केंद्रीय विद्यालय संगठन, बेंगलुरु संभाग

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प्रथम प्री बोर्ड परीक्षा 2025-26

FIRST PRE BOARD EXAMINATION 2025-26

CLASS: X **MAXIMUM MARKS: 80**
SUBJECT: SCIENCE (Code No. 086) **TIME: 3 HRS.**

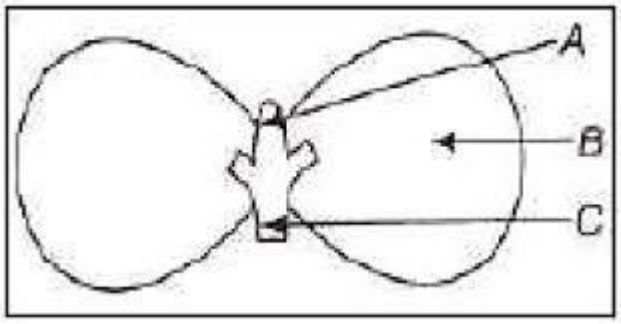
General Instructions:

(i) *This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.*

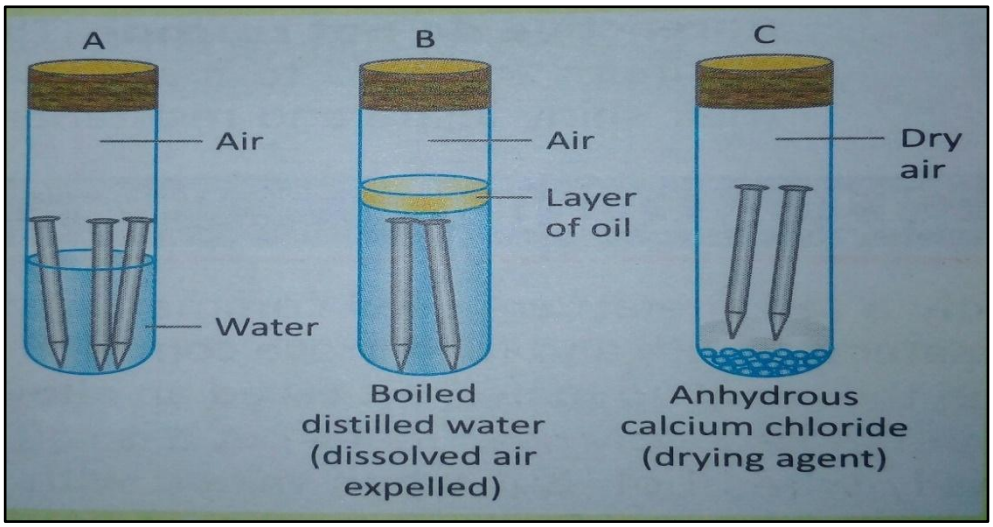
(ii) *All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.*

<table>
<tr><th colspan="2">Section – A</th><th>Marks</th></tr>
<tr><td>1.</td><td>Identify the option that indicates the correct enzyme secreted by the Mouth cavity (L), the Stomach (M) and the Pancreas (N) in the human alimentary canal.
<table>
<tr><td></td><td>L</td><td>M</td><td>N</td></tr>
<tr><td>A.</td><td>lipase</td><td>Trypsin</td><td>pepsin</td></tr>
<tr><td>B.</td><td>salivary amylase</td><td>Pepsin</td><td>trypsin</td></tr>
<tr><td>C.</td><td>tryspin</td><td>amylase</td><td>lipase</td></tr>
<tr><td>D.</td><td>lipase</td><td>amylase</td><td>Pepsin</td></tr>
</table></td><td>1</td></tr>
<tr><td>2.</td><td>During pollination, plants ensure that the pollen grain from a species germinates on the stigma of the same species. Which of the following ensures this?
A. hydrotropism
B. chemotropism
C. phototropism
D. geotropism</td><td>1</td></tr>
<tr><td>3.</td><td>Which of the following statements is/are true about a neuron?
(i) Dendrites of neuron pass the impulse to the axon.
(ii) Axon of neuron carries the impulse from the cell body.
(iii) Sensory neuron carries the impulse to the specific effectors.
(iv) Transmission of impulse from a neuron to a muscle fibre occurs through neuro-muscular junction.
A. (i) only
B. (i) and (iii)
C. (ii) and (iii)
D. (ii) and (iv)</td><td>1</td></tr>
</table>

<table>
<tr><td>4.</td><td>Select the option having correct matching of the organism given in Column I with the mode of reproduction in Column II.
<table>
<tr><td></td><td>Column I</td><td></td><td>Column II</td></tr>
<tr><td>a.</td><td>Leishmania</td><td>i.</td><td>Regeneration</td></tr>
<tr><td>b.</td><td>Spirogyra</td><td>ii.</td><td>Multiple fission</td></tr>
<tr><td>c.</td><td>Planaria</td><td>iii.</td><td>Binary Fission</td></tr>
<tr><td>d.</td><td>Plasmodium</td><td>iv.</td><td>Fragmentation</td></tr>
<tr><td></td><td></td><td>v.</td><td>Budding</td></tr>
</table>
A. a-iv, b-ii, c-i, d-iii
B. a-iii, b-iv, c-v, d-ii
C. a-iii, b-iv, c-i, d-ii
D. a-iv, b-iii, c-ii, d-i</td><td>1</td></tr>
<tr><td>5.</td><td>When an ‘X’ bearing sperm fertilizes the egg, the resulting zygote has the following combination of chromosomes:
A. 44 + XX
B. 44 + XY
C. 22 + XX
D. 22 + XY</td><td>1</td></tr>
<tr><td>6.</td><td>If the total energy at the trophic level of producers in an ecosystem is ‘E’, then which of the following corresponds to the energy available to the tertiary consumers?
A. E/10
B. 10 x E
C. E/1000
D. 1000 x E</td><td>1</td></tr>
<tr><td>7.</td><td>The action of which among the following is crucial to the formation of ozone?
A. Humans
B. Sunlight
C. Carbon dioxide
D. Chlorofluorocarbons</td><td>1</td></tr>
<tr><td colspan="3">The following two questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:
A. Both A and R are true, and R is the correct explanation of A.
B. Both A and R are true, and R is not the correct explanation of A.
C. A is true but R is false.
D. A is false but R is true.</td></tr>
<tr><td>8.</td><td>Assertion (A): In the human heart ventricles have thicker muscular walls than atria.
Reason (R): Ventricles have to pump the blood into various organs.</td><td>1</td></tr>
<tr><td>9.</td><td>Assertion (A): Offsprings produced by sexual reproduction show variation.
Reason (R): Each offspring produced by sexual reproduction inherits all the genes from each parent.</td><td>1</td></tr>
<tr><td>10.</td><td>Sometimes while running, the athletes suffer from muscle cramps. Why does this happen? How is this respiration different from the respiration under</td><td>2</td></tr>
</table>

	normal condition?	
11.	**Students to attempt either option A or B.** A. There is a hormone which regulates carbohydrate, protein and fat metabolism in our body. Name the hormone and the gland which secretes it. Why is it important for us to have iodised salt in our diet? **OR** B. Name a hormone that promotes the growth of tendrils and explain how they help a pea plant to climb up other plants.	2
12.	In the following figure showing a germinating gram seed, name the parts labelled as A, B and C:  Why is part 'B' considered to be important during germination?	2
13.	Explain the events that take place once a sperm reaches the oviduct till it becomes a foetus. Write the role of placenta in pregnancy. (any two roles)	3
14.	(i) From the following group of organisms create a food chain which is the most advantageous for Human beings in terms of energy. Hawk, Rat, Cereal plant, Goat, Snake, Human Being (ii) State the possible disadvantage if the cereal plant is growing in soil rich in pesticides. (iii) Construct a food web using the organisms mentioned above.	3
15.	Kidneys are vital organs for survival. Several factors like infections, injury or restricted blood flow to kidneys reduce the activity of kidneys. This leads to accumulation of toxic wastes in the body, which can even lead to death. In case of kidney failure dialysis is done to remove waste products from the blood through dialysis. A. (i) Name the artery that brings metabolic waste to the blood to the kidney. (ii) Name the cluster of thin-walled blood capillaries present in the Bowman's capsule. B. In human excretory system name the organ which stores urine. Is this organ under hormonal control or nervous control? **Attempt either subpart C or D.** C. List two major steps involved in the formation of urine and state in brief their functions. **OR** In which part of the nephron does selective reabsorption take place? List the	4

	factors which the amount of water reabsorbed depends on.	
16.	**Attempt either option A or B.** A. (i) On the basis of the results of the F_1 generation in a monohybrid cross establish the law of dominance of traits? Explain with an example. (ii) Mendel crossed a round and yellow seeded pea plant with a wrinkled and green seeded pea plant. What did the plants of F_1 generation look like in terms of shape and colour of seed? On self-pollinating F_1 generation plants, plants with four types of combination of characters were seen in F_2 generation. Write the combinations along with their ratios. **OR** (i) Sex in certain group of organisms is not genetically determined. Give any two examples. (ii) A cross was made between green-stemmed tomato plants denoted by (GG) and purple-stemmed tomato plants denoted as (gg) to obtain F_1 progeny. (a) What colour of the stem would you expect in F_1 progeny and why? (b) Give the percentage of purple-stemmed plants if F_1 plants are allowed to self-pollinate to produce F_2 progeny. (c) Write the ratio between GG and gg plants in the F_2 progeny?	5
	SECTION – B	
17.	Consider the following chemical equation: p Al + q H_2O → r Al_2O_3 + s H_2 To balance this chemical equation, the value of 'p', 'q', 'r' and 's' A. 3, 2, 2, 1 B. 2, 3, 3, 1 C. 2, 3, 1, 3 D. 3, 1, 2, 2	1
18.	Barium chloride on reacting with ammonium sulphate, forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved: (i) Displacement reaction (ii) Precipitation reaction (iii) Combination reaction (iv) Double displacement reaction A. (i) only B. (ii) only C. (iv) only D. (ii) and (iv)	1
19.	An aqueous solution 'A' turns phenolphthalein solution pink. When another aqueous solution 'B' is added to the pink solution, the pink colour disappears. Now when few drops of solution 'A' are added to this reaction, the mixture appears pink again. The respective changes in the nature of the solution are from A. acidic → basic → basic B. basic → acidic → acidic	1

	C. acidic → basic → acidic D. basic → acidic → basic	
20.	Sodium hydrogencarbonate when added to acetic acid evolves a gas. Which of the following statements is true about the gas evolved? (i) It turns lime water milky. (ii) It extinguishes a burning splinter. (iii) It dissolves in a solution of sodium hydroxide. (iv) It has a pungent smell. A. (i) and (ii) B. (i), (ii) and (iii) C. (ii), (iii) and (iv) D. (i) and (iv)	1
21.	Study the following cases: (i) $CaSO_4 + Mg \rightarrow$ (ii) $FeSO_4 + Pb \rightarrow$ (iii) $CaSO_4 + Al \rightarrow$ (iv) $ZnSO_4 + Ca \rightarrow$ The case/cases in which new product(s) will be formed is/are: A. Only (i) B. Only (iii) C. Only (iv) D. (i), (ii) and (iv)	1
22.	Raghav, a class 10^{th} teacher, performed an experiment to examine the process of rusting.  Based on his experiment, his students gave the following statements. Varun: The iron nail will rust in test tubes A and C. Vamika: The iron nail will not rust in test tube B. Vivek: The iron nails will only rust in test tube A. Vanshika: The iron nails will rust in test tube C but not in test tube A. A. Only Varun is correct. B. Vamika and Vivek are correct.	1

	C. Vamika and Vanshika are correct. D. Varun and Vamika are correct.	
23.	The number of single and double bonds present in a molecule of benzene (C_6H_6) respectively are: A. 6 and 6 B. 9 and 3 C. 3 and 9 D. 3 and 3	1
The following question consists of two statements – **Assertion (A)** and **Reason (R).** Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true, and R is not the correct explanation of A. C. A is true but R is false. D. A is false but R is true.		
24.	**Assertion (A):** In the homologous series of aldehydes, the molecular formula for the third member is C_2H_5CHO. **Reason (R):** The name of compounds containing the –CHO functional group ends with the suffix –al	1
25.	A metal 'A' reacts violently with cold water and the gas evolved catches fire. Another metal 'B' when dipped in water starts floating. The metal 'C' does not react either with cold or hot water, but reacts with steam. The metal 'D' does not react with water at all. Identify the metals 'A', 'B', 'C' and 'D'.	2
26.	**Students to attempt either option A or B.** A. (i) Show the formation of Aluminium Nitride (AlN) [At. No. of Al = 13; At. No. of N = 7] *(ii)* Ionic compound do not conduct electricity in solid state but conducts electricity in molten and aqueous, why? **OR** B. During extraction of metals, electrolytic refining is used to obtain pure metals. (i) Which material will be used as anode and cathode for refining of silver metal by this process? (ii) Suggest a suitable electrolyte also. (iii)In this electrolytic cell, where do we get pure silver after passing electric current?	3
27.	An organic compound 'X' when reacts with sodium liberates hydrogen, The same compound 'X' when heated at 443 K in the presence of concentrated sulphuric acid gives an unsaturated hydrocarbon. (i) Identify 'X'. (ii) Write the chemical equations for the above mentioned reactions and state the role of concentrated sulphuric acid in the second reaction.	3
28.	The teacher while conducting practicals in the laboratory divided the students into three groups and gave them various solutions to find out their pH and classify them into acidic, basic and neutral solutions. Group A – Lemon juice, vinegar, colourless aerated drink	4

	Group B – Tomato juice, coffee, ginger juice Group C – Sodium hydroxide, sodium chloride, lime water A. For the solutions provided, which group is/are likely to have pH value (i) less than 7 and (ii) greater than 7? B. List two ways of determining the pH of a solution? **Attempt either subpart C or D.** C. Explain why sour substances such as lemon juice are effective in cleaning tarnished copper vessels. **OR** D. "pH has great importance in our daily life." Justify this statement by giving two examples.	
29.	**Attempt either option A or B.** A. When lead nitrate is heated strongly in a boiling tube, two gases are liberated and a solid residue is left behind in test tube. (i) Name the type of chemical reaction and define it. (ii) Write the name and the colour of gas liberated. (iii) Write the balanced chemical equation for the reaction. (iv) Name the residue left in the test tube and state the method of testing its nature (acidic/basic). **OR** B (i) How can we say that the following reactions can be decomposition reaction? Mention the type of energy involved in each case. (a) electrolysis of water, and (b) blackening of silver bromide when exposed to sunlight, (ii) "The type of reactions in which (a) Calcium oxide is formed on heating calcium carbonate and (b) calcium hydroxide is formed on adding water to calcium oxide are opposite reactions to each other." Justify this statement with the help of chemical equations.	5
	SECTION – C	
30.	An object is placed in front of a concave mirror at various positions. Here, column I and column II represent position of object and nature/position/size of images formed respectively. (i) At focus — Real, inverted and highly enlarged (ii) At C — Between P and F (iii) Between C and F — Virtual, inverted and enlarged (iv) Very near to P — Erect and behind the mirror Which of these pairs are correctly matched?	1

A. (i) and (ii) only
B. (i) and (iv) only
C. (i), (ii) and (iii)
D. (i), (iii) and (iv)

31. Match the column I and II — 1

	Column I		Column II
a.	Right hand thumb rule	i.	Represent the magnetic field visually.
b.	Solenoid	ii.	Temporary magnet that can be turned on or off
c.	Electromagnet	iii	Produces a uniform magnetic field inside
d.	Magnetic field lines	iv	Determines the direction of the the magnetic field around a current carrying conductor

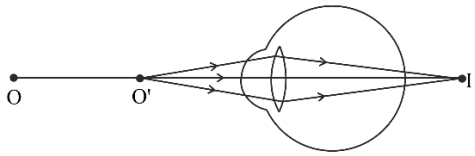
Choose the appropriate option given below:
A. a-iv, b-iii, c-ii, d-i
B. a-iv, b-i, c-ii, d-iii
C. a-iv, b-iii, c-i, d-ii
D. a-iii, b-iv, c-ii, d-I

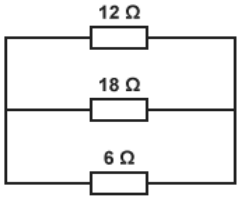
The following question consists of two statements – **Assertion (A)** and **Reason (R).** Answer these questions by selecting the appropriate option given below:
A. Both A and R are true, and R is the correct explanation of A.
B. Both A and R are true, and R is not the correct explanation of A.
C. A is true but R is false.
D. A is false but R is true.

32. **Assertion (A):** The deflection of a compass needle placed near a current carrying wire decreases when the magnitude of an electric current in the wire is increased. — 1
Reason (R): Strength of the magnetic field at a place due to a current carrying conductor increases on increasing the current in the conductor.

33. Define the term absolute refractive index of a medium. A ray of light enters from vacuum to glass of absolute refractive index 1.5. Find the speed of light in glass. The speed of light in vacuum/ air is 3×10^8 m/s — 2

34. **Students to attempt either option A or B.** — 2
A. (i) State two applications of Joule's heating in domestic electric circuit.
(ii) Establish the relationship between the commercial unit of electric energy and the SI unit of electric energy.
OR
B. You are given three identical 10 ohm resistors and a 12 V cell.

	Draw the circuit diagram to show how the resistors can be connected with the 12 V cell so that the total heat produced in the circuit is the minimum.	
35.	(i) An object of 5 cm height is placed at a distance of 20 cm from the optical centre of a concave lens of focal length 18 cm. Calculate (a) image distance and (b) the magnification in this case. (ii) Compare the values of magnification obtained by a concave lens and a convex lens when both the lenses form virtual images.	3
36.	Study the diagram given below and answer the questions that follow:  (i) Name the defect of vision represented in the diagram. Give reason for your answer. (ii) List two causes of this defect. (iii) With the help of a diagram show how this defect of vision is corrected.	3
37.	Define the term solenoid. Draw the pattern of magnetic field lines around a current carrying solenoid. State how this magnetic field can be used to magnetise a piece of magnetic material like soft iron.	3
38.	Read the following passage and answer the questions that follow. The students in a class took a thick sheet of cardboard and made a small hole in its centre. Sunlight was allowed to fall on this small hole and they obtained a narrow beam of white light. A glass prism was taken and the white light was was allowed to fall on one of its faces. The prism was turned slowly until the light that comes out of the opposite face of the prism appeared on the nearby screen. They studied this beautiful band of white light and concluded that it is a spectrum of white light. A. Give one more instance in which this type of spectrum is observed. B. What happens to white light in the above case? **Attempt either subpart C or D.** C. List two conditions necessary to observe a rainbow. **OR** D. Draw a ray diagram to show the formation of a rainbow. Mark on it, points (i), (ii) and (iii) as given below: (i) Where dispersion of light occurs. (ii) Where light gets reflected internally. (iii) Where final refraction occurs.	4

39.	**Attempt either option A or B.** **A** (i) What is the resultant resistance in the circuit given below:  (ii) Redraw the above circuit in such a way that the resultant resistance is 22 ohms. Show the calculation. (i) Calculate current when 50 coulombs of charge flows for 10 seconds. **OR** **B** Draw a schematic diagram of a circuit consisting of a battery of six 2 V cells, a 6 Ω resistor, a 12 Ω resistor and a 18 Ω resistor and a plug key all connected in series. Calculate the following (when key is closed): (i) Electric current flowing in the circuit. (ii) Potential difference across 18 Ω resistor. (iii)Electric power consumed in 18 Ω resistor.	5

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