



विद्या सर्वार्थ साधिका

ANANDALAYA  
PERIODIC TEST -1  
Class: X

Subject: Science (086)

Date : 17-07-2023

MM: 40

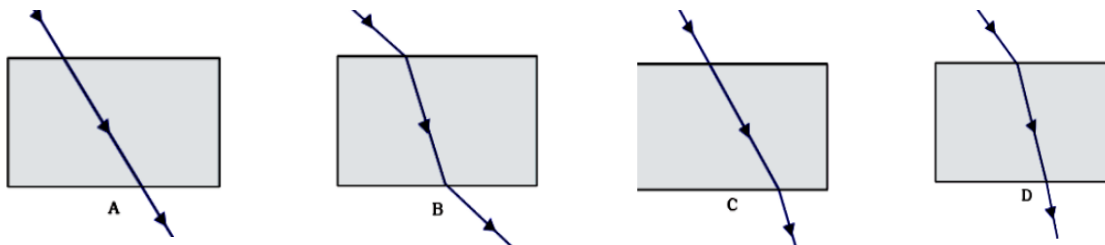
Time: 1 Hr. 30 min.

General Instructions:

- (1) All questions are compulsory. There are 17 questions in all.
- (2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
- (3) Section A consists of 8 multiple choice questions of 1 mark each, Section B consists of 2 very short questions of 2 marks each, Section C consists of 2 short answer type questions of 3 marks each, section D consists of 2 long answer questions of 5 marks each and Section E consists 3 source-based/case study-based questions of 4 marks each with sub-parts.

SECTION A

1. The path of a ray of light coming from air passing through a rectangular slab traced by four students (1) are shown by figures A, B, C and D. Which one of them is correct?



2. Two spherical mirrors, mirror P concave and mirror Q convex, are made out of same (1) spherical ball of glass of radius 20 cm. As per new Cartesian sign convention, the focal length of P and Q are \_\_\_\_\_ and \_\_\_\_\_.

(A) 20cm and -20 cm (B) -20cm and 20cm (C) 10cm and -10cm (D) -10cm and 10cm

3. The following reaction is used for the preparation of oxygen gas in the laboratory (1)



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

- (A) It is a decomposition reaction and endothermic in nature
  - (B) It is a combination reaction
  - (C) It is a decomposition reaction and accompanied by release of heat
  - (D) It is a photochemical decomposition reaction and exothermic in nature
4. Choose the function of the pancreatic juice from the following: (1)
- (A) Trypsin digests proteins and lipase digests carbohydrates.
  - (B) Trypsin digests emulsified fats and lipase digests proteins.
  - (C) Trypsin and lipase digest fats.
  - (D) Trypsin digests proteins and lipase digests emulsified fats.
5. In which of the following groups of organisms, food materials are broken down outside the (1) body and absorbed?
- (A) Mushroom, green plants, Amoeba
  - (B) Yeast, mushroom, Rhizopus
  - (C) Paramecium, Amoeba, Cuscuta
  - (D) Cuscuta, Louse, Tape worm

6. Which of the following gases can be used for storage of fresh sample of an oil for a long time? (1)
- (A) Carbon dioxide or Oxygen (B) Nitrogen or Oxygen  
(C) Carbon dioxide or Helium (D) Helium or Nitrogen

For question numbers 7 and 8, two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.

- (A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion  
(B) Both Assertion and Reason are true but Reason is NOT the correct explanation of Assertion.  
(C) Assertion is true but Reason is false.  
(D) Assertion is false and Reason is also false.
7. Assertion: The full length of a distant tall building can be seen by using a convex mirror. (1)  
Reason: A ray which is directed towards the principal focus of a convex mirror, after reflection, will retrace its path.
8. Assertion: AgBr is used on photographic and x-ray film. (1)  
Reason: AgBr is photosensitive and changes to Silver and Bromine in presence of sunlight and undergoes decomposition reaction.

### SECTION B

9. An object of height 1.2 cm is placed before a concave mirror of focal length 20cm, so that a real image is formed at a distance of 60cm from it. Find the position of the object. (2)
10. You have mixed the solutions of lead (II) nitrate and potassium iodide. (2)  
(a) What is the colour and name of the precipitate formed?  
(b) Write the balanced chemical equation for this reaction.

### SECTION C

11. A reddish-brown coloured metal, used in electrical wires, when powdered and heated strongly in an open china dish, turns its colour to black. When hydrogen gas is passed over this black substance, it regains its original colour. Based on the above information answer the following questions. (3)  
(a) Name the metal and the black coloured substance formed.  
(b) Write balanced chemical equations for both the reactions.
12. (a) Respiration is a vital function of the body. Justify this statement. (3)  
(b) Mention any two characteristics, the respiratory surface should have in order to facilitate its function.

### SECTION D

13. (i) State the laws of refraction of light. (5)  
(ii) The absolute refractive indices of two media 'A' and 'B' are 2.0 and 1.5 respectively. Calculate the speed of light in medium 'A' and medium 'B'. The speed of light in vacuum is  $3 \times 10^8$  m/s.  
(iii) Draw a ray diagram to show the path of a light ray passes from one medium to another if their refractive indices are same.
14. (A) Why is blood circulation in human known as double circulation? (5)  
(B) What is the advantage of double circulation?

## SECTION E

Questions 15 to 17 are Source-based/Case- study based questions of 4 marks with sub-parts.

15. A spherical mirror is a mirror which has the shape of a piece cut out of a spherical surface. There are two types of spherical mirrors: concave and convex. Spherical mirrors are having many applications. The most commonly occurring examples of spherical mirrors are shaving mirrors, makeup mirrors, headlights of car, rear view mirrors of cars etc.

The focal lengths of three spherical mirrors A, B and C, and the respective distances of objects from these mirrors are given in the table.

Mirror	Focal length (cm)	Object distance (cm)
Concave Mirror A	10	20
Concave Mirror B	15	10
Convex Mirror C	10	20

Answer the following questions using the data provided in the table.

- (i) What is the nature and size of image formed by a concave mirror A? (1)  
(ii) Which mirror from the data, will be used as (a) rear view mirror and (b) make up mirror? (1)  
(iii) Out of three mirrors, which mirror will form the magnified virtual image? Draw the ray diagram to show the image formation in this case. (2)

**OR**

- (iii) Out of three mirrors, which one will form diminished virtual image? Draw the ray diagram to show the image formation in this case.

16. Corrosion is the phenomenon of deterioration of surface of metal in presence of air and moisture. It is a natural process and in the presence of a moist atmosphere, chemically active metals get corroded. This is an oxidation reaction. Rusting is the process where iron corrodes due to exposure to the atmosphere. The main circumstance of corrosion occurs with iron because it is a structural material in construction, bridges, buildings, rail transport, ships, etc. Aluminium is also an important structural metal, but even aluminium undergoes oxidation reactions. However, aluminium doesn't corrode or oxidize as rapidly as its reactivity suggests. Copper (Cu) corrodes and forms a basic green carbonate.

- (i) What is rusting? (1)  
(ii) Which two metals do not corrode easily? (1)  
(iii) Write the chemical name and formula of the compound formed on corrosion of silver. (2)

**OR**

- (iii) What is the name and formula of the green coating on copper due to corrosion?

17. In plants, the water and minerals are absorbed from the soil and then transported upward through specific transport tissue. The organic food synthesised in green leaves and the plant hormones are transported through special tissues called phloem. To transport the materials and to absorb them into the cells, specific processes are involved.

Based on this basic information, answer the following questions.

- (i) Differentiate between osmosis and diffusion. (1)  
(ii) Explain how water reaches great heights through xylem. (1)  
(iii) Define the term 'Transpiration'. Is it advantageous or disadvantageous for the plants? (2)

**OR**

- (iii) Which are the different elements of phloem? What is the main difference in conduction of substances through xylem and phloem?