

PM SHRI KENDRIYA VIDYALAYA RAJOURI

AUTUMN BREAK HOLIDAY HOMEWORK – 2026

CLASS X | SUBJECT: ENGLISH

Dear Students

Make the most of your Autumn Break by reading the prescribed chapters carefully and completing the written work neatly in your English notebook. Focus on understanding the text, building vocabulary, and applying the ideas from each chapter to real-life situations.

1. Read the following chapters:

- (i) The Making of a Scientist
- (ii) The Necklace
- (iii) Bholi

2. Written Work (English Notebook):

For each of the three chapters, write the following:

- Theme of the chapter.
- Meanings of any 10 words from the chapter.
- Summary of the chapter in your own words.
- Textual questions and answers.

3. Competency-Based Questions:

Prepare and answer 5 competency-based questions from each chapter and write them in your English notebook. The questions should test your understanding, interpretation, critical thinking, and ability to connect the events and themes of the chapter with real-life situations.

General Instructions:

- Complete all work neatly and legibly in your English notebook.
- Use your own words and avoid copying summaries or answers directly from the internet.
- Support answers with relevant details from the chapters..
- Submit the completed holiday homework on the first working day after the Autumn Break.

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- **MATHS HOLIDAY HOMEWORK**
- **Complete your lab manual.**
- **Solve last three years cbse sample papers of both basic and standard. Paste the question paper in the register.**

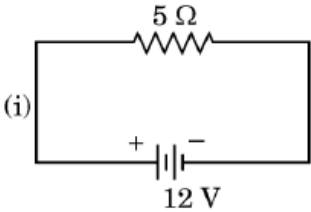
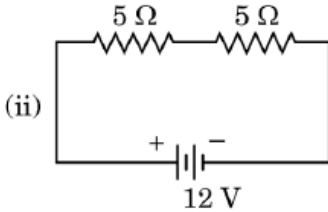
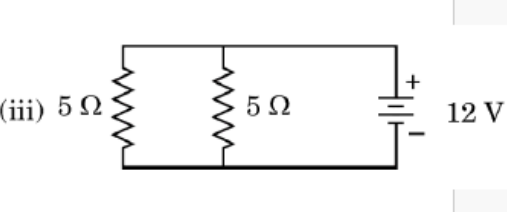
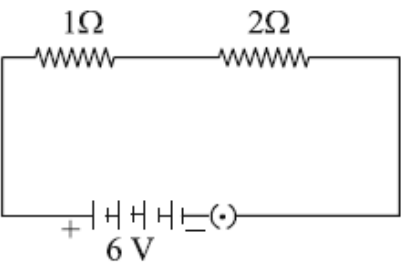
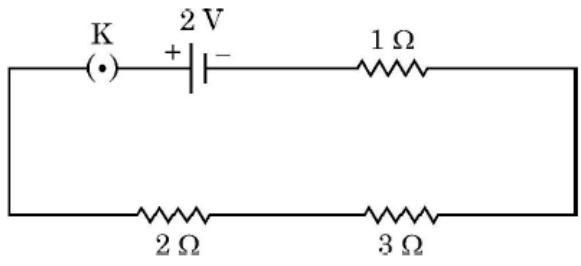
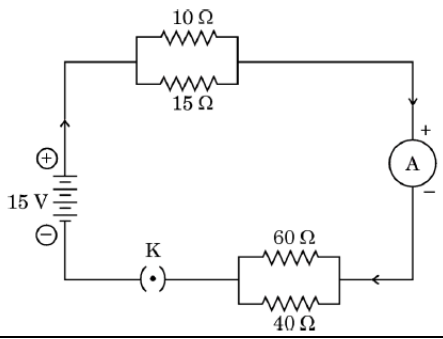
HOLIDAY HOMEWORK – PHYSICS

CLASS X

Chapter: ELECTRICITY | Questions 1–20

Instructions: Attempt all questions neatly in your Physics notebook.

2 Marks Questions	
1	A wire of resistance R is cut into three equal parts. If these three parts are then joined in parallel, calculate the total resistance of the combination so formed. CBSE-2025
2	Define electric power. When do we say that the power consumed in an electric circuit is 1 watt? CBSE-2025
3	An electric kettle is rated 750 W; 220 V. Can this kettle be used in a circuit which has a fuse of current rating 3 A? Give reason for your answer. CBSE-2025
4	An electric kettle is rated 230 V; 1000 W. Calculate the resistance of its heating element when in operation. CBSE-2025
5	Consider the following circuits:

	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>(i)</p> </div> <div style="text-align: center;">  <p>(ii)</p> </div> <div style="text-align: center;">  <p>(iii)</p> </div> </div> <p>In which circuit will the power dissipated in the circuit be (I) minimum (II) maximum? Justify your answer. CBSE-2025</p>
6	<p>Show how you would connect three resistors each of resistance $6\ \Omega$, so that the combination has a resistance of $9\ \Omega$. Also justify your answer. CBSE-2024</p>
7	<p>In the given circuit calculate the power consumed in watts in the resistor of $2\ \Omega$ CBSE-2024</p> <div style="text-align: right;">  </div>
8	<p>Use Ohm's law to determine the potential difference across the $3\ \Omega$ resistor in the circuit shown in the following diagram when key is closed. CBSE-2024</p> <div style="text-align: right;">  </div>
3 Marks Questions	
9	<p>Consider the following electric circuit: Calculate the values of the following: (a) The total resistance of the circuit (b) The total current drawn from the source (c) Potential difference across the parallel combination of $10\ \Omega$ and $15\ \Omega$ resistors. CBSE-2025</p> <div style="text-align: right;">  </div>
10	<p>(a) Write the relationship between resistivity and resistance of a cylindrical conductor of length l and area of cross-section A. Hence derive the SI unit of resistivity. (b) Why are alloys used in electrical heating devices? CBSE-2025</p>
11	<p>Three resistors of $2\ \Omega$, $3\ \Omega$ and $6\ \Omega$ are connected in (i) series, and (ii) parallel. Draw the arrangements of the resistors and find the equivalent resistance of each arrangement. CBSE-2025</p>

1	The electrical resistivity of three materials A, B and C at 20°C is given below: (i) Classify these materials as conductor, alloy and insulator. (ii) Give one example of each of these materials and state one use of each material in the design of an electrical appliance say an electric stove or an electric iron. CBSE-2025	Material	Resistivity ($\Omega \text{ m}$)
2		A	10^{17}
		B	44×10^{-6}
		C	1.62×10^{-8}

1	The resistance of a wire of 0.01 cm radius is 7 ohms. If the resistivity the material of the wire is 44×10^{-6} ohm meter, calculate the length of wire. CBSE-2025	
3		

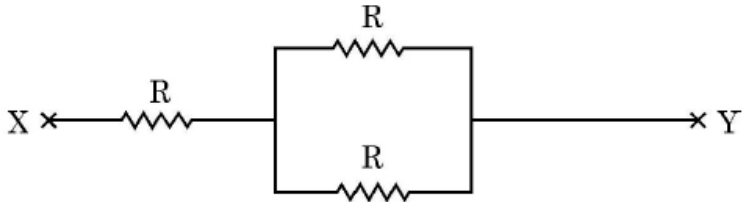
1	(a) Explain the statement "Potential difference between two points is 1 volt". (b) What do the symbols given below represent in an electric circuit? Write one function of each.	
4		




(i)
(ii)

CBSE-2025

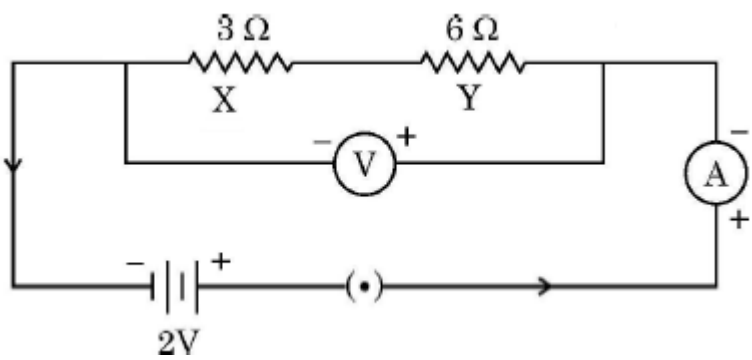
1	(a) State Ohm's law. Write formula for the equivalent resistance R , of the parallel combination of three resistors of values R_1 , R_2 and R_3 . (b) Find the resistance of the following network of resistors:	
5		



CBSE-2024

5 Marks Questions

1	Study the circuit shown in which two resistors X and Y of resistances 3Ω and 6Ω respectively are joined in series with a battery of 2 V. (i) Draw a circuit diagram showing the above two resistors X and Y joined in parallel with same battery and same ammeter and voltmeter.	
6		



(ii) In which combination of resistors will the (a) potential difference across X and Y and (b) current through X and Y, be the same?

(iii) Determine the equivalent resistance of the parallel combination of the two resistors (X and Y).

(iv) Find the current drawn from the battery by the series combination of the two resistors (X and Y).

1

2

CBSE-2025

1 7	<p>(i) Define electric power. Express it in terms of potential difference (V) and resistance (R).</p> <p>(ii) An electric oven is designed to work on the mains voltage of 220 V. This oven consumes 11 units of electrical energy in 5 hours. Calculate:</p> <p>(a) power rating of the oven</p> <p>(b) current drawn by the oven</p> <p>(c) resistance of the oven when it is red hot</p> <p style="text-align: right;">CBSE-2024</p>
1 8	<p>(i) Write the relation between resistance R and electrical resistivity ρ of the material of a conductor in the shape of cylinder of length l and area of cross-section A. Hence derive the SI unit of electrical resistivity.</p> <p>(ii) The resistance of a metal wire of length 3 m is $60\ \Omega$. If the area of cross-section of the wire is $4 \times 10^{-7}\text{ m}^2$, calculate the electrical resistivity of the wire.</p> <p>(iii) State how would electrical resistivity be affected if the wire (of part 'ii') is stretched so that its length is doubled. Justify your answer.</p> <p style="text-align: right;">CBSE-2024</p>
1 9	<p>(i) The potential difference across the two ends of a circuit component is decreased to one-third of its initial value, while its resistance remains constant. What change will be observed in the current flowing through it? Name and state the law which helps us to answer this question.</p> <p>(ii) Draw a schematic diagram of a circuit consisting of a battery of four 1.5 V cells, a $5\ \Omega$ resistor, a $10\ \Omega$ resistor and a $15\ \Omega$ resistor and a plug key, all connected in series. Now find</p> <p>(a) the electric current passing through the circuit, and</p> <p>(b) potential difference across the $10\ \Omega$ resistor when the plug key is closed. CBSE 2024</p>
2 0	<p>(i) When is the potential difference between two points said to be 1 volt?</p> <p>(ii) A copper wire has a diameter of 0.2 mm and resistivity of $1.6 \times 10^{-8}\text{ m}$. What will be the length of this wire to make its resistance $14\ \Omega$? How much does the resistance change, if the diameter of the wire is doubled?</p> <p style="text-align: right;">CBSE-2024</p>

HOLIDAY HOMEWORK – CHEMISTRY

CLASS X | CBSE | Chapter: Metals and Non-Metals

Name: _____

Class/Section: _____

Roll No.: _____

Submission Date: _____

Instructions: Complete all written work neatly in your chemistry notebook. Write balanced equations wherever required and label diagrams clearly.

Section A: Short-answer questions

1. Define metals and non-metals. Give four examples of each.
2. Write any five physical properties of metals.
3. Write any four physical properties of non-metals.
4. Why are metals good conductors of heat and electricity?
5. What is malleability? Give one example.

6. What is ductility? Give one example.
7. Why is sodium stored in kerosene?
8. Why do ionic compounds have high melting and boiling points?
9. What is corrosion? Give two examples.
10. What is an alloy? Give two examples with their uses.

Section B: Chemical reactions

Write balanced chemical equations for the following reactions:

1. Magnesium burns in oxygen.
2. Zinc reacts with dilute hydrochloric acid.
3. Iron reacts with copper sulphate solution.
4. Sodium reacts with water.
5. Calcium oxide reacts with water.
6. Aluminium reacts with dilute hydrochloric acid.
7. Copper oxide reacts with hydrogen.
8. Carbon reacts with oxygen.

Section C: Give reasons

1. Gold and platinum are used for making jewellery.
2. Aluminium is used for making cooking utensils.
3. Copper is used for electrical wiring.
4. Ionic compounds conduct electricity in the molten state but not in the solid state.
5. Highly reactive metals are extracted by electrolytic reduction.
6. Iron articles are painted to prevent rusting.
7. Silver articles turn black when exposed to air.
8. Graphite conducts electricity although it is a non-metal.

ASSIGNMENT

CLASS X – SCIENCE

CHAPTER: OUR ENVIRONMENT

Name: _____ Roll No.: _____ Date: _____

SECTION A – 2 MARKS QUESTIONS

1. “Excessive use of chemicals and pesticides in agriculture adversely affect the environment.” Justify this statement. [2 marks]
2. (a) Why are the organisms of the first trophic level important in any food chain?
(b) Justify the statement: “The flow of energy in an ecosystem is unidirectional.” [2 marks]

3. We do not clean natural ponds or lakes, whereas an aquarium or a swimming pool needs to be cleaned regularly. Why?

OR

We do not clean ponds or lakes, but an aquarium needs to be cleaned regularly. Why? [2 marks]

4. Write the percentage of the energy of sunlight captured by green plants to convert it into food energy. Explain the fate of this energy when green plants are eaten by primary consumers. [2 marks]

5. Name the term used for materials that cannot be broken down by biological processes. Give two ways by which they harm various components of an ecosystem. [2 marks]

6. Define biodegradable and non-biodegradable substances. Classify the following items into these two categories: newspapers, glass bottles, polythene bags and vegetables. [2 marks]

7. Give reasons for the following:

(i) A food web is more stable than a food chain in an ecosystem.

(ii) A food chain should not have more than four to five trophic levels. [2 marks]

8. How do harmful chemicals get accumulated progressively at each trophic level in a food chain? [2 marks]

9. (i) What is meant by trophic level?

(ii) On average, what percentage of energy is transferred to the second trophic level from the first trophic level? Which category of consumers do the organisms of the second trophic level belong to? [2 marks]

10. "Ozone, although a deadly poison, performs an essential function for the Earth and its inhabitants." Explain. [2 marks]

11. In the following food chain, if 50 J of energy was available to the hawk, how much energy would have been present at the first and third trophic levels? Justify your answer.

Grass → Grasshopper → Frog → Snake → Hawk [2 marks]

12. State two reasons why human-made materials like plastics persist for a long time in the environment. [2 marks]

SECTION B – 3 MARKS QUESTIONS

1. Write the essential function performed by ozone at the higher levels of the atmosphere. How is it formed in the upper atmosphere? Name the group of chemicals mainly responsible for the depletion of the ozone layer. [3 marks]

2. (a) "In a food chain, energy flow is unidirectional." Give two reasons for this statement.

(b) If 10,000 J of energy is available at the producer level, how much energy will be available to the secondary consumers? Give a reason to justify your answer. [3 marks]

3. What are decomposers? Give two examples. State how they maintain a balance in an ecosystem. [3 marks]

4. Plants → Deer → Lion

In the given food chain, what will be the impact of removing all the organisms of the second trophic level on the first and third trophic levels? Will the impact be the same for the organisms of the third trophic level if they were present in a food web? Justify. [3 marks]

5. A gas "X" that is a deadly poison is found at the higher levels of the atmosphere and performs an essential function. Name the gas and state its function in the atmosphere. Which chemical is linked to the decrease in the level of this gas? What measures have been taken by an international organisation to check the depletion of the layer containing this gas? [3 marks]

6. The use of pesticides to protect crops affects organisms at various trophic levels, especially human beings. Name the phenomenon involved and explain how it happens. [3 marks]
7. Study the picture showing three food chains (a), (b) and (c), and answer the following:
(i) Name the types of ecosystems that exist in food chains (b) and (c).
(ii) The first trophic level in all food chains consists of producers. Why? What percentage of solar energy do these producers capture for their use?
(iii) Why are the arrows shown in the diagram in one direction only and not vice versa? Justify. [3 marks]
8. Differentiate between biodegradable and non-biodegradable wastes. We generate a lot of non-biodegradable waste in daily life. Write any two harmful effects caused by these wastes if not disposed of properly. [3 marks]
9. Differentiate between a food chain and a food web. In a food chain consisting of deer, grass and tiger, if the population of deer decreases, what will happen to the populations of organisms belonging to the first and third trophic levels? [3 marks]
10. (i) Why is a kitchen garden called an artificial ecosystem while a forest is considered a natural ecosystem?
(ii) While designing an artificial ecosystem at home, write any two things to be kept in mind to convert it into a self-sustaining system. Give reasons to justify. [3 marks]
11. (i) Construct a food chain of four trophic levels comprising the following: hawk, snake, plants and rat.
(ii) If 20,000 J of energy is transferred by producers to the organisms of the second trophic level, calculate the amount of energy that will be transferred by organisms of the third trophic level to organisms of the fourth trophic level. [3 marks]
12. If a harmful chemical enters a food chain comprising peacock, plants, rats and snakes, which organism is likely to have the highest concentration of the chemical in its body? Justify your answer. Name and define the process involved. [3 marks]

AUTUMN BREAK HOMEWORK
SUBJECT: ARTIFICIAL INTELLIGENCE (CODE 417) — CLASS X

SECTION A: EMPLOYABILITY SKILLS

PART 1: MULTIPLE CHOICE QUESTIONS (MCQs)

Q1. Which of the following is an example of non-verbal communication?

- (a) Writing an email
- (b) Body language and facial expressions
- (c) Giving a oral presentation
- (d) Text messaging

Q2. Rohan is facing severe stress due to upcoming board examinations. Which of the following self-management techniques will best help him maintain emotional balance?

- (a) Ignoring the study schedule and playing video games continuously
- (b) Practicing yoga, meditation, and structured time management

- (c) Staying awake all night to cover the entire syllabus
- (d) Avoiding discussion with teachers and parents

Q3. Which shortcut key is used to copy selected text or files in Windows operating system?

- (a) Ctrl + X
- (b) Ctrl + V
- (c) Ctrl + C
- (d) Ctrl + Z

Q4. An entrepreneur who innovates new products, introduces new techniques, and creates new markets is primarily characterized by:

- (a) Risk aversion and fear of failure
- (b) Creativity, initiative, and problem-solving mindset
- (c) Strict adherence to routine daily tasks
- (d) Dependency on government subsidies

Q5. Which of the following actions directly contributes to sustainable development and green economy?

- (a) Excessive usage of single-use plastics
- (b) Adopting 4 Rs (Reduce, Reuse, Recycle, Refuse)
- (c) Wasting electrical energy during peak hours
- (d) Uncontrolled deforestation for industrial expansion

PART 2: COMPETENCY-BASED QUESTIONS

Q6. [Competency-Based Case Study] Communication & ICT Skills in Workplace

Aarav was tasked with sending a weekly project update report to his team members. Instead of writing a clear structured email, he sent a long, unformatted voice message with background noise. As a result, team members missed key deadlines and misinterpreted task assignments.

- (a) Identify the barriers to effective communication present in Aarav's situation.
- (b) Suggest two best ICT tools and communication practices Aarav should adopt to ensure clear, professional messaging.

Q7. [Competency-Based Case Study] Entrepreneurship & Green Skills Application

Priya lives in a town facing acute plastic waste management issues. She decided to start a startup that collects post-consumer plastic waste and converts it into durable eco-friendly construction tiles. Her business not only generates profit but also creates local employment and reduces landfill waste.

- (a) What key entrepreneurial quality is demonstrated by Priya in identifying a business opportunity from a community problem?
- (b) How does Priya's venture align with the core objectives of 'Green Skills' and Sustainable Development Goals (SDGs)?

UNIT 1: REVISITING AI PROJECT CYCLE & ETHICAL FRAMEWORKS FOR AI

Multiple Choice Questions (MCQs)

Q8. What is the primary objective of the 'Problem Scoping' stage in the AI Project Cycle?

- (a) Writing Python code for neural networks
- (b) Defining clear boundaries, stakeholders, and goals of the AI problem using the 4Ws canvas
- (c) Collecting numerical datasets from web scraping
- (d) Testing model accuracy on validation data

Q9. Which component of the 4Ws Problem Canvas identifies the target group suffering from the problem?

- (a) What
- (b) Where
- (c) Who
- (d) Why

Q10. During Data Acquisition, if an AI model is trained exclusively on pictures of lighter-skinned individuals, it may perform poorly on darker-skinned individuals. This ethical issue is known as:

- (a) Data Security Breach
- (b) AI Bias / Algorithmic Bias
- (c) Data Privacy Violations
- (d) Overfitting

Q11. Which of the following ethical frameworks emphasizes that AI systems should be transparent, explainable, and accountable for their decisions?

- (a) Black-box AI Framework
- (b) Responsible & Ethical AI Principles
- (c) Unsupervised Learning Protocol
- (d) Proprietary AI Protection Law

Q12. When extracting features from unstructured textual data, converting text into numerical vectors is essential because:

- (a) Computers cannot process raw natural text directly without mathematical representation
- (b) It reduces file size to zero
- (c) Text processing requires image recognition algorithms
- (d) It automatically translates text into foreign languages

Competency-Based / Case-Study Questions

Q13. [Competency-Based Case Study] Smart Traffic & Pollution Management System (4Ws Canvas)

The Municipal Corporation of a major metro city observes severe traffic congestion and rising air pollution levels during peak hours at major intersections. They want to deploy an AI-based system to dynamically control traffic lights and optimize vehicular flow based on real-time camera feed analysis.

- (a) Draft a complete 4Ws Problem Canvas (Who, What, Where, Why) for this scenario.
- (b) List three different sources from which data can be acquired for this AI project.

Q14. [Competency-Based Case Study] Ethical Dilemma in Automated Recruitment AI

A multinational technology company developed an AI tool to screen job resumes automatically. After six months, HR noticed that the AI consistently ranked male candidates higher than female candidates for engineering roles because it was trained on 10 years of historical company hiring data where males predominated.

- (a) Identify the ethical flaw in this AI system and explain why it occurred.
- (b) Propose two corrective actions the development team must take to make this AI recruitment tool fair, unbiased, and ethical.

UNIT 2: ADVANCED CONCEPTS OF MODELLING IN AI

Multiple Choice Questions (MCQs)

Q15. Which approach of AI modelling involves providing labeled training data with explicit input-output pairs to the algorithm?

- (a) Unsupervised Learning
- (b) Supervised Learning
- (c) Reinforcement Learning
- (d) Heuristic Search

Q16. An AI model designed to predict continuous numerical values (e.g., predicting house prices or temperature) uses which type of algorithm?

- (a) Classification
- (b) Regression
- (c) Clustering
- (d) Dimensionality Reduction

Q17. Grouping customer shopping data into distinct clusters based on purchasing behavior without prior labels is an example of:

- (a) Supervised Classification
- (b) Unsupervised Clustering
- (c) Rule-based Expert System
- (d) Decision Tree Regression

Q18. In Artificial Neural Networks (ANN), what role do 'Weights' and 'Biases' play during the training process?

- (a) They store user login credentials
- (b) They are adjustable parameters modified during training to minimize prediction error
- (c) They represent hardware memory capacity
- (d) They define text formatting rules

Q19. Which layer in a Deep Neural Network receives raw input data features and passes them to hidden layers?

- (a) Output Layer
- (b) Hidden Layer
- (c) Input Layer
- (d) Convolutional Layer

Competency-Based / Case-Study Questions

Q20. [Competency-Based Case Study] Healthcare Medical Diagnosis System

A hospital wants to build an AI application that inspects X-ray images and classifies them into 'Pneumonia Detected' or 'Normal'. Additionally, they want another system to predict the exact number of days a patient will require for recovery based on age, blood markers, and vital signs.

- (a) Specify whether the X-ray classification system uses Rule-based approach or Learning-based approach, and state whether it is Classification or Regression.
- (b) Identify the AI task type (Classification vs. Regression) for predicting the exact number of recovery days. Justify your answer.

Q21. [Competency-Based Case Study] Neural Network Architecture in Autonomous Driving

An autonomous self-driving car relies on computer vision neural networks to detect pedestrians, road signs, lane markings, and obstacles in real-time under changing light and weather conditions.

- (a) Explain the function of Hidden Layers in an Artificial Neural Network (ANN) used in complex tasks like image recognition.
- (b) Why are deep learning neural networks preferred over traditional rule-based algorithms for autonomous navigation?