

BANGALORE SAHODAYA SCHOOLS COMPLEX ASSOCIATION PRE-BOARD EXAMINATION 1(2024-2025) Grade X

Class:10 Time:3hrs SUBJECT: SCIENCE (086) SET 1 Date:16.12.2024 Marks: - 80

General Instructions:

- *i.* This question paper consists of 39 questions in 5 sections.
- *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.
- *iii.* Section A consists of 20 objective type questions carrying 1 mark each.
- *iv.* Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words
- vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with subparts

Section-A

Select and write the most appropriate option out of the four options given for each of the questions

1 - 20. There is no negative mark for incorrect response.

| 1 | The following observations are given for four metals: | | | | |
|---|---|---|--|--|--|
| 1 | The following observations are given for four metals: | | | | |
| | 1. Metal H does not react with dilute HCl | | | | |
| | 2. Metal K reacts with warm water | | | | |
| | 3. Metal L does not react with water but displaces metal H from its aqueous salt solution | | | | |
| | 4. Metal M reacts with cold water | | | | |
| | Choose the correct order of reactivity amongst the following: | | | | |
| | (a) $M > L > H > K$ (b) $K > M > H > L$ | | | | |
| | (c) $M > K > L > H$ (d) $L > H > K > M$ | | | | |
| | | | | | |
| 2 | Which of the following statements is true about combustion reactions?1 | | | | |
| | (a) They involve the reaction of a metal with an acid | | | | |
| | (b) They involve the reaction of a non-metal with oxygen | | | | |
| | (c) They involve the reaction of a base with an acid | | | | |
| | (d) They involve the reaction of an acid with a carbonate | | | | |
| | | | | | |
| 3 | An aqueous solution turns the red litmus solution to blue. Excess addition of which of the | 1 | | | |
| | following given solutions would reverse the change? | | | | |
| | (a) Baking powder (b) Lime | | | | |
| | (c) Ammonium hydroxide solution (d) Hydrochloric acid | | | | |
| | | | | | |
| 4 | Which of the following statements is correct about an aqueous solution of an acid and base? | 1 | | | |
| | (i) Higher the pH, stronger the acid | | | | |
| L | | I | | | |



| | Na ⁺ | | | | |
|----|--|---|--|--|--|
| | | | | | |
| | | | | | |
| | Dirt | | | | |
| | Na ⁺ | | | | |
| | On the start of the second sec | | | | |
| | | | | | |
| | Na⁺ | | | | |
| | Na ⁺ | | | | |
| | What helps the dirt to rise away? | | | | |
| | (a) The attraction between the ionic end and the dirt to remove it. | | | | |
| | (b) A collection of water molecules in the centre of the micelle. | | | | |
| | (c) Emulsion of the dirt in the micelles. | | | | |
| | (d) Mixing of the soap molecules along with the dirt to make it heavier. | | | | |
| 8 | The following can be used to write the word equation for photosynthesis- | 1 | | | |
| | 1. Carbon dioxide and water | 1 | | | |
| | 2. Light and chlorophyll | | | | |
| | 3. Glucose and oxygen | | | | |
| | Which shows a correct word equation for photosynthesis? | | | | |
| | (a) $1 \rightarrow 2$ in presence of 3 | | | | |
| | (b)1 \rightarrow 3 in presence of 2 | | | | |
| | (c) $2 \rightarrow 3$ in presence of 1 | | | | |
| | (d) $3 \rightarrow 1$ in presence of 2 | 1 | | | |
| 9 | The diagram shows what happens to fat globules when they mix with blie. | 1 | | | |
| | \circ \circ | | | | |
| | \bigcirc \circ \circ \circ | | | | |
| | | | | | |
| | | | | | |
| | This process is known as- | | | | |
| | (a) Digestion | | | | |
| | (b) Assimilation | | | | |
| | (c) Absorption | | | | |
| | (d) Emulsification | | | | |
| 10 | Which among the following is not the function of testes at puberty? | 1 | | | |
| | (i) formation of germ cells | T | | | |
| | (ii) secretion of testosterone | | | | |
| | (iii) development of placenta | | | | |
| | (iv) secretion of estrogen | | | | |
| | (a) (i) and (ii) | | | | |
| | (b) (ii) and (iii) | | | | |
| | (c) (iii) and (iv) | | | | |
| | (d) (1) and (1v) | | | | |
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| | | | | | |

| 11 | Look at the figure below and identify the structure labelled incorrectly. | 1 |
|----|--|---|
| | B C C C C C C C C C C C C C | |
| | (a) A- Neuromuscular Junction (b) B- Axon (c) C- Muscle fibre (l) D D = Lit | |
| 12 | (a) D-Dendrite The % of solar radiation absorbed by all green plants for photosynthesis is about ——. (a) 1% (b) 5% (c) 8% (d) 10% | 1 |
| 13 | A beam of light is incident through the holes on side A and emerges out of the holes on the other face B of the box as shown in the figure. Which of the following could be inside the box? $ \underbrace{10}{9}{8}{7}{7}{6}{6}{5}{1}{1}{1}{1}{1}{1}{1}{1}{1}{1}{1}{1}{1}$ | 1 |
| | (a)Concave lens (b) Convex lens (c) Prism (d)Rectangular glass slab | |
| 14 | For a convex mirror the image distance (v)=5cm, focal length (f)=10cm and height of the image(h)=7.5cm. The correct representation according to sign convention is (a) $v = -5cm$, f= -10cm and h = -7.5cm (b) $v = -5cm$, f= +10cm and h = -7.5cm (c) $v = +5cm$, f= -10cm and h = +7.5cm (d) $v = +5cm$, f= +10cm and h = +7.5cm | 1 |
| 15 | A student wants to draw a graph to show how the resistivity (ρ) of a wire change with the length (1) of the wire. What should the graph look like? | 1 |
| | | |





| 25 | Observe Madhu's and Rahul's circuits shown below.2 | | | | | | |
|----|--|-------------|--|--|--|--|--|
| | Madhu's circuit Rahul's circuit | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | Switch | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | Neutral wire - Live wire Neutral wire - Live wire | | | | | | |
| | AC supply AC supply 220V | | | | | | |
| | | | | | | | |
| | (a)In which circuit will the bulb glow when the switch is closed? (b)Both Madhu and Rahul open the switches in their circuits to change the hulbs. For whom | | | | | | |
| | (b)Both Madhu and Rahul open the switches in their circuits to change the bulbs. For whom | | | | | | |
| 26 | will changing the bulb be sate and for whom will it be dangerous? Explain why | | | | | | |
| 20 | (a) on entering a medium from an, the speed of right becomes han of its value in an. This the refractive index of that medium with respect to air? | 1 - 1 | | | | | |
| | (b) A glass slab made of a material of refractive index $n1$ is kept in a medium of refractive index | | | | | | |
| | n2. A light ray is incident on the slab. Draw the path of the rays of light emerging from the glass | | | | | | |
| | slab if n1>n2. | | | | | | |
| | OR | | | | | | |
| | A lens produces a magnification of -0.5. Is this a converging or diverging lens? If the focal | | | | | | |
| | length of the lens is 6cm, draw a ray diagram showing the image formation in this case. | | | | | | |
| | <u>Section-C</u> | | | | | | |
| | Question No. 27 to 33 are short answer questions | | | | | | |
| 27 | (i) The industrial process used for the manufacture of caustic soda involves electrolysis of an | 2+1 | | | | | |
| | aqueous solution of compound 'X'. In this process two gases 'Y' and 'Z' are liberated. 'Y' is | | | | | | |
| | liberated at cathode and Z is liberated anode, 'Z' on treatment with the dry slaked lime forms a | | | | | | |
| | compound B. Name X, Y, Z and B. | | | | | | |
| • | (ii) With the help of a balanced reaction, show the formation of an acidic salt. | 2.1 | | | | | |
| 28 | (i) Two ores, A & B, were taken, | | | | | | |
| | On heating, ore A gives CO ₂ , and ore B provides SO ₂ molecules. What process/steps will you | | | | | | |
| | take to convert them into metals? | | | | | | |
| 20 | (ii) with the help of election transfer show the process of formation of magnesium oxide. | 2+1 | | | | | |
| 2) | Dominant allele for tall plants-T | ∠ ⊤1 | | | | | |
| | Recessive allele for short plants-t | | | | | | |
| | Dominant allele for purple flowers-P | | | | | | |
| | Recessive allele for white flowers-p | | | | | | |
| | a. Cross a heterozygous dominant parent with an another heterozygous dominant parent. | | | | | | |
| | b. What is the probability of obtaining tall plants with white flowers? | | | | | | |
| 30 | The below figure shows a section through the heart. | 3 | | | | | |
| | (a) Name the parts labelled A and B | | | | | | |
| | (b) Suggest why the wall around chamber C is much thicker than that around chamber D | | | | | | |
| | (c) Name the labelled part which shows the chamber of the heart which contains oxygenated | | | | | | |
| | blood. | | | | | | |
| | | | | | | | |
| | | | | | | | |

| | OR | | | |
|----|---|---|--|--|
| | (a)Sometimes doctors inject medicines directly in our bloodstream, where do they inject in | | | |
| | arteries or in vein? Why? | | | |
| | (b)What will happen if there are no platelets in the blood? | | | |
| 31 | (a) Create a food chain of the following organisms. | 3 | | |
| | Insect. Hawk, Grass, Snake, Frog | - | | |
| | (b) If 10,000 Joules of energy is available to frogs, how much energy will be available to snakes | | | |
| | and the insects in this food chain? | | | |
| 32 | (a)What is solenoid? | 3 | | |
| | (b)Draw the pattern of magnetic field lines of (i) a current carrying solenoid (ii) a bar magnet. | | | |
| 33 | An object of height 4.5cm is placed 12 cm away from a diverging mirror of focal length 15cm. | 3 | | |
| | Find out the location of the image and the magnification. | | | |
| | Section-D | | | |
| | Question No. 34 to 36 are long answer questions | | | |
| 34 | [A] An organic compound 'P' is a constituent of wines. 'P' on reacting with acidified K ₂ Cr ₂ O ₇ | 5 | | |
| | forms another compound 'Q'. When a piece of sodium is added to 'Q', a gas 'R' evolves which | | | |
| | burns with a pop sound when a burning matchstick is brought near it. | | | |
| | a) Give the IUPAC name of compound P. | | | |
| | b) Mention another use of the compound 'P' apart from the use mentioned in the question. | | | |
| | c) Illustrate with the help of a chemical equation the conversion of 'P' into 'Q'. | | | |
| | d) Give a balanced equation to depict the reaction of Q with sodium. | | | |
| | e) What happens when 'P' is heated with Q, write its chemical equation? | | | |
| | | | | |
| | [B] An organic compound 'X' is a liquid at room temperature. It is also a very good solvent and | | | |
| | has the molecular formula C_2H_6O . Upon oxidation of 'X' gives 'Y'. 'Y' releases a gas 'W' with | | | |
| | to give another compound '7' which has a placent small 7 | | | |
| | to give another compound Σ which has a pleasant sinen. Σ . | | | |
| | b) How will you test for the gas 'W'? | | | |
| | c) Depict the formation V and Z using chemical equations | | | |
| | d) Name the reaction of formation of 'Z' | | | |
| | e) Give any one use of 'Z'? | | | |
| 35 | [A](a) State Joule's law of heating. | 5 | | |
| | (b) A bulb is rated 40W,220V. Find the current drawn by it, when it is connected to a 220V | | | |
| | supply. Also find its resistance. If the given bulb is replaced by a bulb of rating 25W, 220V, | | | |
| | Will there be any change in the value of current and resistance. Justify your answer and | | | |
| | determine the change. | | | |
| | OR | | | |
| | | | | |



| | stage 1 | (| Cell membran | e | | |
|---|--|---|--|--|-----------------------|-----|
| | stage 2 | | | | | |
| | stage 3 | () | (1) | | | |
| | | | | | | |
| | (a)Name t (b)Draw a | he structures labelled diagram to show the | 1 X and Y. e organ system where <u>Section – E</u> | this type of cell di | vision occurs. | |
| | | Question No. 3 | 7 to 39 are case-base | ed/data -based que | estions | |
| 37 | 37 Four metals A, B, C, and D are, in turn, added to the following solutions one by one. Th observations made are tabulated below: | | | | | e 4 |
| | Metal | FeSO4 | CuSO4 | ZnSO4 | AgNO3 | |
| | A | No reaction | Displacement | | | |
| | В | Displacement | | No reaction | | |
| | С | No reaction | No reaction | No reaction | Displacement | |
| | D | No reaction | No reaction | No reaction | No reaction | |
| | Answer the following questions based on the above information. (i) Which is the most active metal and why? (ii) What would be observed if B is added to a solution of copper (II) sulphate and Why? (iii) Arrange the metals A, B, C, and D in order of decreasing reactivity. (iv) Container of which metal can be used to store both zinc sulphate solution and silver n solution. | | | | | e |
| 38 Some plants like the pea plant climb on other plants or fences by means of tendrils tendrils are sensitive to touch. When they come in contact with any support, the part tendril in contact with the object does not grow as rapidly as the part of the tendril aw the object. This causes the tendril to circle around the object and thus cling to it. | | | | neans of tendrils. Thes support, the part of th of the tendril away from cling to it. | e 4 e n | |
| i) Name the types of tropic movements shown by plants. ii) The touch me not plant is an example of which type of tropism? iii) Give one example of chemotropism. iv) Name the plant hormone which promotes cell division in plant roots and shoot systems | | | | | ts and shoot systems. | |

| 39 Study the diagram given below and answer the following questions. | 4 |
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| | |
| | |
| | |
| P | |
| | |
| (i)Identify the defect of vision | |
| (ii)State two possible causes of this defect. | |
| (iii)How can we rectify this defect. | |
| (iv)Name and define the unit of power of a lens. | |
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