2025_26_PRE_4

SET : 01

EDUTECH ACADEMY
NURTURING THE FUTURE....

— SCHOOL SECTION —

STD : X CBSE | **PRE EXAM – IV** | **TIME : 3:00 Hrs**

SUB : SCIENCE (086) | **DATE : 23rd January, 2026** | **MM :80**

General Instructions:

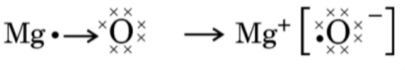
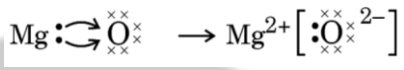
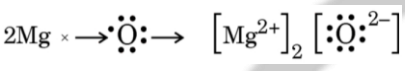
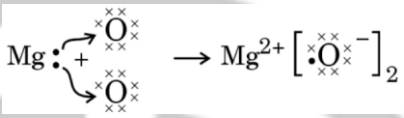
1. This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

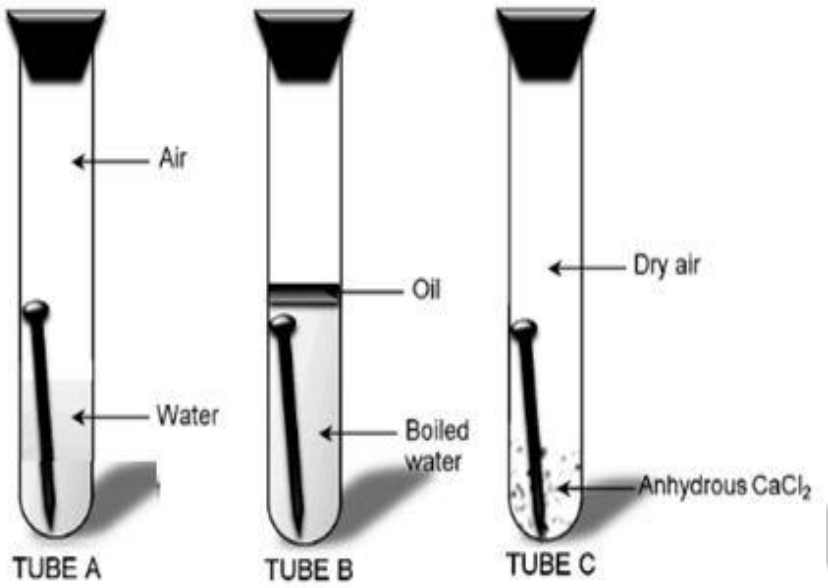
	Section A	
1	In plants, waste products like resins and gums are stored in : a) old xylem b) phloem c) cellular vacuoles d) leaves that fall off	**[1]**
2	When a pure - tall pea plant is crossed with a pure - dwarf pea plant, the percentage of tall pea plants in F_1 and F_2 generation pea plants will be respectively: a) 100%; 100% b) 100%; 50% c) 100%; 75% d) 100%; 25%	**[1]**
3	Biomagnification refers to the increase in the : a) number of plants and animals in an area. b) growth of phytoplanktons. c) the amount of harmful chemicals in the successive trophic levels of a food chain. d) body weight of an organism.	**[1]**
4	Match the following with correct response. **Column A** / **Column B** (i)Ductless gland / (a)Mammary gland (ii)Endocrine hormone system / (b)Salivary gland (iii)Milk / (c)Pancreas (iv)Glucagon / (d)Thyroid gland a) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b) b) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d) c) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c) d) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a)	**[1]**

5	Which one of the following gets biomagnified at different levels in a food chain? a) Manure b) Carbon monoxide c) DDT d) CFC's	**[1]**
6	The gastric glands present in the wall of the stomach release: a) Pepsin and Salivary amylase b) Mucus and Trypsin c) Pepsin and Trypsin d) Mucus and Pepsin	**[1]**
7	Which one of the following statements is TRUE for Hydra, Amoeba and Spirogyra? a) They reproduce sexually. b) They reproduce asexually. c) They are multicellular. d) They are unicellular.	**[1]**
8	**Assertion (A):** In reptiles, the temperature at which the fertilized eggs are kept decides the sex of the offsprings. **Reason (R):** Sex is not genetically determined in some animals. 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.	**[1]**
9	**Assertion (A):** Ozone layer protects the surface of the Earth from harmful UV radiations. **Reason (R):** Chlorofluorocarbons (CFCs) are responsible for depletion of ozone layer. 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.	**[1]**
10	Give reasons: 1. The male reproductive organ responsible for formation of germ cells is located outside the abdominal cavity. 2. The roles of the glands, present along the path of the vas - deferens, are very significant.	**[2]**

11	1. Explain the role of UV radiation in producing ozone layer. 2. Mention the reaction involved. 3. Why is excessive use of CFCs a cause of concern? **OR** Human beings are most adversely affected by the Biological Magnification. State the reason. Why can ordinary washing of the edibles (fruits and vegetables) not reduce the effect of biological magnification?	**[2]**
12	"Nervous and hormonal systems together perform the function of control and coordination in human beings." Justify the statement.	**[2]**
13	A green stemmed tomato plant denoted by (GG) is crossed with a tomato plant with purple stem denoted by (gg). 1. What colour of the stem would you expect in their F_1 progeny? 2. In what ratio would you find the green and purple coloured stem in plants of F_2 progeny? 3. What conclusion can be drawn for the above observations?	**[3]**
14	1. State the role of rings of cartilage present in the throat. 2. Discuss the role of the ribs and diaphragm when air is taken in during the breathing cycle. 3. Why do we get muscle cramps during heavy exercise? Explain.	**[3]**
15	**Read the following text carefully and answer the questions that follow:** The cross that includes the inheritance of two pairs of contrasting characters simultaneously is referred to as a dihybrid cross. Mendel chose pure breeding plants for yellow and green seeds and round and wrinkled shape of seeds. He cross - pollinated the plant having yellow round seeds with the plant having green wrinkled seeds. All the plants produced in Fx generation were having yellow round seeds. The plants raised from these seeds were self - pollinated, which resulted in the production of plants having four phenotypically different types of seeds. 1. What will be the percentage of yr gamete produced by YyRr parent? (1) 2. How many types of gametes can be produced by YYrr? (1)	**[4]**

	3. In the Mendelian dihybrid cross, when a heterozygous tall plant with green seeds is self - crossed then what will be the progenies? (2) **OR** When round yellow seeded heterozygous pea plants are self-fertilised, then what will be the frequency of occurrence of RrYY genotype among the offsprings? (2)	
16	1. Mention the role of the following organs of human male reproductive system: a. Testis b. Scrotum c. Vas - deferens d. Seminal vesicle 2. What is Placenta? State its function in a human female. **OR** 1. Distinguish between hormonal co - ordination in plants and animals. 2. Which part of the brain is responsible for - a. intelligence b. riding a bicycle c. vomiting d. controlling hunger 3. How is brain and spinal - cord protected against mechanical injuries?	**[5]**
	Section B	
17	Which of the following statements is not correct? a) Some metals react with acids to give salt and hydrogen. b) Some non metal oxides react with water to form an acid. c) All metal oxides react with water to give salt and acid.	**[1]**

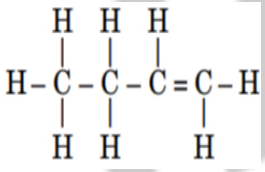
	d) All metal carbonates react with acid to give a salt, water and carbon dioxide.	
18	Which of the given statement is true or false: **Statement A:** Valeric acid is the common name of hexane. **Statement B:** Glycerol is added in the manufacturing of soap. a) Statement B is true and statement A is false b) Neither statement A nor statement B is false c) Both the statements A and B are false d) Statement A is true and statement B is false	**[1]**
19	The formation of magnesium oxide is correctly shown in option: a)  b)  c)  d) 	**[1]**
20	Match the following with the correct response: (1) Soap — (A) Sodium salts of long-chain of sulphonic acids (2) Detergents — (B) Esterification (3) The reaction of CH_3COOH with metal hydroxides — (C) Neutralization (4) The reaction of CH_3COOH with alcohols — (D) Sodium salts of long-chain fatty acids a) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b) b) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c) c) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d) d) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a)	**[1]**
21	Take three boiling tubes A, B and C. Pour some water in test tube A Put iron nails in it and cork it. Pour boiled distilled water in another test tube B and put iron nails in it. Add 1 ml of oil over it such that oil floats over it and prevents the air from entering. Take some iron nails in test tube C and put some anhydrous calcium chloride in it and cork it. Leave all the three test tubes for one day and then observe.	**[1]**

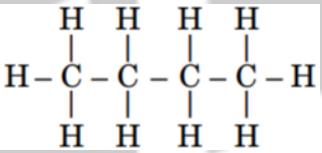


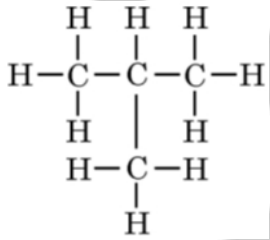
In which test tube nail is rusted?

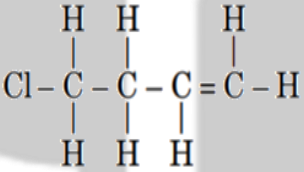
a) Tube A b) Tube B and C c) Tube A and C d) Tube B

22 Given below are the structures of some hydrocarbons. Select the two structures which are related to each other from the given options: **[1]**

(i) 

(ii) 

(iii) 

(iv) 

a) (ii) and (iii) b) (i) and (iv) c) (ii) and (iv) d) (i) and (iii)

23 An aqueous solution of sodium chloride is prepared in distilled water. The pH of this solution is: **[1]**

a) 7 b) 6 c) 3 d) 8

24 **Assertion (A):** HCl produces hydronium ions (H_3O^+) and chloride ions (Cl^-) in aqueous solution. **[1]**

Reason (R): In presence of water, basic give H^+ ions.

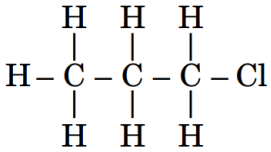
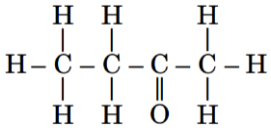
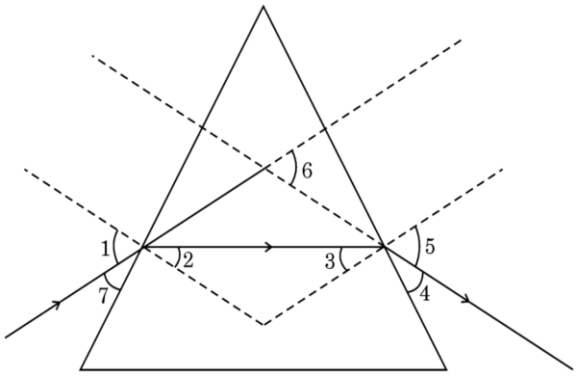
a) Both A and R are true and R is the correct explanation of A.

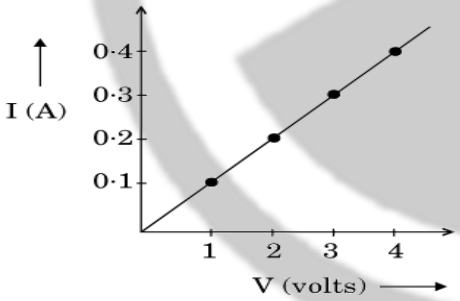
b) Both A and R are true but R is not the correct explanation of A.

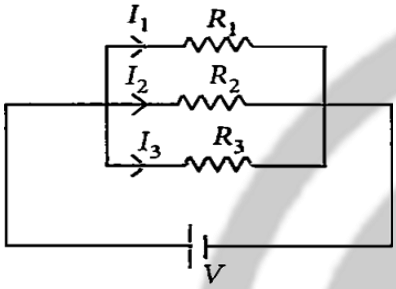
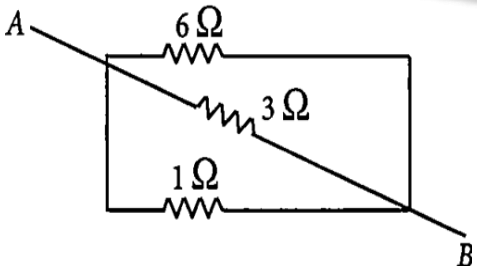
	c) A is true but R is false. d) A is false but R is true.	
25	What will be the action of the following substances on litmus paper? 1. Dry HCl gas 2. Moistened NH_3 gas 3. Curd 4. Soap solution.	**[2]**
26	1. Define the term decomposition reaction. Write one chemical equation each for decomposition reaction where energy is supplied in the form of heat, light or electricity. 2. Decomposition of vegetable matter into compost is considered an exothermic reaction. Why? **OR** Translate the following statement into a chemical equation and then balance it : Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.	**[3]**
27	A group of a students looked at different metals and metal sulphate solutions given is a tabular form. From the data, answer the following: 1. Which metal reactswith all other sulphate solutions? 2. Which metal did not react with any other metal sulphate solution? 3. Arrange the metals in decreasing order of reactivity.	**[3]**
28	**Read the following text carefully and answer the questions that follow:**	**[4]**

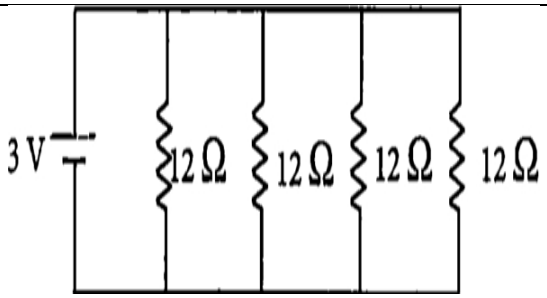
Metal	Metal sulphate solution	Colour
Chromium	Chromium sulphate	Green
Cobalt	Cobalt sulphate	Pink
Copper	Copper sulphate	Blue
Magnesium	Magnesium sulphate	Colourless

	When the fats and oil present in the food material get oxidized by the oxygen (of air), their oxidation products have unpleasant smells and tastes. Due to this taste of food material containing fats and oil change and become very unpleasant. The condition produced by aerial oxidation of fats and oils in food marked by unpleasant smell and taste is called rancidity. Rancidity spoils the food material prepared in the fats and oils which have been kept for a considerable time and makes them unfit for eating. The development of rancidity in food can be prevented in the following ways - I. Rancidity can be prevented by adding an antioxidant to foods containing fats and oils. II. Rancidity can be prevented by packaging fat and oil - containing food in Nitrogen gas. III. Rancidity can be prevented by keeping food in a refrigerator. 1. What do you understand by oxidation? (1) 2. How does the food become rancid? (1) 3. How can we prevent the rancidity of food? (2) **OR** Which type of food material gets spoiled by the phenomenon of rancidity? (2)	
29	A carbon compound 'A' is widely used as a preservative in pickles and has a molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound 'B'. 1. Identify the compound 'A' and write its structure. 2. Write the chemical equation for the reaction of 'A ' with ethanol to form compound 'B'. State the role of presence of an acid in the reaction. 3. How can we get compound 'A' back from 'B'? 4. How can 'A' be obtained from ethanol? 5. Name the gas produced when compound 'A' reacts with washing soda. **OR**	**[5]**

	1. Draw two isomeric structures of Butene(C_4H_8) . 2. Name the following compounds: a.  b.  3. Write the chemical equations for the following reactions. Mention one essential condition each for these reactions to take place. a. Ethanol undergoes complete oxidation b. Propene undergoes hydrogenation c. Ethanoic acid reacts with ethanol	
	Section C	
30	Which of the following statement is incorrect? 1. A ray of light passing from an optically rarer medium to an optically denser medium bends away from the normal. 2. A ray of light passing from an optically denser medium to an optically rarer medium bends away from the normal. 3. A ray of light passing from an optically rarer medium to an optically denser mediumbends toward the normal. 4. A ray light passing from an optically denser medium to an optically rarer mediumbends towards the normal. a) A, B and D b) B and C c) A and C d) A and D	**[1]**
31	In the given figure the angle of incidence and the angle of deviation respectively are:  	**[1]**

	a) 7 and 4 b) 1 and 5 c) 1 and 6 d) 7 and 6	
32	**Assertion (A):** In the common domestic circuits the earth wire is connected to a metallic plate buried deep inside the earth. **Reason (R):** Earth wire ensures that any leakage of current to the metallic body of the appliance keeps its potential to that of the earth, so the user may not get a severe electric shock. 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.	**[1]**
33	A person with myopic eye cannot see objects beyond 1.2metre distinctly. What should be the nature of corrective lenses to restore proper vision?	**[2]**
34	In the experiment to study the dependence of current (I) on the potential difference (V) across a resistor, a student obtained a graph as shown. 1. What does the graph depict about the dependence of current on the potential difference? 2. Find the current that flows through the resistor when the potential difference across it is 2.5 V.  **OR** 1. State the relation correlating the electric current flowing in a conductor and the voltage applied across it. Also draw a graph to show this relationship. 2. Find the resistance of a conductor if the electric current flowing through it is 0.35 A when the potential difference across it is 1.4 V.	**[2]**
35	1. Draw the pattern of magnetic field lines around a bar magnet. Mark the position of North Pole, South Pole and the places where the magnetic field is strongest.	**[3]**

	2. Why do the magnetic field lines not intersect each other?	
36	Why do different rays deviate differently in the prism?	**[3]**
37	What is a Solenoid? Draw the pattern of the magnetic field lines around a current carrying solenoid. Mark on the pattern the region where the magnetic field is uniform.	**[3]**
38	**Read the following text carefully and answer the questions that follow:** If two or more resistances are connected in such a way that the same potential difference gets applied to each of them, then they are said to be connected in parallel.  The current flowing through the two resistances in parallel is, however, not the same. When we have two or more resistances joined in parallel to one another, then the same current gets additional paths to flow and the overall resistance decreases. 1. Three resistances, 2Ω , 6 Ω and 8 Ω are connected in parallel, then what will be the equivalent resistance? (1) 2. A wire of resistance 12Ω is cut into three equal pieces and then twisted their ends together, then what will be theequivalent resistance? (1) 3. Three resistances are connected as shown. Calculate the equivalent resistance between A and B (2)  **OR** Find the current in each resistance. (2)	**[4]**



39 The variation of image distance (v) with object distance (u) for a convex lens is given in the following observation table. Analyse it and answer the questions that follow: **[5]**

S. No.	Object distance (u) cm	Image distance (v) cm
1	-150	+30
2	-75	+37.5
3	-50	+50
4	-37.5	+75
5	-30	+150
6	-15	+37.5

1. Without calculation, find the focal length of the convex lens. Justify your answer.
2. Which observation is not correct? Why? Draw ray diagram to find the position of the image formed for this position of the object.
3. Find the approximate value of magnification for u = - 30 cm.

OR

1. Draw a ray diagram to show the path of the refracted ray in each of the following cases:
   A ray of light incident on a concave lens
   a. parallel to its principal axis, and
   b. is directed towards its principal focus.
2. A 4 cm tall object is placed perpendicular to the principal axis of convex lens of focal length 24 cm. The distance of object from the lens is 16 cm. Find the position and size of image formed.

....All The Best....