



DELHI PUBLIC SCHOOL, GURGAON
PREBOARD I EXAMINATION (2025-26)
SUBJECT: SCIENCE (086)
CLASS: X, 08/12/25
SET - B

Time: 3 Hours
No. of pages: 08

M.M: 80

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 any one of these questions.

SECTION A

1 Which of the following statement(s) is (are) true about nastic movements? 1

- (i) These are growth dependent movements.
- (ii) These occur either towards or away from the stimulus.
- (iii) These do not involve electro chemical signals from the plants.
- (iv) In such movements the cells of the plants change the shape by altering the water content.

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

2 The part of the brain that controls muscular coordination is: 1

- A. medulla
- B. cerebellum
- C. cerebrum
- D. pons

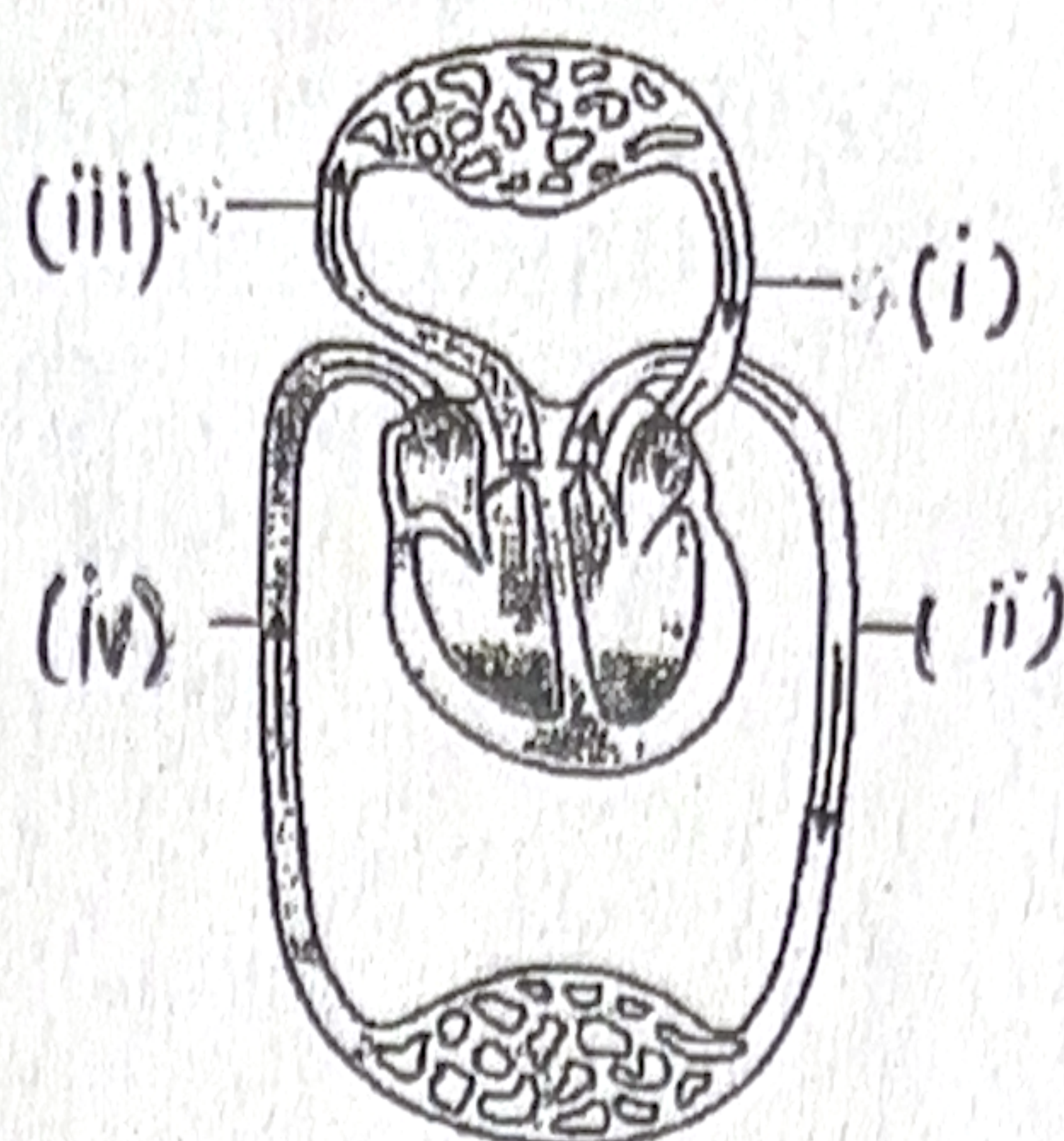
3 A food chain becomes more advantageous in terms of energy if it has: 1

- A. 5 trophic levels
- B. 4 trophic levels
- C. 3 trophic levels
- D. 1 trophic level

4 In a food chain, the amount of energy at the third trophic level is 3kJ. What will be the energy at the first trophic level? 1

- A. 300 kJ
- B. 30 kJ
- C. 3000 kJ
- D. 30000 kJ

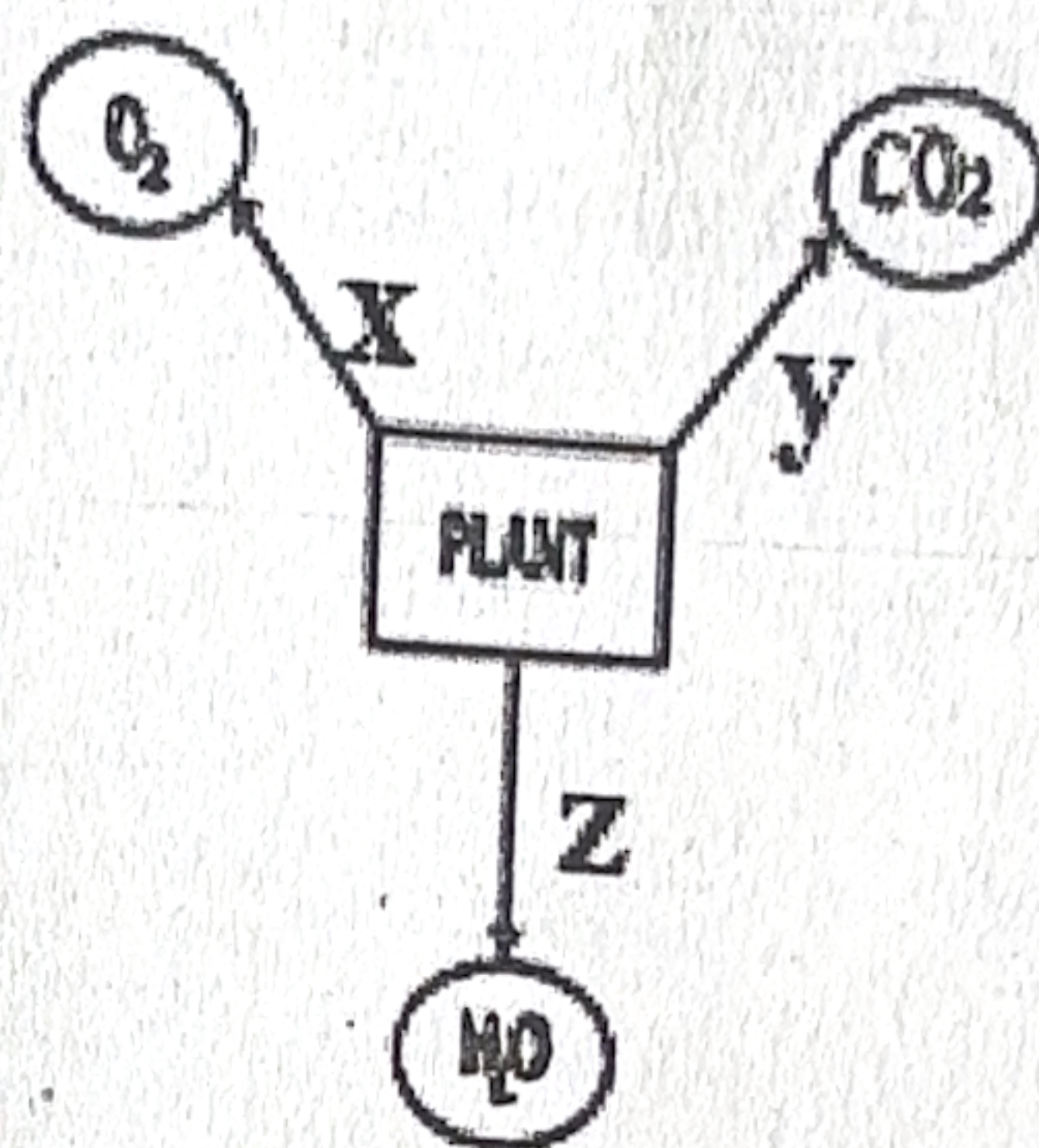
5 The figure given shows a schematic plan of blood circulation in humans with labels (i) to (iv). Identify the correct label with its function. 1



- A. (i) Pulmonary vein – takes impure blood from the body part.
 B. (ii) Pulmonary artery – takes pure blood from the lung to the heart.
 C. (iii) Aorta – takes impure blood from the heart to body parts.
 D. (iv) Vena cava – takes impure blood from body parts to the right auricle.

- 6 When a pure tall pea plant is crossed with a pure dwarf pea plant, the percentage of pure tall pea plants in F_2 generation pea plants will be
 A. 100%
 B. 50%
 C. 25%
 D. 75%

- 7 Observe the figure given below and answer the question-



- Identify the process taking place at y,x,z
 A. Reproduction, transpiration, respiration
 B. Transpiration, respiration, photosynthesis
 C. Respiration, photosynthesis, transpiration
 D. Photosynthesis, respiration, transpiration

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.

- 8 **Assertion(A):** Ozone layer shields the surface of the earth.

Reason(R): It protects from the harmful ultra violet radiations of the sun.

- 9 **Assertion(A):** Iodine is necessary for the thyroid gland to make thyroxine hormone.

Reason(R): Thyroxine regulates the appearance of secondary sexual characters in the body.

- 10 (i) Name the group of organisms which form the first trophic level in every food chain. Why are they called so? 2

(ii) State any one ill-effect of the absence of decomposers from a natural ecosystem.

- 11 Attempt either option A or B.

A. In the process of digestion of food in human beings, two protein digesting enzymes are secreted.

Name the enzymes and the glands that secrete them.

OR

B. Enlist any two structural differences between arteries and veins.

12 State reasons for the following:

- (i) Rings of cartilage are present in the trachea.
- (ii) Plants look green in colour.

2

13 (i) List any two differences between recessive and dominant traits.

- (ii) 'Proteins control the expression of various characters'. Explain this statement by taking an example of tallness as a characteristic in plants.

3

14 (i) List two constituents of the central nervous system.

- (ii) How are these components protected against injuries?

3

- (iii) Write two limitations of the use of electrical impulses for the transfer of information.

15 Human beings undergo holozoic nutrition which involves intake of complex food substances and subsequent breakdown of food inside the digestive tract with the help of enzymes. The process includes five steps – ingestion, digestion, absorption, assimilation, and egestion. Different organs of the digestive system like the mouth, stomach, small intestine, and large intestine work together to ensure complete digestion. This mode of nutrition provides energy and raw materials necessary for growth, repair, and maintenance of the body.

4

Attempt either subpart A or B.

A. The table below shows the average pH levels in different organs of the digestive system.

Organ	pH
Mouth	6.5 to 7.5
Oesophagus	7
Stomach	1 to 2
Small Intestine	7.5 to 8
Large Intestine	5.5 to 7
Pancreas	8 to 8.3
Liver	7 to 7.5

Stomach secretes acidic juices with pH 1 to 2 but the lining of the stomach rarely gets corroded. Explain.

OR

B. The bile juice secreted by the liver does not contain any digestive enzyme, but is still essential for digestion. Explain giving reasons.

C. In which organ of the digestive system does the carbohydrates get converted into their simplest form?

D. Name the movement that helps in pushing food down the oesophagus.

16 Attempt either option A or B.

5

A. (i) Explain the surgical method of contraception in human males and females.

- (ii) Unsafe sexual act can lead to various infections. Name one viral and one bacterial infection which can be transmitted due to unsafe sex.

- (iii) Why is prenatal sex determination banned by law in India? State the benefits of this step in the long run.

OR

B. (i) Write one function each of the following:

- (a) anther (b) petals (c) ovary (d) style

- (ii) While observing a papaya plant, Radhika found that it was not being able to bear fruits. Give a possible reason for the situation.
- (iii) Mention the changes a flower undergoes after fertilization.

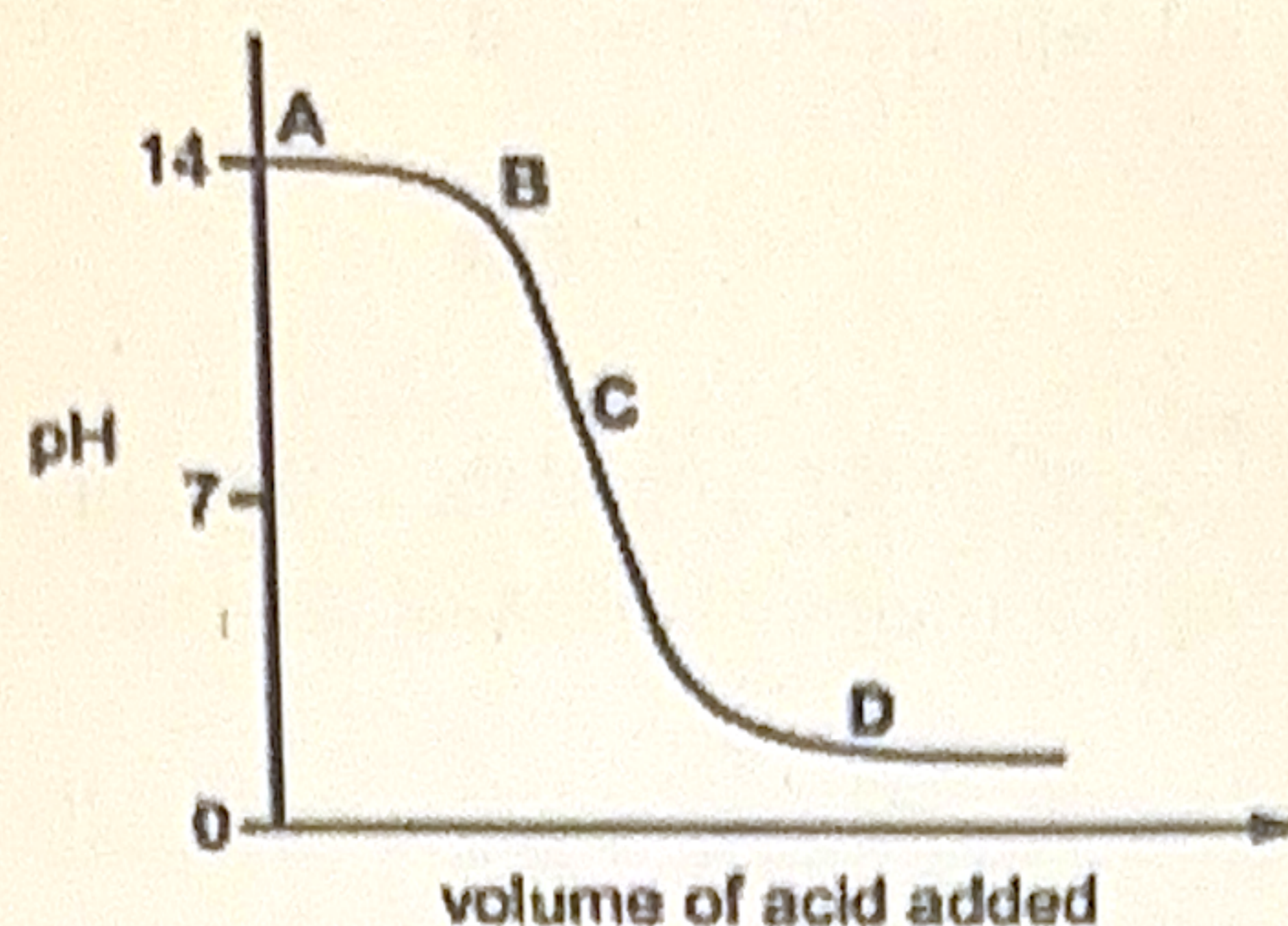
SECTION- B

17 Study the following cases:

- (i) $\text{CuSO}_4 + \text{Mg} \rightarrow$
(ii) $\text{FeSO}_4 + \text{Pb} \rightarrow$
(iii) $\text{CaSO}_4 + \text{Al} \rightarrow$
(iv) $\text{ZnSO}_4 + \text{Ca} \rightarrow$

The case/cases in which new product(s) will form is/are:

- A. only (i)
B. only (iii)
C. (i) and (iv)
D. (i), (ii) and (iv)
- 18 In the decomposition of lead (II) nitrate to give lead (II) oxide, nitrogen dioxide, and oxygen gas, the coefficient of nitrogen dioxide (in the balanced equation) is 1
A. 1
B. 2
C. 3
D. 4
- 19 In the double displacement reaction between aqueous potassium iodide and aqueous lead nitrate, a yellow precipitate of lead iodide is formed. While performing the activity if lead nitrate is not available, which of the following can be used in place of lead nitrate? 1
A. Lead sulphate (insoluble)
B. Lead acetate
C. Ammonium nitrate
D. Potassium sulphate
- 20 Solid calcium oxide reacts vigorously with water to form calcium hydroxide accompanied by liberation of heat. This process is called slaking of lime. Calcium hydroxide dissolves in water to form its solution called lime water. Which among the following is (are) true about slaking of lime 1
(i) It is an endothermic reaction
(ii) It is an exothermic reaction
(iii) The pH of the resulting solution will be more than seven
(iv) The pH of the resulting solution will be less than seven
A. (i) and (ii)
B. (ii) and (iii)
C. (i) and (iv)
D. (iii) and (iv)
- 21 Which of the following represents a family of salts? 1
A. MgSO_4 , CuSO_4 , K_2SO_4
B. NaNO_3 , CaCO_3 , Na_2CO_3
C. K_2SO_4 , Na_2SO_4 , CaCl_2
D. NaCl , Na_2SO_4 , CaSO_4
- 22 The graph given below depicts a neutralization reaction (acid + alkali \rightarrow salt + water). The pH of a solution changes as we add excess of acid to an alkali. 1



Which letter denotes the area of the graph where both acid and salt are present?

- A. A
- B. B
- C. C
- D. D

23 Metals are refined by using different methods. Which of the following metals are refined by electrolytic refining?

1

- (i) Au
- (ii) Cu
- (iii) Na
- (iv) K
- A. (i) and (ii)
- B. (i) and (iii)
- C. (ii) and (iii)
- D. (iii) and (iv)

The following question consists of two statements – **Assertion (A)** and **Reason (R)**. Answer this question by selecting the appropriate option given below:

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24 **Assertion(A):** Carbon has a strong tendency to either lose or gain electrons to attain noble gas configuration.

1

Reason(R): Carbon has 4 electrons in its outermost shell and has the tendency to share electrons with carbon or other elements.

25 The thermit process is used for repairing cracks in railway tracks onsite.

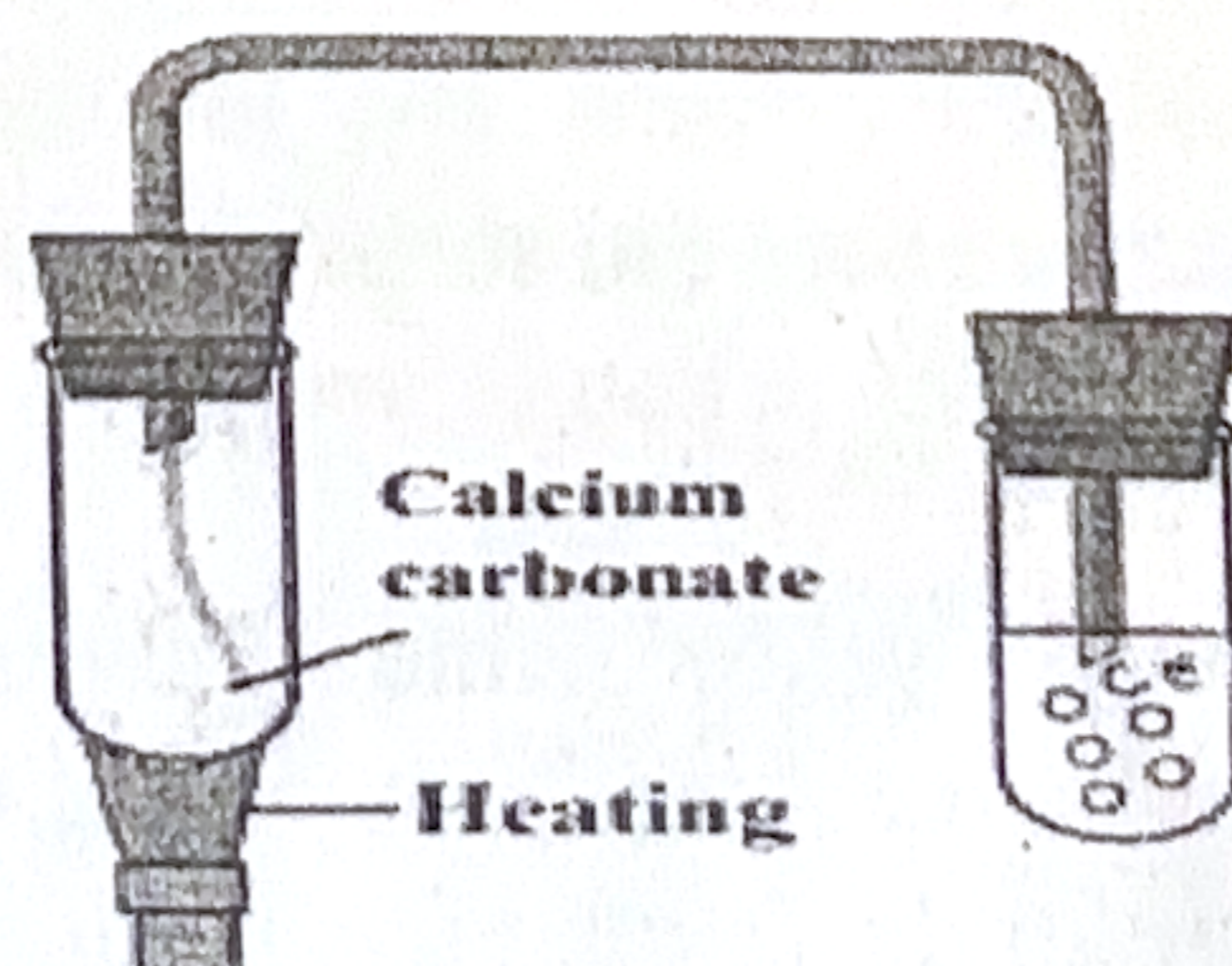
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- (i) Write a balanced chemical equation representing thermit reaction.
- (ii) What information in equation shows that the reaction is exothermic?

26 Attempt either option A or B.

3

A. Observe the diagram given below and answer the questions that follow:



- (i) Write the balanced chemical equation for the decomposition of calcium carbonate.
- (ii) Which gas is released in this reaction? How is this gas tested in the laboratory?

- (iii) Write the name of the solid compound obtained during the reaction (i). Write one use of this compound.

OR

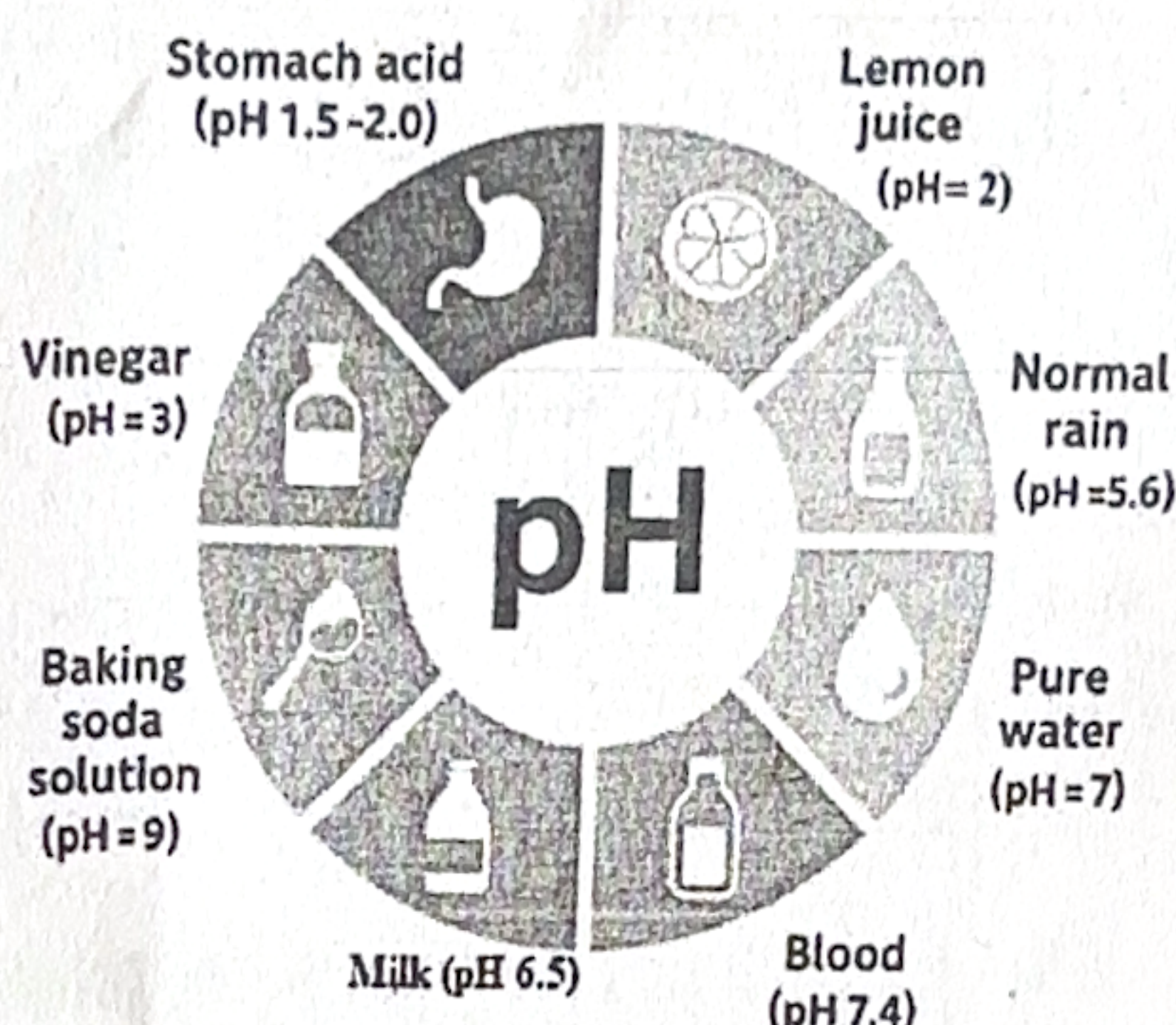
B. Write a balanced chemical equation for each of the following reactions

- Iron (III) oxide on heating with carbon monoxide gas reacts to form solid iron and liberates carbon dioxide gas.
- Hydrogen sulphide gas reacts with oxygen gas to form solid sulphur and liquid water.
- Electrolytic decomposition of water.

27 Write balanced chemical equations to explain what happens when:

- mercuric oxide is heated.
- zinc carbonate undergoes calcination.
- mixture of cuprous oxide and cuprous sulphide is heated.

- 28 The given infographic shows the approximate pH values of different common substances. pH is an important concept in daily life as it determines whether a substance is acidic, neutral, or basic. Our stomach contains HCl (pH 1.5–2.0) that helps in digestion, while blood has a slightly basic pH of 7.4 essential for proper functioning of the body. Household substances like vinegar, lemon juice, and baking soda also have characteristic pH values, which affect their uses. Even natural processes like rainwater (pH 5.6) and products like bleach (pH \approx 12.5) can be explained using the pH scale. Study the infographic carefully and answer the following questions:



- Which of the two substances- vinegar or stomach acid has a higher concentration of H^+ ions? Give reason for your answer.
- Why is the pH of rain water 5.6 instead of 7? How does this pH affect the aquatic life forms?

OR

Stomach acid has a pH range of 1.5–2.0. Explain what happens when excess acid secretion lowers pH further, and how antacids help.

- C. The infographic shows baking soda solution with pH = 9. Write a balanced chemical equation showing its neutralization with HCl.

29 Attempt either option A or B.

- (i) Write any two points of difference between soaps and detergents.
- (ii) Explain the mechanism of cleansing action of soaps.

OR

- (i) An organic compound burns with a yellow flame with lots of black smoke. What is it most likely to be- butane or propene? Give reasons for your answer.
- (ii) State the formula and the name of the fourth member of the series of carbon compounds whose general formula is C_nH_{2n-2} .
- (iii) Why do pentanal and hexanal have same chemical properties?
- (iv) Draw the structure and name the first member of ketone series.

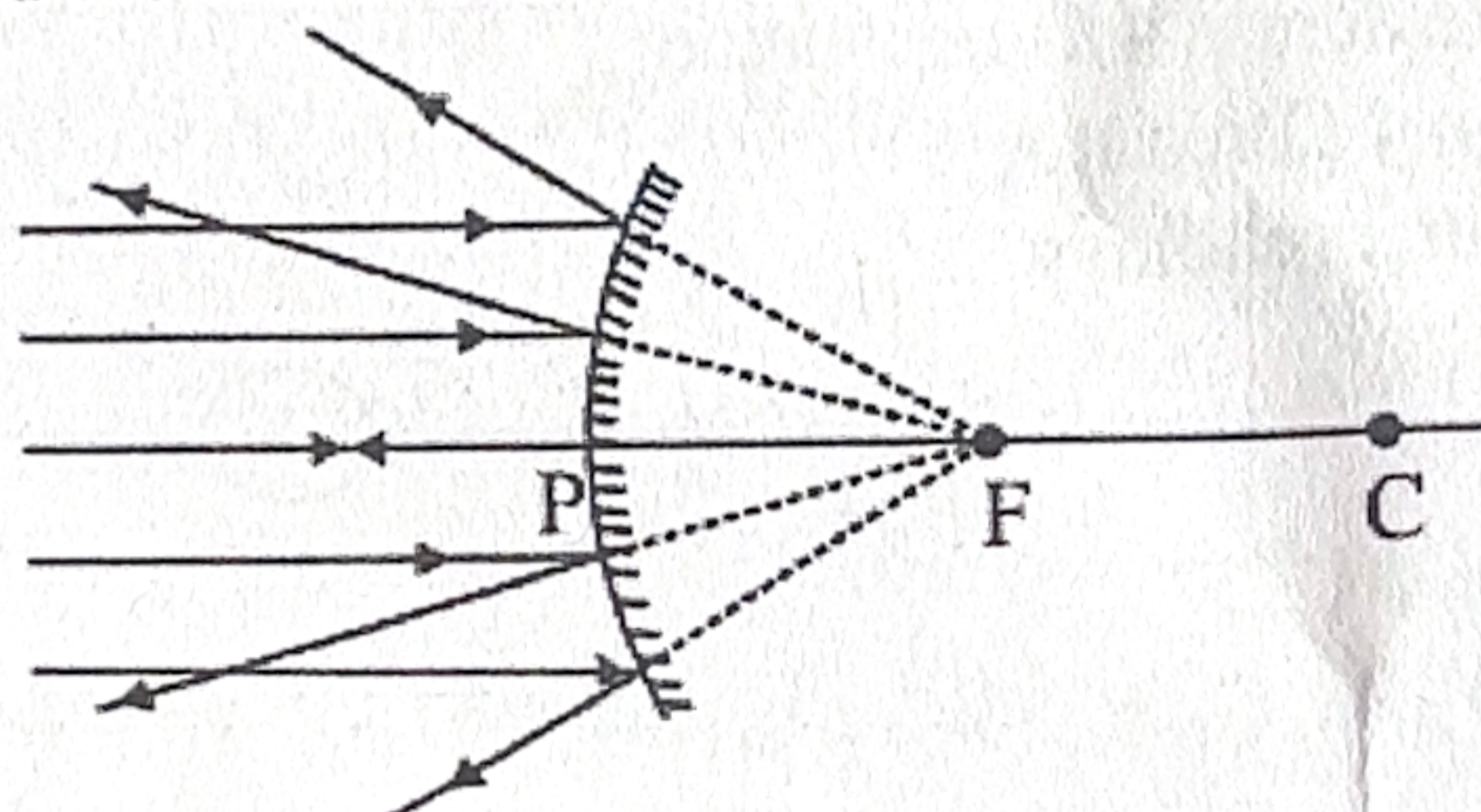
SECTION-C

- 30 A convex lens forms a real image 4 times the size of the object. If the object is placed at 6 cm from the lens, the image distance will be: 1
- A. 12 cm
B. 16 cm
C. 24 cm
D. 30 cm

- 31 A full length image of a distant tall building can definitely be seen by using 1
- A. a concave mirror
B. a convex mirror
C. a plane mirror
D. both concave as well as plane mirror

The following question consists of two statements – **Assertion (A)** and **Reason (R)**. Answer this question by selecting the appropriate option given below:

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C. A is true but R is false.
D. A is false but R is true.
- 32 **Assertion(A):** Red light signals are used to stop the vehicles on the road. 1
Reason(R): Red coloured light is scattered the least so as to be visible from a large distance.
- 33 In a series electrical circuit comprising a resistor made up of a metallic wire, the ammeter reads 5 A. 2
The reading of the ammeter decreases to half when the length of the wire is doubled. Why?
- 34 Attempt either option A or B. 2
- A. In the diagram given below, incident rays parallel to the principal axis strike a mirror and appear to diverge from point F behind the mirror after reflection.



- (i) What type of mirror is shown?
(ii) What kind of image is formed by this mirror for any object?
(iii) Give one use of this mirror in daily life.

OR

B. You are provided with two lenses of focal length 20 cm and 40 cm respectively. Which lens will you use to obtain more convergent light? Justify.

- 35 Two resistors, having resistances 5Ω and 10Ω respectively are to be connected to a battery of 6 V so as to obtain: (a) minimum current (b) maximum current 3
- (i) How will you connect the resistances in each case?
(ii) Calculate the total current in the circuit in the two cases.
- 36 (i) A person is suffering from an eye defect in which the near point of the eye is more than 25 cm. 3
Identify the defect.