10			

Note: All written work, competency-based questions, the MDP and the Learner's Diary must be completed and submitted after the break.

SCIENCE

1. **Revision and Written Work:** All students must revise the syllabus covered to date. Ensure that all written work is completed neatly in the respective subject notebooks.
2. **Multidisciplinary Project:** Prepare a multidisciplinary project file on the topic assigned by the subject teacher. Follow the given instructions and maintain proper presentation and neatness.
3. Complete the assignment given below in your notebooks.

COMPETENCY-BASED QUESTIONS ASSIGNMENT

A. Short Answer Questions (Q1 to Q9)

1. Write the steps of the scientific method in the correct order.
2. Differentiate between unicellular and multicellular organisms, with one example of each.
3. Name two useful microorganisms and state one use of each.
4. Differentiate between communicable and non-communicable diseases, with one example of each.
5. Give two uses of electromagnets and two appliances based on the heating effect of electric current.

6. Give two examples each of contact forces and non-contact forces.
7. List any two ways of reducing friction.
8. Calculate the pressure exerted by a force of 200 N acting on an area of 0.5 m².
9. Describe two safety measures to follow during a thunderstorm.

B. Competency-Based Questions (Q10 to Q15)

10. Rina noticed that plants kept on a window sill bend towards the light. She guessed that plants grow towards light to get energy.
 - (a) Identify the observation and the hypothesis.
 - (b) Suggest a simple experiment to test her hypothesis.
11. Milk kept at room temperature turns sour in a day, but milk kept in a refrigerator stays fresh for longer.
 - (a) Explain the reason for milk turning sour.
 - (b) Explain how a refrigerator slows this down.
12. During a cholera outbreak in a village, the health officer advised everyone to boil drinking water, cover food and wash hands with soap.
 - (a) Name the way in which cholera spreads.
 - (b) Explain how the advised measures help.
13. Many appliances are plugged into one socket. The wire becomes hot and there is a smell of burning plastic.
 - (a) Identify the effect of electric current responsible for this.
 - (b) Name two devices that protect a circuit from this.
 - (c) Explain the danger of overloading a socket.
14. **Assertion (A):** A plastic comb rubbed on dry hair can pick up small bits of paper.
Reason (R): Rubbing produces an electric charge on the comb, which exerts an electrostatic force.
Options:
 - (a) Both A and R are true, and R is the correct explanation of A.
 - (b) Both A and R are true, but R is not the correct explanation of A.
 - (c) A is true, but R is false.
 - (d) A is false, but R is true.
15. A person can lie on a bed of closely spaced nails without getting hurt, but would be hurt by lying on a single nail.
 - (a) Explain this observation using the idea of pressure.
 - (b) Predict the change in pressure if the area of contact increases while the force stays the same.

SANSKRIT

ऑटम ब्रेक गृहकार्य (Autumn Break Homework)

विषय: संस्कृत | कक्षा 8 (Class 8)

- (1) पाठ 1 से पाठ 3 तक प्रश्नोत्तर दोहराएँ।
- (2) अपनी पाठ्यपुस्तक से कोई एक श्लोक लिखें।
- (3) 1 से 50 तक की गिनती संस्कृत में लिखें।
- (4) किन्हीं पाँच फलों के नाम संस्कृत में लिखें।
- (5) सन्धि की परिभाषा लिखो तथा दीर्घ स्वर सन्धि के दस उदाहरण लिखो।

ENGLISH

1. **Literature (Kaveri):** Learn and revise Unit 4 and Unit 5 thoroughly.
2. **Grammar:** Write 15 examples based on Determiners and Tenses.
3. **Writing Skills:** Write one letter to the editor on the topic "The Problem of Plastic Pollution in Our Neighbourhood."

Note: Complete the work neatly in your English notebook and learn all the assigned work.

HINDI

प्रश्न 1.

निम्नलिखित प्रस्थान बिंदु के आधार पर 100 से 120 शब्दों में शीर्षक सहित एक लघुकथा लिखिए –

“एक बूढ़ा किसान था। उसके चारों पुत्र आपस में झगड़ा करते थे। किसान बहुत दुखी था। उसने एक दिन अपने चारों पुत्रों को बुलाया और दुखी मन से कहा, ‘आपस में झगड़ा नहीं करना चाहिए और तुम लोगों को मिल-जुलकर रहना चाहिए।’ पिताजी की बातें सुनकर चारों पुत्र वहाँ से चले गए। पर लड़ाई-झगड़े का सिलसिला जारी रहा। फिर एक दिन उस बूढ़े किसान ने एक उपाय सोचा.....”

प्रश्न 2.

निम्नलिखित विषयों पर 120 शब्दों का अनुच्छेद लिखिए –

1. एक भारत श्रेष्ठ भारत
2. नई शिक्षा नीति 2020

प्रश्न 3.

“गीता पुस्तक पढ़ती है।” इस वाक्य को अर्थ के आधार पर वाक्य के आठों (8) भेदों में रूपांतरित कीजिए।

प्रश्न 4.

अलंकार के सभी भेदों के दो-दो उदाहरण लिखकर कंठस्थ कीजिए।

प्रश्न 5.

PT 2 प्रश्न-पत्र हल कीजिए।

MATHEMATICS

General Instructions

1. The following holiday homework is to be done in your regular Mathematics notebook. There is no need to maintain a separate notebook.
2. The main purpose of this homework is the revision and recap of all the concepts covered so far.
3. Apart from the assignment, students are advised to go through each chapter and solve problems daily.
4. The assignment should not be completed in one go; it should be done partially each day.
5. End-of-chapter exercises from Chapter 5 and Chapter 6 should also be completed during the holidays.

Drive Link for the Homework

https://drive.google.com/file/d/1Rk7Z3zpLRPxaRZHbt_9OcKeK7Cl0ASpa/view?usp=drivesdk

SOCIAL SCIENCE

General Instructions

- Write the date and day before each day's work.
- Use a separate Social Science holiday homework notebook.
- Write answers in your own words and keep them neat.

- Draw charts, tables and diagrams wherever required.
- Complete all competency-based questions carefully.
- Revise the complete work on Day 10 before submission.

Day-wise Holiday Homework

Day	Chapter	Homework
Day 1	Ch. 7: Elections	Write the meaning of an election. Make a flow chart of the election process: voters, candidates, political parties, campaigning, polling, counting and results.
Day 2	Ch. 7: Elections	Write short notes on: universal adult franchise, voter ID, the Election Commission of India, and free and fair elections. Prepare a poster on “My Vote, My Responsibility.”
Day 3	Ch. 7: Elections	Complete the competency-based questions given under “Elections”.
Day 4	Ch. 8: Building Blocks in Economics	Define scarcity, wants, resources, choice and opportunity cost. Draw a chart showing the three basic economic questions: what to produce, how to produce and for whom to produce.
Day 5	Ch. 8: Building Blocks in Economics	Give five examples of choices made by a student, a farmer, a shopkeeper and the government. For each example, write the opportunity cost.
Day 6	Ch. 8: Building Blocks in Economics	Complete the competency-based questions under “Economics: Choice and Opportunity Cost”.
Day 7	Ch. 9: The Price Puzzle	Define demand, supply, price, market, shortage, surplus and market equilibrium. Draw a simple demand–supply diagram and mark the equilibrium point.
Day 8	Ch. 9: The Price Puzzle	Make a table showing five factors that increase demand and five factors that increase supply. Explain what happens to the price when demand rises but supply remains the same.
Day 9	Ch. 9: The Price Puzzle	Complete the competency-based questions under “Market and Price”.
Day 10	Revision	Revise Chapters 7–9. Prepare a one-page comparison chart: Elections vs Market. Write how both involve choices, participation, rules and outcomes. Submit all work neatly.

Competency-Based Questions

A. Elections

1. Case Study: In a village, some people are told by a local leader that they must vote only for him. Others are not allowed to reach the polling booth.

- Which values of a free and fair election are being violated?
- What should the Election Commission do in this situation?
- Suggest two ways citizens can protect their voting rights.

2. Application: A Class IX student says, “My one vote will not change anything.”

- Do you agree? Give reasons.
- Explain how voting is both a right and a responsibility.

3. Analysis: During an election, Candidate A promises free laptops, Candidate B promises better roads, and Candidate C promises clean drinking water.

- Which promise is most important for your area? Give one reason.

(b) What questions should voters ask before believing election promises?

B. Economics: Choice and Opportunity Cost

1. Case Study: Ravi has ₹500. He can buy either a school bag or two books. He chooses the school bag.

- (a) What is Ravi's opportunity cost?
- (b) Which economic problem does this example show?
- (c) Why can a person not satisfy all wants at the same time?

2. Application: A village has limited land. It can use the land either for farming or for building a school.

- (a) Identify the scarce resource.
- (b) Write one advantage and one disadvantage of each choice.
- (c) What would you choose? Justify your answer.

3. Analysis: A government has to decide whether to spend more money on hospitals or on sports stadiums.

- (a) Which choice has a higher opportunity cost, in your opinion?
- (b) Explain using the ideas of "what to produce" and "for whom to produce".

C. Market and Price

1. Case Study: During the rainy season, the price of vegetables rises sharply because supply decreases.

- (a) What happens to demand and supply in this situation?
- (b) Why does the price increase?
- (c) Suggest two steps the government or traders can take to control the price rise.

2. Data-based Question: At ₹40 per kg, buyers demand 100 kg of potatoes, but sellers supply only 60 kg.

- (a) Is there a shortage or a surplus?
- (b) What will happen to the price?
- (c) In what situation will the market reach equilibrium?

SCIENCE

All students of Class IX are instructed to complete the following holiday homework during the Autumn Break:

- 1. Revision of Syllabus:** Revise the entire syllabus covered so far in preparation for the upcoming examinations.
- 2. Portfolio File:** Prepare a portfolio file comprising at least 10 pages. A sample portfolio file has been provided in the link shared. Students should refer to the sample while preparing their files.
- 3. Holiday Homework Assignment:** Complete the assignment comprising 30 competency-based questions (10 Physics, 10 Chemistry and 10 Biology) in your respective subject notebooks.

All students must complete the assigned work neatly and submit it after the Autumn Break.

https://drive.google.com/drive/folders/1nBMDWb61CNgAll_20qZJVWxpalwehVxy

SANSKRIT

ऑटम ब्रेक गृहकार्य (Autumn Break Homework)

विषय: संस्कृत | कक्षा 9 (Class 9)

- (1) स्पर्श-व्यञ्जना: लिखन्तु।
- (2) कारक-चिह्नानि लिखन्तु।
- (3) विद्यालय में अवकाश हेतु प्रार्थना-पत्र संस्कृत में लिखें।
- (4) अपनी पाठ्यपुस्तक से कोई श्लोक लिखो।
- (5) अपने विद्यालय के बारे में पाँच वाक्य लिखो।
- (6) 'बालक' शब्द के रूप लिखो।

ENGLISH

1. Grammar

1. Solve 20 questions on Determiners.
2. Solve 20 questions on Tenses.

2. Writing Skills

1. Write a letter to the editor of a newspaper expressing concern about the increasing use of plastic.
2. Write an analytical paragraph in 100–120 words on “Favourite Sports of Students in a School” (based on a chart).

3. Literature Revision

Revise the following six chapters from both textbooks.

First Flight

1. A Letter to God
2. Nelson Mandela: Long Walk to Freedom
3. Glimpses of India

Footprints Without Feet

4. The Necklace
5. Bholi
6. The Book That Saved the Earth

4. Poetry Revision

Revise the following poems from *First Flight*:

1. For Anne Gregory
2. Trees
3. A Tiger in the Zoo

Instructions

- Complete the written work neatly in your English notebook.
- Revise all the prescribed chapters and poems, including important questions and answers.

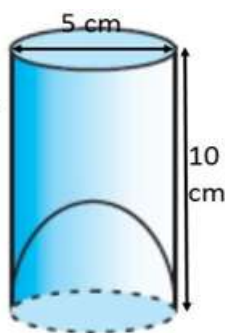
HINDI

- 1) PT 2 प्रश्न-पत्र हल कीजिए ।
- 2) संज्ञा, सर्वनाम, क्रिया, विशेषण एवं अव्यय की परिभाषा, उनके प्रकार (परिभाषा सहित) एवं उनके उदाहरण लिखिए ।
- 3) आपका नाम अमित / अनन्या है । आप कंप्यूटर ऑपरेटर के पद के लिए आवेदन करना चाहते हैं । इस पद के लिए एक स्ववृत्त (बायोडाटा) तैयार कीजिए ।
- 4) आप अंशुल / आस्था हैं । अपने विद्यालय के कंप्यूटर शिक्षक को ई-मेल लिखकर कंप्यूटर प्रयोगशाला में इंटरनेट की समस्या दूर करने का अनुरोध कीजिए ।
- 5) किसी समाचार-पत्र के संपादक को मोबाइल फ़ोन के बढ़ते दुष्प्रभावों के संबंध में पत्र लिखिए ।
- 6) रचना के आधार पर वाक्य के भेद उदाहरण सहित लिखिए एवं 10 वाक्यों का रूपांतरण कीजिए ।
- 7) पढ़ाए गए सभी पाठों की पुनरावृत्ति कीजिए ।

MATHEMATICS

1. A tent is in the shape of a right circular cylinder up to a height of 3 m and then a right circular cone, with a maximum height of 13.5 m above the ground. Calculate the cost of painting the inner side of the tent at the rate of ₹2 per square metre, if the radius of the base is 14 m. (5 M)

2. A juice seller serves his customers using a glass as shown in the figure. The inner diameter of the cylindrical glass is 5 cm, but the bottom of the glass has a hemispherical portion raised, which reduces the capacity of the glass. If the height of the glass is 10 cm, find the apparent capacity of the glass and its actual capacity. [$\pi = 3.14$]



3. The mean of the following frequency distribution is 62.8 and the sum of all the frequencies is 50. Compute the missing frequencies f_1 and f_2 .

Class	0–20	20–40	40–60	60–80	80–100	100–120
Frequency	5	f_1	10	f_2	7	8

4. The median of the following data is 50. Find the values of p and q , if the sum of all frequencies is 90. Also find the mode.

Marks obtained	20–30	30–40	40–50	50–60	60–70	70–80	80–90
Number of students	p	15	25	20	q	8	10

5. A survey regarding the heights (in cm) of 50 girls of Class X of a school was conducted and the following data was obtained. Find the mean, median and mode of the given data.

Heights (in cm)	120–130	130–140	140–150	150–160	160–170
No. of girls	2	8	12	20	8

6. Four bells toll together at 9:00 a.m. They toll after 7, 8, 11 and 12 seconds respectively. How many times will they toll together again in the next 3 hours?
7. India is a competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities, contributing to higher-quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in the 6th year and 22600 sets in the 9th year.

Based on the above information, answer the following questions:

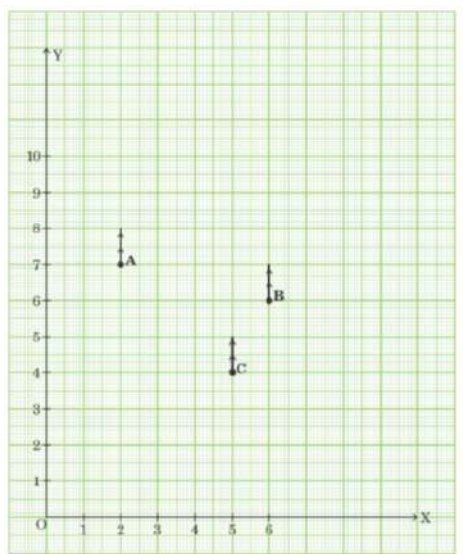
- Find the fixed number by which the production of the factory increases every year.
- What is the production during the first year?
- (a) Find the total production in the first 3 years.

OR

- Find the n th term in terms of n .

8. Find the points on the x -axis which are at a distance of $2\sqrt{5}$ from the point $(7, -4)$. How many such points are there?
9. If A and B are $(-2, -2)$ and $(2, -4)$ respectively, find the coordinates of P such that $AP = \frac{3}{7}AB$ and P lies on the line segment AB .

10. To conduct Sports Day activities, in your rectangular-shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1 m each. 100 flower pots have been placed at a distance of 1 m from each other along AD, as shown in the figure. Niharika runs $\frac{1}{4}$ th of the distance AD on the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$ th of the distance AD on the eighth line and posts a red flag. Assume A as the origin, AB along the x-axis and AD along the y-axis, and answer the following questions:



Based on the above information, answer the following questions:

- Find the coordinates of the green flag.
- Find the distance between the two flags.
- (a) If Rashmi has to post a blue flag exactly halfway along the line segment joining the two flags, where should she post her flag?

OR

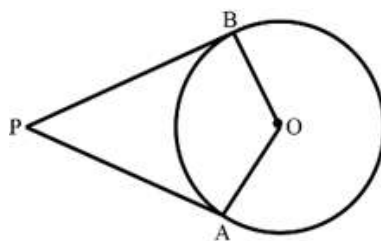
- If the position of the green flag is named P and that of the red flag Q, then find the ratio in which $R(10, \frac{55}{3})$ divides the line segment PQ.

11. In an examination hall, students are seated at a distance of 2 m from each other to maintain social distancing during the coronavirus pandemic. Let three students sit at points A, B and C, whose coordinates are (4, -3), (7, 3) and (8, 5) respectively.
- If an invigilator at point D, lying on the straight line joining B and C, divides the distance between them in the ratio 1 : 2, find the coordinates of D. (1 M)
 - Find the ratio in which B divides the line segment joining A and C. (2 M)
 - Find the midpoint of AB. (1 M)

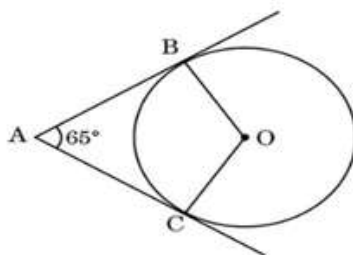


- Find the ratio in which the line $2x + y - 4 = 0$ divides the line segment joining the points A (2, -2) and B (3, 7).
- The line segment joining the points A (____, ____) and B (____, ____) is divided by the point P such that $AP : AB = 2 : 5$. Find the coordinates of the point P.

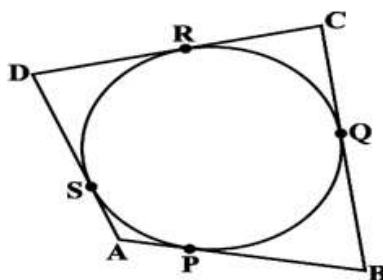
14. Find the ratio in which P (4, k) divides the line segment joining the points A (2, 3) and B (6, -3). Also find k.
15. If A (-2, -1), B (a, 0), C (4, b) and D (1, 2) are the vertices of a parallelogram, find the values of a and b.
16. Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.
17. In the given figure, PA and PB are the tangent segments to a circle with centre O. Show that the points A, O, B and P are concyclic.



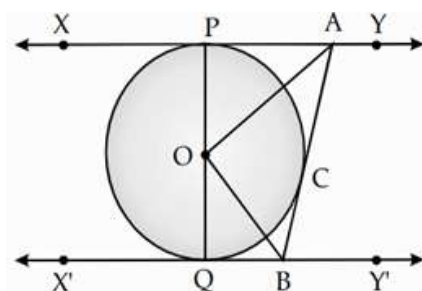
18. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTO = 2\angle OPQ$.
19. In the given figure, O is the centre of the circle. AB and AC are tangents drawn to the circle from point A. If $\angle BAC = 65^\circ$, then find the measure of $\angle BOC$.



20. Prove that a parallelogram circumscribing a circle is a rhombus.
21. Prove that the tangents drawn to a circle from an external point are equal.
22. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$.



23. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.
24. In the figure, XY and X'Y' are two parallel tangents to a circle with centre O, and another tangent AB with point of contact C intersects XY at A and X'Y' at B. Prove that $\angle AOB$ is a right angle.



SOCIAL SCIENCE

10-Day Revision Plan

Complete the following revision tasks systematically during the autumn break.

Day	Topics to Revise	Practice Task
1	History: Nationalism in Europe	PYQs and timeline
2	History: Nationalism in India	PYQs and map work
3	Geography: Resources and Development, Agriculture	MCQs and 3-mark answers
4	Geography: Minerals and Energy Resources, Manufacturing Industries, Lifelines of National Economy	PYQs and map practice
5	Political Science: Power Sharing, Federalism	Case-based questions
6	Political Science: Gender, Religion and Caste; Political Parties; Outcomes of Democracy	MCQs and long answers
7	Economics: Development, Sectors of the Indian Economy	PYQs and data-based questions

Instructions for Learners

- 1. Practise Previous Year Questions**
Practise CBSE PYQs from 2024, 2025 and 2026, wherever available.
- 2. Daily Question Practice**
Solve at least 5 PYQs daily.
- 3. Answer Writing Practice**
Write two 3-mark answers and one 5-mark answer daily.
- 4. Map Practice**
Practise all prescribed History and Geography map locations.
- 5. Conceptual Revision**
Revise important dates, definitions, examples and case studies.
- 6. Notebook Completion**
Complete the work neatly in your Social Science notebook.

SCIENCE

All students of Class X are instructed to complete the following holiday homework during the Autumn Break:

- Revision for Pre-Board Examinations:** Revise the entire syllabus covered so far thoroughly in preparation for the upcoming Pre-Board Examinations.
- Portfolio File:** Prepare a portfolio file comprising at least 10 pages. A sample portfolio file has been provided in the link shared. Students should refer to the sample while preparing their files.
- Holiday Homework Assignment:** Complete the assignment comprising 30 competency-based questions (10 Physics, 10 Chemistry and 10 Biology) in your respective subject notebooks.

All students must complete the assigned work neatly and submit it after the Autumn Break.

<https://drive.google.com/drive/folders/11SSglfprNv4fJZaUiYzkkasczbDrzpT>

SANSKRIT

- सन्धि की परिभाषा लिखें तथा अयादि सन्धि के पाँच उदाहरण लिखें ।
- तत्पुरुष समास के दस उदाहरण लिखो ।
- 'वाङ्मयम्' पाठ का सार लिखो ।
- उदाहरणानुसारं समयं संख्याभिः लिखत –
(उदाहरण) पादोन सप्तवादनम् = ६:४५ (6:45)
(1) सार्धं द्वादशवादनम् = _____
(2) दशवादनम् = _____

- (3) सपाद षड्वादनम् = _____
(4) सार्धं चतुर्वादनम् = _____
(5) पादोन अष्टवादनम् = _____
(5) विद्यालय में अवकाश हेतु प्रार्थना-पत्र लिखो ।
(6) अपने मित्र के बारे में पाँच वाक्य संस्कृत में लिखो ।

ARTIFICIAL INTELLIGENCE

AI Holiday Homework – Class X Artificial Intelligence (417)

Chapters: Statistical Data, ICT Skills – II

Instructions

- Do all questions in your holiday homework notebook.
- Show all steps of calculation wherever required.
- Write answers in your own words with examples.

Statistical Data

1. What is statistical data? Give two examples of how statistical data is used in Artificial Intelligence.
2. What are no-code AI tools? Name any three no-code AI tools and write one use of each.
3. Differentiate between no-code and low-code AI tools (any two points).
4. Find the mean, median and mode of the following marks scored by students: 12, 15, 18, 15, 20, 25, 15.
5. What is a dataset? Differentiate between training data and testing data.

ICT Skills – II

1. What is an operating system? Write any three functions of an operating system.
2. Differentiate between GUI (Graphical User Interface) and CLI (Command Line Interface), with one example of each.
3. What is the difference between a file and a folder? Write the steps to create a new folder and rename it.
4. What are a computer virus and malware? Write any three ways to protect a computer from them.
5. Why should we take a regular backup of data? Write any three tips for the basic care and maintenance of a computer.

ENGLISH

1. Read and revise the chapters *The Adventure* and *Silk Road* from *Hornbill*.
2. Write five important short-answer questions with answers from each chapter.
3. Practise one classified advertisement and one speech on the topic "The Role of Technology in Education."
4. Revise the poems *A Photograph* and *The Voice of the Rain*, including their central ideas and poetic devices.
5. Complete ten grammar questions based on gap-filling and sentence reordering.

Note: Complete the work neatly in your English notebook and revise the prescribed syllabus for the upcoming assessment.

HINDI

प्रश्न 1. अर्धवार्षिक परीक्षा में आने वाले सभी पाठों को याद करना है।

प्रश्न 2. किसी घटना / स्थिति के आधार पर दृश्य लेखन कीजिए –



प्रश्न 3. जनसंचार के प्रमुख माध्यमों (विभिन्न माध्यमों के लिए लेखन पाठ पर आधारित) पर बीस बहुविकल्पीय प्रश्न तैयार कीजिए –

प्रश्न 4. "कोरोना एक महामारी" विषय पर फ्रीचर लिखिए –

अथवा

"विद्यार्थी और ऑनलाइन कक्षाएँ" विषय पर आलेख लिखिए –

MATHEMATICS

- Let A and B be sets. If $A \cap X = B \cap X = \emptyset$ and $A \cup X = B \cup X$ for some set X, show that $A = B$.
- Show that $A \cup B = A \cap B$ implies $A = B$.
- Find the domain and range of the real function $f(x) = \sqrt{9 - x^2}$.
- Let $f = \{(x, \frac{x}{1+x^2}) : x \in \mathbb{R}\}$ be a function from $\mathbb{R}$ into $\mathbb{R}$. Determine the range of f.
- Let R be a relation from Q to Q defined by $R = \{(a, b) : a, b \in \mathbb{Q} \text{ and } a - b \in \mathbb{Z}\}$.

Show that: (i) $(a, a) \in R$ for all $a \in \mathbb{Q}$

(ii) $(a, b) \in R$ implies that $(b, a) \in R$

(iii) $(a, b) \in R$ and $(b, c) \in R$ implies that $(a, c) \in R$

- Prove that $\tan 4x = \frac{4 \tan x (1 - \tan^2 x)}{1 - 6 \tan^2 x + \tan^4 x}$
 - Prove that $\cos 6x = 32 \cos^6 x - 48 \cos^4 x + 18 \cos^2 x - 1$.
 - If $\tan x = \frac{3}{4}$, $\pi < x < \frac{3\pi}{2}$, find the values of $\sin \frac{x}{2}$, $\cos \frac{x}{2}$, $\tan \frac{x}{2}$?
 - Prove that $\cos^2 x + \cos^2(x + \frac{\pi}{3}) + \cos^2(x - \frac{\pi}{3}) = \frac{3}{2}$
 - Prove that $\cos 2x \cos \frac{x}{2} - \cos 3x \cos \frac{9x}{2} = \sin 5x \sin \frac{5x}{2}$
 - Prove that $(\cos x - \cos y)^2 + (\sin x - \sin y)^2 = 4 \sin^2(\frac{x-y}{2})$.
 - If $(x + iy)^3 = u + iv$, then show that $\frac{u}{x} + \frac{v}{y} = 4(x^2 - y^2)$
-
- Solve $6 \leq -3(2x - 4) < 12$.
 - A manufacturer has 600 litres of a 12% solution of acid. How many litres of a 30% acid solution must be added to it so that the acid content in the resulting mixture will be more than 15% but less than 18%?
 - Find r, if: (i) $5 \times 4_{p_r} = 6 \times 5_{p_{r-1}}$. (ii) $n_{p_r} = 840$ and $n_{c_r} = 35$.
 - How many numbers greater than a million can be formed by using the digits 1, 2, 0, 2, 4, 2, 4?
 - Using the letters of the word DAUGHTER, answer the following questions: |
How many words can be formed with or without meaning.
(i) each of 2 vowels and 3 consonants?
(ii) there are always 4 letters between D and R, assuming that no letter is repeated?
(iii) all the consonants occur together?
(iv) no two vowels come together?
(v) vowels occupy even places only?
 - A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done when the committee consists of:
(i) exactly 3 girls? (ii) no girl? (iii) at least 3 girls?
(iv) at most 3 girls? (v) at least one boy and one girl?
 - Find the number of words with or without meaning which can be made using all the letters of the word AGAIN. If these words are written as in a dictionary, what will be the 50th and 60th words?
 - Find $(x + 1)^6 + (x - 1)^6$. Hence, evaluate $(\sqrt{2} + 1)^6 + (\sqrt{2} - 1)^6$.
 - Find the sum to n terms of the sequence 8, 88, 888, 8888, ...
 - The sum of two numbers is 6 times their geometric mean, show that numbers are in the ratio $(3 + 2\sqrt{2}) : (3 - 2\sqrt{2})$
 - The sum of first three terms of a G.P. is $\frac{13}{12}$ and their product is -1. Find the common ratio and the terms.
 - Find the value of n so that $\frac{a^{n+1} + b^{n+1}}{a^n + b^n}$ may be the geometric mean between a and b.
 - Let $x = 1 + a + a^2 + \dots$ and $y = 1 + b + b^2 + \dots$, where $|a| < 1$ and $|b| < 1$.
Prove that $1 + \frac{ab}{x+y-1} + a^2b^2 + \dots = \frac{xy}{x+y-1}$.

PHYSICS

All students must complete the following assignments neatly and submit them after the Autumn Break.

- Revision of Syllabus:** Revise the entire Physics syllabus covered in class to date. Focus on important concepts, laws, derivations, formulae and numerical problems.
- Periodic Test-I Question Paper:** Attempt the complete Periodic Test-I question paper in your Physics fair notebook. Write all answers in the proper CBSE Board Examination format, with

appropriate steps, formulae, SI units, diagrams and derivations wherever required.

3. **Physics Activity File:** Prepare a Physics Activity File by selecting any three activities from the list given below. Students must write at least three activities in the file, following the proper format, including aim, apparatus required, theory/principle, procedure, observations, calculations, result and precautions, wherever applicable.

Suggested Activities

1. To make a paper scale of a given least count, e.g., 0.2 cm or 0.5 cm.
2. To determine the mass of a given body using a metre scale by the principle of moments.
3. To plot a graph for a given set of data, with a proper choice of scales and error bars.
4. To measure the force of limiting friction for rolling of a roller on a horizontal plane.
5. To study the variation in the range of a projectile with the angle of projection.
6. To study the conservation of energy of a ball rolling down an inclined plane using a double inclined plane.
7. To study the dissipation of energy of a simple pendulum by plotting a graph between the square of amplitude and time.

CHEMISTRY

1. Competency-Based Questions:

- Open the link shared below and solve these questions.
- Solve all 50 competency-based questions provided in the material.
- Write all the questions along with their answers neatly in your Chemistry fair notebook.
- Ensure that you attempt every question with proper understanding and logical reasoning.

https://docs.google.com/document/d/1qsbEnrf9q0BTuy7Y_hnLq9NHVtUyX9ea/edit?usp=drivesdk&ouid=102450399347053667979&rtpof=true&sd=true

2. Chemistry Project:

- Prepare a Chemistry project of more than 15 pages.
- The project should be well organised, informative and neatly presented.
- Students who have already submitted their Chemistry projects may skip this task.
- All other students must complete and submit their projects immediately after the Autumn Break.

Note: Both assignments must be completed within the stipulated time. Make the best use of the Autumn Break to strengthen your conceptual understanding and complete your pending work.

BIOLOGY

AUTUMN BREAK HOMEWORK (2026-27)

Class XI | Subject: Biology

Name: _____ Roll No.: _____ Section: _____

General Instructions

1. Complete all work in a separate Biology homework notebook, neatly and in your own handwriting.
2. Assertion–Reason options: (a) Both A and R are true, and R explains 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.
3. Draw neat, labelled diagrams in pencil. Use the NCERT textbook as the primary reference.
4. Prepare a one-page mind map for each chapter (see the Activity section at the end).
5. Submit the notebook on the first day after the break.

A. Assertion–Reason

1. **A:** In bryophytes, the gametophyte is the dominant phase of the life cycle.
R: The sporophyte is dependent on the gametophyte for anchorage and nutrition.

2. **A:** C_4 plants are more productive than C_3 plants in hot, bright conditions.
R: C_4 plants show negligible photorespiration due to Kranz anatomy.
3. **A:** Meiosis I is called a reductional division.
R: Homologous chromosomes separate during meiosis I, halving the chromosome number.
4. **A:** Lysosomes are called “suicide bags” of the cell.
R: Differentiate between rough and smooth endoplasmic reticulum. State one function of each.

B. Short Answer

1. Differentiate between racemose and cymose inflorescence. Give one example of each.
2. Differentiate between radial and bilateral symmetry, with one example of each.
3. What is a coelom, and how are acoelomate, pseudocoelomate and coelomate animals different?
4. Explain the four levels of protein structure briefly. Write the difference between a nucleoside and a nucleotide.

C. Case-Based / Competency Questions

1. Four animals are listed with their scientific names: lion (*Panthera leo*), tiger (*Panthera tigris*), leopard (*Panthera pardus*) and cat (*Felis catus*).
 - (i) Which animals share the same genus?
 - (ii) Which category do all four share, apart from class and order?
 - (iii) State two conventions followed while writing scientific names.
2. Two identical plants, one C_3 and one C_4 , are kept under high light and high temperature.
 - (i) Which will show better growth?
 - (ii) Explain the role of RuBisCO in the two plants.
 - (iii) What is photorespiration, and why is it wasteful for agriculture?

D. Activity Section

1. Make a one-page, colourful mind map for each chapter.
2. Make a labelled model or chart of any ONE: animal cell, mitosis stages, or chloroplast and Z-scheme.
3. Prepare a report on any experiment on photosynthesis (for example, showing that light is necessary), with aim, materials, procedure, observation and result.

COMPUTER SCIENCE

CS Holiday Homework – Class XI Computer Science

Chapters: Encoding Schemes and Number System, Introduction to Problem Solving

Instructions

- Do all questions in your holiday homework notebook.
- Show all steps of working in number conversion questions.
- Draw flowcharts neatly with a pencil and use the correct symbols.

Encoding Schemes and Number System

1. What is encoding? Why is it needed in a computer? Expand ASCII, ISCII and UTF.
2. Differentiate between ASCII and Unicode (any two points). How many characters can be represented using 7-bit ASCII?
3. Convert $(156)_{10}$ into binary, octal and hexadecimal.
4. Convert $(101101.101)_2$ into decimal.
5. Convert $(3A7)_{16}$ into binary and octal.
6. Convert $(725)_8$ into decimal and hexadecimal.

Introduction to Problem Solving

1. Write the steps of problem solving and explain each step in one or two lines.
2. What is an algorithm? Write any three characteristics of a good algorithm.
3. Write an algorithm to find the largest of three numbers.
4. Draw the symbols used in a flowchart and write their uses. Draw a flowchart to check whether a number is even or odd.
5. What is decomposition? Give one example. Write pseudocode to find the sum of the first N natural numbers.

ENGLISH

1. Read and revise the following chapters from *Flamingo*:
 - The Rattrap
 - Going Places
 - Indigo
 - The Interview
2. Write five important questions with answers from each chapter.
3. Revise the poems *A Thing of Beauty* and *A Roadside Stand*. Write the central idea and poetic devices of each poem.
4. Practise one formal invitation with its reply and one letter to the editor.
5. Read and revise the supplementary reader *Vistas: The Enemy*.

Note: Complete all the work neatly in your English notebook and revise the prescribed syllabus for the upcoming assessment.

HINDI

लिखित भाग

प्रश्न 1 – दीक्षा पोर्टल पर प्रदत्त समस्त पाठों के अभ्यास भाग (प्रेक्टिस आइटम्स) पर जाएँ और बहुविकल्पीय, अति-लघुउत्तरीय और दीर्घ-उत्तरीय प्रश्नों का अभ्यास करें।

प्रश्न 2 – “एक गीत”, “कविता के बहाने”, “सहर्ष स्वीकारा है”, “कवितावली” – इन कविताओं का काव्य-सौंदर्य लिखिए।

प्रश्न 3 – सीबीएसई द्वारा प्रदत्त प्रतिदर्श प्रश्न-पत्र को हल कीजिए।

प्रश्न 4 – प्रदत्त परियोजना कार्य को पूर्ण करें।

अभ्यास भाग

प्रश्न 1 – जनसंचार से संबंधित भाग का अभ्यास कीजिए।

प्रश्न 2 – वितान पुस्तक के समस्त पाठों का अभ्यास कीजिए।

प्रश्न 3 – आरोह के समस्त पाठों का अभ्यास कीजिए।

MATHEMATICS

- Find the points on the line $\frac{x+2}{3} = \frac{y+1}{2} = \frac{z-3}{2}$ at a distance of 5 units from the point $P(1, 3, 3)$. (2M)
- Three vectors $\vec{a}$, $\vec{b}$ and $\vec{c}$ satisfy the condition $\vec{a} + \vec{b} + \vec{c} = \vec{0}$. Evaluate the quantity $\mu = \vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}$, if $|\vec{a}| = 3$, $|\vec{b}| = 4$ and $|\vec{c}| = 2$. (3M)
- Find the vector and Cartesian equations of the lines which is perpendicular to the lines with equations $\frac{x+2}{1} = \frac{y-3}{2} = \frac{z+1}{4}$ and $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-3}{4}$ and passes through the point $(1, 1, 1)$. Also find the angle between the given lines. (3M)
- If $|\vec{a}| = 2$, $|\vec{b}| = 7$ and $\vec{a} \times \vec{b} = -3\hat{i} + \hat{j} + 2\hat{k}$, find the angle between $\vec{a}$ and $\vec{b}$. (2M)
- Find the co-ordinates of the foot of the perpendicular drawn from the point $A(-1, 8, 4)$ to the line joining points $B(0, -1, 3)$ and $C(2, -3, -1)$. Hence find the image of the point A in the line BC . (5M)
- The equation of a line is $5x - 3 = 15y + 7 = 3 - 10z$ Write the direction cosines of the line (2M)
- Find the values of p , so that the lines $l_1: \frac{1-x}{3} = \frac{7y-14}{p} = \frac{z-3}{2}$ and $l_2: \frac{7-7x}{3p} = \frac{y-5}{1} = \frac{6-z}{5}$ are perpendicular to each other. Also, find the equation of a line passing through a point $(3, 2, -4)$ and parallel to line l_1 . (5M)
- Show that the points A, B, C with position vectors $2\hat{i}-\hat{j}+\hat{k}$, $\hat{i}-3\hat{j}-5\hat{k}$ and $3\hat{i}-4\hat{j}-4\hat{k}$ respectively, are the vertices of a right-angled triangle. Hence find the area of the triangle (3M)
- If $\vec{a} = 4\hat{i} + 5\hat{j} - \hat{k}$, $\vec{b} = -\hat{i} + 4\hat{j} - 5\hat{k}$, then find another vector $\vec{d}$ which is perpendicular to both $\vec{a}$ and $\vec{b}$, and such that $\vec{c} \cdot \vec{d} = 21$ where $\vec{c} = 3\hat{i} + \hat{j} - \hat{k}$. (3M)
- Find the shortest distance between the Lines:
 $\vec{r} = (3\hat{i} + 2\hat{j} - 4\hat{k}) + \lambda(\hat{i} + 2\hat{j} + 2\hat{k})$ and $\vec{r} = (5\hat{i} - \hat{j}) + \mu(3\hat{i} + 2\hat{j} + 6\hat{k})$. Also, find whether the lines are intersecting or not (5M).
- Find a vector of magnitude 6, perpendicular to each of the vectors $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$, where $\vec{a} = \hat{i} + \hat{j} + \hat{k}$ and $\vec{b} = \hat{i} + 2\hat{j} + 3\hat{k}$.
- Find the area of a parallelogram whose adjacent sides are $2\hat{i}-4\hat{j}+5\hat{k}$ and $3\hat{i}-6\hat{j}+2\hat{k}$.
- Find a vector in the direction of vector $\vec{a} = \hat{i} - 2\hat{j}$ that has magnitude 7 units
- Find the projection of the vector $\hat{i} + 3\hat{j} + 7\hat{k}$ on the vector $7\hat{i} - \hat{j} + 8\hat{k}$.

15. If $\vec{a} = 4\hat{i} + 5\hat{j} - \hat{k}$, $\vec{b} = -\hat{i} + 4\hat{j} - 5\hat{k}$, then find another vector $\vec{d}$ which is perpendicular to both $\vec{a}$ and $\vec{b}$, and such that $\vec{c} \cdot \vec{d} = 21$ where $\vec{c} = 3\hat{i} + \hat{j} - \hat{k}$

16. If $A = \begin{pmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{pmatrix}$, then find a matrix X such that $A^2 - 5A + 4I + X = 0$.

17. Solve the system of equations $\frac{2}{x} + \frac{3}{y} + \frac{10}{z} = 4$; $\frac{4}{x} - \frac{6}{y} + \frac{5}{z} = 1$; $\frac{6}{x} + \frac{9}{y} - \frac{20}{z} = 2$

18.. For two matrices $A = \begin{bmatrix} 3 & -6 & -1 \\ 2 & -5 & -1 \\ -2 & 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -2 & -1 \\ 0 & -1 & -1 \\ 2 & 0 & 3 \end{bmatrix}$, find the product AB and hence solve the system of equations: $3x - 6y - z = 3$, $2x - 5y - z + 2 = 0$ and $-2x + 4y + z = 5$

19. If $A = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 3 \\ 1 & -2 & 1 \end{bmatrix}$ then find A^{-1} and hence solve the system of linear equations: $x + y + z = 6$, $y + 3z = 7$ and $x - 2y + z = 0$

20. If $A = \begin{bmatrix} -1 & a & 2 \\ 1 & 2 & x \\ 3 & 1 & 1 \end{bmatrix}$ and $A^{-1} = \begin{bmatrix} 1 & -1 & 1 \\ -8 & 7 & -5 \\ b & y & 3 \end{bmatrix}$, find the value of $(a+x) - (b+y)$

21. Let N be the set of natural numbers and R be the relation on $N \times N$ defined by $(a, b) R (c, d)$ iff $ad = bc$ for all $a, b, c, d \in N$. Show that R is an equivalence relation.

22. Let $f: R - \left\{-\frac{4}{3}\right\} \rightarrow R$ be a function defined as $(x) = \frac{4x}{3x+4}$. Show that f is a one one function. Also check whether f is an onto function or not

23. A function $f: [0, \infty) \rightarrow [-5, \infty)$ be defined by $f(x) = 3x^2 + 9x - 5$

Prove that the function is a one-one and on-to function.

24. 1. Minimize $Z = 5x + 10y$ subject to the constraints; $x + 2y \leq 120$; $x + y \geq 6$; $x - 2y \geq 0$; $x, y \geq 0$.

25. Maximize $Z = 3x + 9y$ Subject to constraints $x + 3y \leq 60$, $x + y \geq 10$, $x \leq y$, $x, y \geq 0$
Solve the above L.P.P graphically.

26. Solve the following linear programming problem graphically: Maximise $z = 600x + 400y$, Subject to constraints: $x + 2y \leq 12$, $2x + y \leq 12$, $x + 1.25y \geq 5$, $x \geq 0$, $y \geq 0$

27. The corner points of the feasible region determined by the system of linear inequalities are $(0,0)$, $(4,0)$, $(2,4)$, and $(0,5)$. If the maximum value of $Z = ax + by$, where $a, b > 0$ occurs at both $(2,4)$ and $(4,0)$, then

- a) $a = 2b$ b) $2a = b$ c) $a = b$ d) $3a = b$

28. Which of the following points is not in the feasible region of the constraints: $x + 2y \leq 8$, $3x + 2y \leq 12$, $x \geq 0$, $y \geq 0$.

- (A) $(0, -1)$ (B) $(0, 1)$ (C) $(2, 2)$ (D) $(4, 0)$

PHYSICS

You are instructed to complete the following holiday homework during the Autumn Break:

- Revision of Syllabus:** Revise thoroughly all the Physics topics and chapters covered in the classroom to date.

2. **Half-Yearly Question Paper:** All students must solve the Half-Yearly Examination question paper in their Physics notebooks, following the exact format and presentation required in CBSE Board Examination answer sheets.
3. **Physics Project File:** Complete your Physics project file based on any one of the topics given below.

Project Topics: Suggested Investigatory Projects

1. To study the various factors on which the internal resistance/EMF of a cell depends.
2. To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp used to “illuminate” the LDR (keeping all the lamps at a fixed distance), and (b) the distance of an incandescent lamp (of fixed power) used to “illuminate” the LDR.
3. To find the refractive indices of (a) water and (b) oil (transparent) using a plane mirror, an equiconvex lens (made from glass of known refractive index) and an adjustable object needle.
4. To investigate the relation between the ratio of (i) output and input voltage and (ii) the number of turns in the secondary coil and primary coil of a self-designed transformer.
5. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled, one by one, with different transparent fluids.
6. To estimate the charge induced on each one of two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb’s law.
7. To study the factors on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/bulb in a circuit fed by an AC source of adjustable frequency.
8. To study the Earth’s magnetic field using a compass needle and a bar magnet by plotting magnetic field lines, and using a tangent galvanometer.

CHEMISTRY

You are instructed to complete the following tasks during the Autumn Break. Please utilise this time effectively, as Pre-Board Examination–I will be conducted immediately after the Autumn Break.

1. **Revision of Chapters:** Revise all Chemistry chapters covered up to and including Amines. Practise important questions, numericals, chemical reactions, conversions and previous years’ CBSE questions. Give special attention to conceptual clarity and competency-based questions.
2. **Chemistry Project:** Complete your Chemistry investigatory project in all respects, including the required write-up, observations, conclusion and other relevant sections.
3. **Chemistry Practical File:** Complete your Chemistry practical file, ensuring that all prescribed experiments, activities, observations, calculations and results are properly recorded.

Important Instructions

- Complete all the assigned work within the Autumn Break.
- Bring your completed project and practical file to school after the break.
- Be well prepared for Pre-Board Examination–I, as no additional preparation time will be available after the holidays.

BIOLOGY

<https://drive.google.com/file/d/18yBrMxq253lF-FPTTmhEdL3H2HAflX9Z/view?usp=drivesdk>

Tips for preparation: Practise all NCERT diagrams at least three times. Learn key terms, definitions and flow charts. Solve one CBSE sample paper or previous-year paper during the break.

Holiday Homework – Class XII Computer Science (083)

Topics: Computer Networks, Database Concepts, SQL, Interface of Python with MySQL

General Instructions

- Do all the work neatly in a separate holiday homework notebook.
- Write the question number and question before each answer.
- Sections A, B, C and D are compulsory. Section E: do any **one** activity.
- Write SQL keywords in capitals. Run the queries and Python programs on your computer if possible.
- Draw diagrams with a pencil and label them clearly.
- Submit the notebook on the first day after the holidays.

Section A – Computer Networks

I. Very short answer (1 mark each)

1. Expand: ARPANET, NSFNET, PPP, SMTP, POP3, VoIP, HTTPS, TELNET, Mbps, RJ45.
2. Which device regenerates a weak signal in a network?
3. Name the switching technique in which a dedicated path is set up before communication starts.
4. Which protocol is used to transfer files between two computers on the Internet?
5. Which transmission medium is least affected by electromagnetic interference?
6. Name the device that connects networks working on different protocols.
7. What is the full form of URL? Give one example.

II. Short answer (2–3 marks each)

8. Write a short note on the evolution of networking (ARPANET → NSFNET → Internet).
9. Define bandwidth, data transfer rate and IP address.
10. Differentiate between circuit switching and packet switching.
11. Differentiate between a hub and a switch; and between a router and a gateway.
12. Differentiate between HTTP and HTTPS. Which is safer and why?
13. Write the use of each protocol: SMTP, POP3, FTP, TELNET.
14. What is VoIP? Give one advantage and one limitation.
15. Differentiate between a static and a dynamic web page.
16. What is a web browser? What are cookies and add-ons/plugin-ins?
17. Differentiate between web hosting and a web server.

III. Long answer / Case study (5 marks each)

18. Explain star, bus and tree topologies with labelled diagrams. Give one advantage and one disadvantage of each.
19. **Case study:** *Sunrise Pvt. Ltd.* is setting up its network in Jaipur with four wings: ADMIN, ACCOUNTS, HR and STORE. It also has a head office in Delhi.

Table: Distances between wings

Wings	Distance
ADMIN – ACCOUNTS	55 m
ADMIN – HR	90 m
ADMIN – STORE	150 m
ACCOUNTS – HR	60 m
HR – STORE	45 m

Table: Number of computers

Wing	Computers
ADMIN	110
ACCOUNTS	25
HR	40
STORE	15

- Suggest the most suitable wing to house the server. Justify.
- Draw the most efficient cable layout to connect all wings.
- Where should a repeater be placed, if needed? Why?
- Which device should be placed in each wing to connect all its computers?
- Which type of network (PAN/LAN/MAN/WAN) will be formed between the Jaipur office and the Delhi head office? Suggest a fast way to connect them.

Section B – Database Concepts

I. Very short answer (1 mark each)

- Define: relation, tuple, attribute, domain.
- What is the degree and cardinality of a table with 8 columns and 25 rows?
- Which key is used to link two tables?
- What is a Cartesian product? If table A has 4 rows and B has 5 rows, how many rows will $A \times B$ have?

II. Short answer (2–3 marks each)

- Differentiate between primary key, candidate key and alternate key with an example.
- What is a foreign key? Explain with two related tables.
- Write any three advantages of a database over a file system.
- Differentiate between DDL and DML with two examples each.

Section C – SQL

Consider the following two tables and answer the questions:

Table: EMPLOYEE

EmplID	Name	DeptID	Salary	City	DOJ
E01	Rahul	D1	35000	Delhi	2019-04-12
E02	Meena	D2	42000	Jaipur	2020-07-01
E03	Arjun	D3	58000	Delhi	2018-11-23
E04	Pooja	D1	31000	Mumbai	2021-02-15
E05	Vikas	D3	64000	Pune	2017-09-05
E06	Anita	D2	NULL	Delhi	2022-06-10

Table: DEPARTMENT

DeptID	DeptName	Location
D1	Sales	Floor 1
D2	HR	Floor 2
D3	IT	Floor 3

I. Write SQL commands (1 mark each)

- Create the table DEPARTMENT with DeptID as primary key.
- Create the table EMPLOYEE with DeptID as a foreign key referencing DEPARTMENT.

3. Display names of employees who joined after 1st January 2020.
4. Display names of employees whose name has 'a' as the second letter.
5. Display details of employees whose salary is NULL.
6. Display Name and Salary in descending order of Salary.
7. Display the number of employees in each city.
8. Display DeptID and average salary of each department having more than one employee.
9. Increase the salary of employees of department D1 by 5%.
10. Add a column Phone of type CHAR(10) to EMPLOYEE.
11. Change the size of column City to VARCHAR(30).
12. Delete all employees from Mumbai.
13. Display Name of each employee along with their DeptName (use an equi-join).
14. Display Name, Salary and Location of employees working in the IT department.
15. Display the total salary paid in each department along with DeptName.
16. Remove the table DEPARTMENT from the database. What problem may occur and why?

II. Write the output (2 marks each)

17. SELECT COUNT(*), COUNT(Salary), MAX(Salary) FROM EMPLOYEE;
18. SELECT City, COUNT(*) FROM EMPLOYEE GROUP BY City HAVING COUNT(*) > 1;
19. SELECT Name FROM EMPLOYEE WHERE Salary BETWEEN 35000 AND 60000;
20. SELECT DISTINCT DeptID FROM EMPLOYEE ORDER BY DeptID DESC;
21. SELECT E.Name, D.DeptName FROM EMPLOYEE E, DEPARTMENT D WHERE E.DeptID = D.DeptID AND E.City = 'Delhi';
22. SELECT * FROM EMPLOYEE NATURAL JOIN DEPARTMENT WHERE Salary > 50000;

III. Theory (2 marks each)

23. Differentiate between WHERE and HAVING clause.
24. Differentiate between equi-join and natural join.
25. Differentiate between DELETE and DROP; and between ALTER and UPDATE.
26. Differentiate between CHAR and VARCHAR.
27. What is the difference between COUNT(*) and COUNT(column_name)?

Section D – Interface of Python with MySQL

I. Short answer (1–2 marks each)

1. Name the Python module used to connect Python with MySQL. Write the command to install it.
2. What is the use of connect(), cursor(), execute() and commit()?
3. Differentiate between fetchone(), fetchmany() and fetchall().
4. What does the rowcount property of a cursor return?
5. Why is commit() necessary after an INSERT, UPDATE or DELETE query?

II. Programs (3–4 marks each)

6. Write a Python program to connect to the database OFFICE (user: root, password: tiger) and display all records of EMPLOYEE.
7. Write a Python program to accept EmpID, Name, DeptID, Salary and City from the user and insert the record into EMPLOYEE. Use %s or format() in the query.
8. Write a Python program to display names of employees whose salary is more than an amount entered by the user. Also display how many such records were found.
9. Write a Python program to increase the salary of an employee by 10%, where EmpID is accepted from the user. Display a message if no such employee exists.
10. Fill in the blanks to complete the code that deletes employees of a given city:

```

import mysql.connector as m
con = m.connect(host="localhost", user="root",
                passwd="tiger", database="OFFICE")
cur = con._____( ) # Statement 1
c = input("Enter city: ")
q = "DELETE FROM EMPLOYEE WHERE City = '{}'._____(c) # Statement 2
cur._____(q) # Statement 3
con._____( ) # Statement 4
print(cur._____, "record(s) deleted") # Statement 5
con.close()

```

Section E – Activity (do any one)

1. **Network chart:** Make a chart on network devices (modem, ethernet card, RJ45, repeater, hub, switch, router, gateway, Wi-Fi card) with pictures and the use of each.
2. **Protocols booklet:** Prepare a small booklet on HTTP, HTTPS, FTP, PPP, SMTP, POP3, TCP/IP, TELNET and VoIP — full form, use and one real-life example each.
3. **Mini project:** Create a database SCHOOL with tables STUDENT and FEES linked by AdmNo. Write a menu-driven Python program (Add, Display, Search, Update, Delete) using MySQL connectivity. Paste the code and output screenshots.
4. **SQL practical file:** Create any two related tables, insert 8 records each, and write 15 queries (including GROUP BY, HAVING, ORDER BY and JOIN) with their outputs.

<https://drive.google.com/drive/folders/11SSglfprNv4fJZaUiYzkkasczbDrszp>