

DAV PUBLIC SCHOOLS, ODISHA
PERIODIC ASSESSMENT-I (2023-2024)

- Check that this question paper contains **FIVE** printed pages.
- Check that the question paper contains **19** questions.

CLASS - X
SUB - SCIENCE

Time Allowed: 1 Hour 30 mins

Maximum Marks: 40

General Instructions:

- (i) This question paper consists of **5** sections.
- (ii) All questions are compulsory.
- (iii) **Section A** consists of **10** Objective type questions carrying **1** mark each.
- (iv) **Section B** consists of **3** Very Short Answer type questions carrying **02** marks each. Answers to these questions should be in the range of **30 to 50** words.
- (v) **Section C** consists of **2** 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 **2** 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 **2** source-based/case-based units of assessment of **04** marks with sub-parts.

SECTION: A

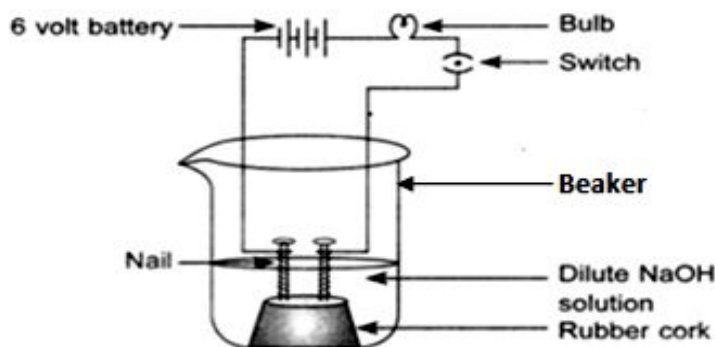
This section has 10 multiple choice questions (Q. No 1-10) . All questions are compulsory.

(10 x 1 = 10)

1. The reaction of iron with steam is/are : (1)
 - (i) Combination reaction (ii) Displacement reaction
 - (iii) Redox reaction (iv) Neutralisation reaction

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

2. The apparatus given in the adjoining figure is set up to demonstrate electrical conductivity. (1)



Which of the following statement(s) is are correct ?

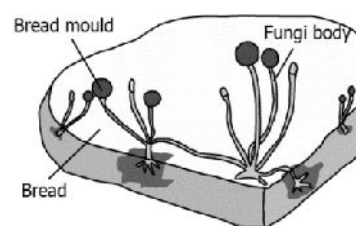
- (i) Bulb will not glow because electrolyte is not acidic.
 - (ii) Bulb will glow because NaOH is a strong base and furnishes ions for conduction.
 - (iii) Bulb will not glow because circuit is incomplete.
 - (iv) Bulb will not glow because it depends upon the type of electrolytic solution.
- (a) (i) and (iii) (b) (ii) and (iv) (c) (ii) only (d) (iv) only

3. Heating of ferrous sulphate crystal strongly results in the release of white fumes with burning sulphur smell and leaves residue with reddish brown colour. From these observations Sunita had the following conclusion. Predict which one is incorrect. (1)

- 1. It is a thermal decomposition reaction.
 - 2. It is a double displacement reaction.
 - 3. It is an example of redox reaction.
 - 4. It is an endothermic reaction.
- (a) Both 1 and 4 (b) Both 2 and 3 (c) Only 2 (d) only 3

4. The organism shown in the given figure, obtains nutrition by (1)

- (a) eating the bread on which it is growing.
- (b) using nutrients from the bread to prepare their own food.
- (c) breaking down the nutrients of bread and then absorbing them.
- (d) allowing other organisms to grow on the bread and then consuming them.



5. Which of the following structures prevent the backflow of blood during contraction of heart chambers? (1)

- (a) Walls of atria (b) Walls of ventricles (c) Valves in the heart (d) Pulmonary arteries

6. An object is placed 60 cm in front of a concave mirror. The real image formed by the mirror is located 30cm in front of the mirror. The object's magnification is: (1)

- (a) +2 (b) -2 (c) +0.5 (d) -0.5

7. Which of the following lenses would you prefer to use while reading small letters found in a dictionary? (1)

- (a) A convex lens of focal length 50 cm. (b) A concave lens of focal length 50 cm. (c) A convex lens of focal length 5 cm. (d) A concave lens of focal length 5 cm.

8. A child is standing in front of a magic mirror. She finds the image of her head smaller, the middle portion of her body of the same size and that of the legs larger. The following is the order of combinations for the magic mirror from the top. (1)

- (a) Plane, convex and concave (b) Convex, concave and plane
(c) Concave, plane and convex (d) Convex, plane and concave

Question number 9 to 10 Assertion- Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions 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.

9. **Assertion (A):** The walls of atria are thicker than those of the ventricles.

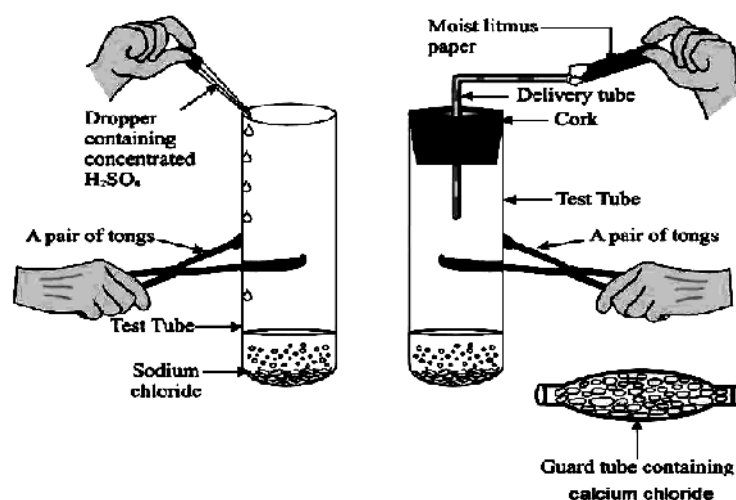
Reason (R): Ventricles have to pump blood into various organs at high pressure. (1)

10. **Assertion (A):** Ammonium chloride solution reacts with barium hydroxide solution to release ammonia gas and other substances.

Reason (R): This reaction is endothermic and makes the surrounding cool. (1)

SECTION: B

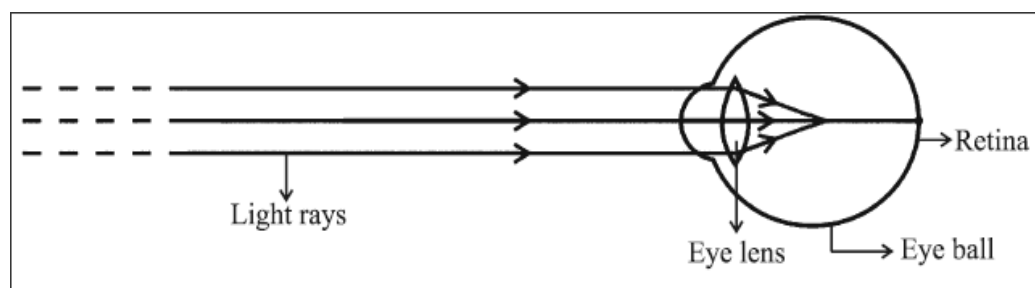
11. Bile juice does not have any digestive enzyme but still plays a significant role in the process of digestion. Justify the statement. (2)
12. A metal nitrate 'A' on heating gives a yellow residue along with the evolution of a brown gas 'B' and a colourless gas 'C'. Aqueous solution of 'A' on reaction with potassium iodide forms a yellow precipitate of compound 'D'. The metal is used as an electrode in batteries. Identify 'A', 'B', 'C' and 'D'. (2)
13. Given below is a labelled diagram to show the preparation of hydrogen chloride gas in the laboratory. (2)



- (a) If the gas evolved is tested first with dry and then with wet litmus paper, in which of the two cases, does the litmus paper show change in colour ?
- (b) State the reason of exhibiting acidic character by dry HCl gas or HCl solution.

SECTION: C

14. Observe the following diagram which is about an image formation in a human eye: (3)



- (a) Identify the defect of vision shown in the above figure.
- (b) List two possible causes of the above defect of vision.
- (c) Draw a ray diagram to show the correction of the above defect of vision.

15. An object is situated at a distance of 8 cm from a convex lens of focal length 10 cm. Find the position and nature of the image. Draw a ray diagram to illustrate the formation of the image. (3)

SECTION: D

16. (a) The separation of the right side and the left side of heart is useful in human beings. Give reason. (Any two points) (5)
- (b) **X** is the fluid that is similar to plasma of blood but is colourless and contains less protein.
- Identify the fluid **X**.
 - Mention the role of **X** inside the small intestine in human body.
- (c) Veins do not need thick walls. Justify.
17. (a) A brown substance 'X' on heating in air forms a black substance 'Y'. When hydrogen gas is passed over heated 'Y', it again changes back into 'X'. (5)
- Name the substances X and Y..
 - Write the chemical equations involved.
 - Identify the role of copper (II) oxide in second chemical equation.
- (c) A, B and C are three elements which undergo chemical reactions in the following ways.
- $$\begin{array}{l} A_2O_3 + 2B \rightarrow B_2O_3 + 2A \\ 3CSO_4 + 2B \rightarrow B_2(SO_4)_3 + 3C \\ 3CO + 2A \rightarrow A_2O_3 + 3C \end{array}$$
- Answer the following:
Identify the most reactive and the least reactive element.

SECTION: E

The following questions are source based / case based questions. Read the case carefully and answer the questions that follow. Internal choice is provided in third sub part (c).

18. The life under water and on Earth is possible due to the availability of differential amount of oxygen in water and in the atmosphere. The respiratory organs have specialised structures which are adapted for efficient exchange of gases. Within the lungs, the trachea divides into smaller and smaller tubes which finally terminate in balloon like structures called alveoli. In case of large sized animals, the diffusion pressure alone is not sufficient to transfer oxygen to all parts of the body.

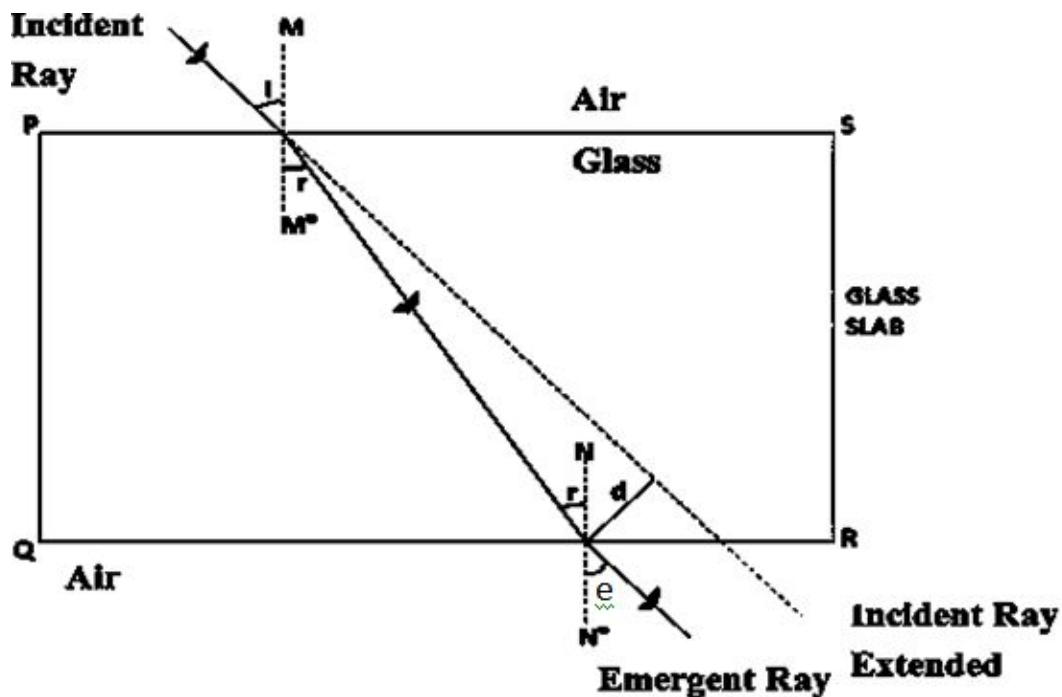
Answer the following questions;

- The rate of breathing in aquatic organisms is much faster than that found in terrestrial organisms. Give reason. (1)
- Name the feature in the respiratory system which ensures that the air passage does not collapse. (1)
- Mention the importance of residual volume of air in lungs. (2)

OR

- Name the respiratory pigment in human beings and mention its function. (2)

19. When a ray of light travelling in air enters obliquely into a glass slab, it is observed that the light ray emerges parallel to the incident ray but it is shifted sideways slightly.



Observe the above diagram and answer the following questions-

- (a) For the same angle of incidence the angles of refraction for a ray of light passing through three different media A, B and C are 50° , 45° and 40° respectively. Which of the three media A, B or C has maximum optical density? (1)
- (b) Give the direction of the emergent ray if the incident ray is along the normal. (1)
- (c) The absolute refractive index of diamond is 2.42 and water is 1.33. Calculate the speed of light in water and in diamond for the need of industrial infrastructure. In which of the above two medium is the speed of light more? (Speed of light in vacuum = 3×10^8 m/s) (2)

OR

- (c) State second law of refraction (Snell's law). Light enters from air to a medium 'X', if the speed of light in medium 'X' is 1.5×10^8 m/s then find the refractive index of medium 'X'. (Speed of light in vacuum = 3×10^8 m/s) (2)
