

SCIENCE
Sample Question Paper 4
Class X | Code 086 | 2026-27

Time Allowed: 3 hours

Maximum Marks: 80

General Instructions

This paper has 39 questions in three sections: A Biology, B Chemistry and C Physics.

All questions are compulsory. Three internal choices are provided in each section; attempt only one alternative wherever a choice is given.

Marks are shown against each question. Draw neat labelled diagrams wherever required.

For Questions 8, 9, 24 and 32, use the Assertion–Reason codes below:

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is true.

SECTION A

(Biology | Questions 1–16 | 30 marks)

1. A plant stores waste products in leaves that later fall. This primarily helps in: [1]

- | | |
|-----------------|-------------------|
| (A) germination | (B) excretion |
| (C) pollination | (D) translocation |

2. A plant hormone that promotes cell division is: [1]

- | | |
|---------------|-------------------|
| (A) cytokinin | (B) abscisic acid |
| (C) insulin | (D) thyroxine |

3. The expressed physical appearance of a trait is its: [1]

- | | |
|---------------|---------------|
| (A) gamete | (B) zygote |
| (C) chromatid | (D) phenotype |

4. A garden with plants, insects, birds, soil and water constitutes: [1]

- (A) only a food chain
- (B) only an abiotic community
- (C) an ecosystem
- (D) a single population

5. A fish living in a pond ecosystem feeds on small aquatic insects (larvae). These insect larvae, in turn, feed on green algae and small photosynthetic bacteria. In this specific food chain, what is the trophic level classification of fish? [1]

- | | |
|------------------------|-----------------------|
| (A) Producer | (B) Primary Consumer |
| (C) Secondary Consumer | (D) Tertiary Consumer |

6. During photosynthesis, what happens to carbon dioxide and water as glucose is formed? [1]

- (A) Carbon dioxide gains hydrogen, while water loses electrons.
- (B) Carbon dioxide loses oxygen, while water gains oxygen.
- (C) Carbon dioxide is oxidised, while water is reduced.
- (D) Both carbon dioxide and water undergo reduction.

7. A fruit usually develops from the flower's: [1]

- (A) anther
- (B) filament
- (C) sepal only
- (D) ovary

8. Assertion (A): All plant movements require growth.

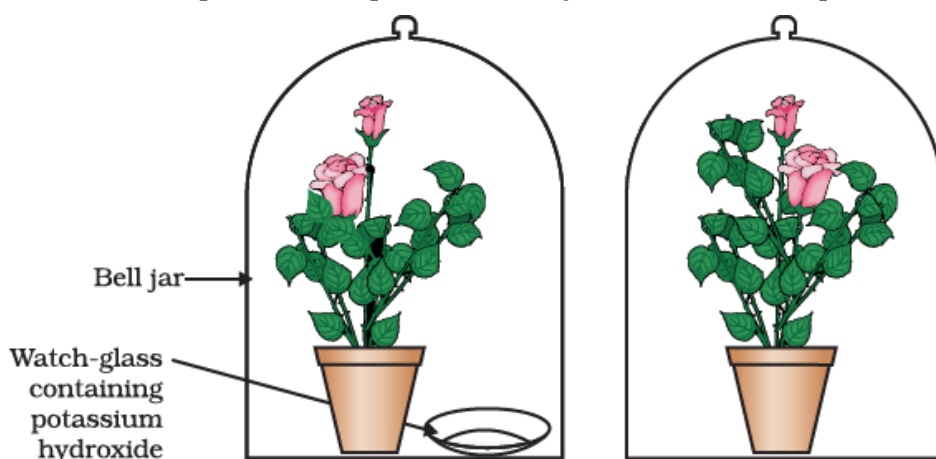
Reason (R): Sensitive plant leaves fold through changes in cellular water content. [1]

9. Assertion (A): Sexual reproduction creates new combinations of inherited traits.

Reason (R): Offspring receive genetic material from two parents. [1]

10. Attempt either A or B. [2]

A. Both plants shown were destarched before exposure to sunlight. Predict the starch test result for the plant with potassium hydroxide and explain it. (2)



OR

B. What is the purpose of the plant without KOH in the figure, and why must the bell jars be sealed? (2)

11. Where are genes located, and what is their chemical basis? [2]

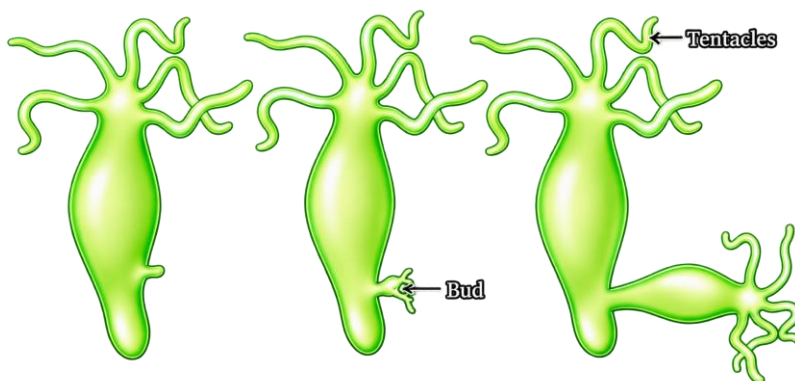
12. Attempt either A or B. [2]

A. Explain why the left ventricle has a thicker muscular wall than the right ventricle. (2)

OR

B. Why is pressure in arteries generally greater than in veins? (2)

13. Use the Hydra sequence to explain where a bud originates, how it grows and when it becomes independent. [3]



14. Explain why food chains generally have only a few trophic levels. [3]

15. A Tiwari Academy gardener grows roses from cuttings of one plant. (a) Name the method. (b) Is gamete fusion required? (c) Explain one benefit and one genetic limitation. [4]

16. Describe transmission of a skin stimulus to the spinal cord. [5]

Attempt either A or B for the remaining 2 marks.

A. How does the motor signal cause movement? (2)

OR

B. Why are reflexes useful despite conscious decision-making? (2)

SECTION B

(Chemistry | Questions 17–29 | 25 marks)

17. The brown gas evolved on heating lead nitrate is: [1]

(A) carbon monoxide

(B) nitrogen dioxide

(C) nitrogen

(D) hydrogen

18. In $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$, the substance oxidised is: [1]

(A) H_2

(B) CuO

(C) Cu

(D) H_2O

19. Which of the following salts contain water of crystallisation:

(i) Plaster of Paris, (ii) Washing soda,

(iii) Baking soda and (iv) Gypsum. [1]

(A) (i), (ii) and (iii)

(B) (i), (iii) and (iv)

(C) (ii), (iii) and (iv)

(D) (i), (ii) and (iv)

20. To dilute a concentrated acid safely, one should: [1]

- (A) heat acid before adding water
- (B) mix without stirring in a sealed bottle
- (C) add acid slowly to water with stirring
- (D) pour water rapidly into acid

21. The ability to be drawn into thin wires is: [1]

- (A) brittleness
- (B) ductility
- (C) malleability
- (D) sonority

22. The functional group in ethanol is: [1]

- (A) -OH
- (B) -COOH
- (C) -CHO
- (D) -CO-

23. A freshly whitewashed wall becomes hard mainly because slaked lime reacts with: [1]

- (A) hydrogen
- (B) nitrogen
- (C) helium
- (D) carbon dioxide

24. Assertion (A): Copper oxide is reduced when heated with hydrogen.
Reason (R): Hydrogen removes oxygen from copper oxide to form water. [1]

25. Attempt either A or B. [2]

A. Why is nitrogen used in packets containing oily snacks? (2)

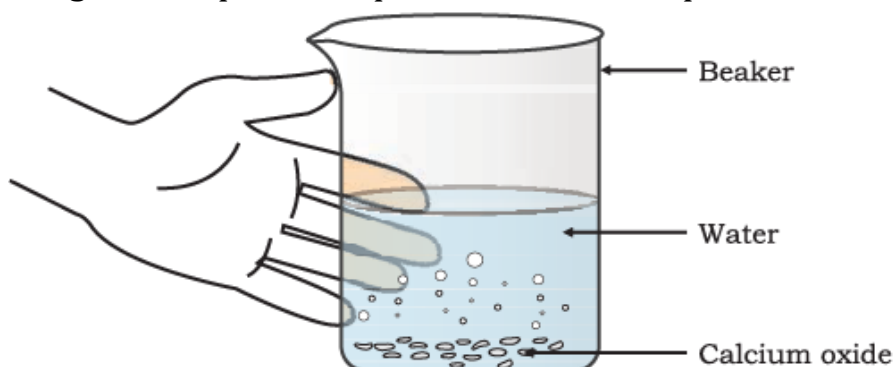
OR

B. Why should a magnesium ribbon be rubbed with sandpaper before burning? (2)

26. Write balanced equations for the reaction of zinc with dilute hydrochloric acid and the test for the gas produced. [3]

27. Attempt either A or B. [3]

A. Water is added to quicklime in the beaker shown. Write the reaction, predict the temperature change and explain one practical use of the product. (3)



OR

B. Explain why slaking lime is both a combination reaction and an exothermic reaction, and distinguish it from heating limestone. [3]

28. A farmer finds poor crop growth in soil of pH 4.5. (a) Is the soil acidic or basic? (b) Name a suitable basic treatment from the textbook. [4]

Attempt either A or B for the remaining 2 marks.

A. Explain the treatment and why adding too much is undesirable. (2)

OR

B. If soil were too basic, explain how organic matter could help. (2)

29. A compound A turns blue litmus red and reacts with NaHCO_3 . It contains two carbon atoms and a carboxyl group. Identify A, write its formula and the bicarbonate reaction. [5]

Explain how A can form a sweet-smelling compound with ethanol. (2)

SECTION C

(Physics | Questions 30–39 | 25 marks)

30. A concave mirror forms a real inverted image of the same size as the object when the object is: [1]

(A) at the centre of curvature

(B) at the focus

(C) at infinity

(D) between the pole and focus

31. An electrical appliance rated 1000 W is operated at 250 V. What current does it draw? [1]

(A) 0.25 A

(B) 2.5 A

(C) 4.0 A

(D) 10 A

32. Assertion (A): The focal length of a spherical mirror is twice its radius of curvature.

Reason (R): For paraxial rays, $R = 2f$.

[1]

33. A light ray travels obliquely from water into glass. In which direction does it bend, and why? [2]

34. A resistor carries 0.4 A when connected to 8 V. Find its resistance and current at 12 V if temperature stays constant. [2]

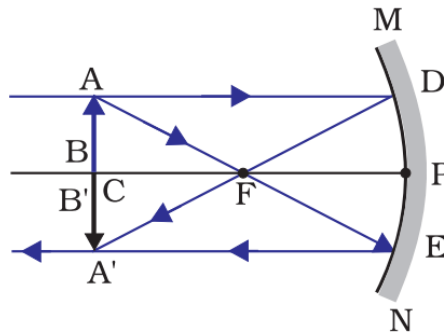
35. What is lens power? Find the nature and power of lenses of focal lengths +40 cm and –20 cm. [3]

36. A. State the Right-Hand Thumb Rule and describe how it helps determine the direction of magnetic field around a current-carrying conductor. [3]

B. Explain how the magnetic field changes with distance from the conductor. [3]

37. Attempt either A or B. [3]

A. The object in the diagram is at C of a concave mirror whose radius is 40 cm. Give u , f and v with signs, and determine magnification. (3)



OR

B. Explain why the object and image exchange positions when an object is moved from beyond C to the corresponding image position between F and C. (3)

38. A $6\ \Omega$ resistor and a $3\ \Omega$ resistor are in parallel, followed by a $4\ \Omega$ series resistor across 12 V. Find parallel resistance, total resistance and total current. [5]

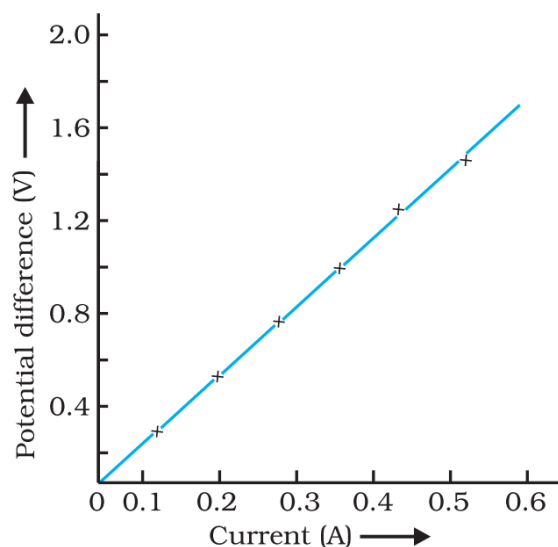
Attempt either A or B for the remaining 2 marks.

A. Find the voltage across the parallel group and its branch currents. (2)

OR

B. Find power in the $4\ \Omega$ resistor and explain why it differs from either branch's power. (2)

39. The V-I graph shown includes approximately $I = 0.40\ \text{A}$ at $V = 1.20\ \text{V}$. (a) Calculate resistance. (b) What does the origin indicate? [4]



Attempt either A or B for the remaining 2 marks.

A. Find current at 1.8 V and heat generated in 10 s at that voltage. (2)

OR

B. Explain why reversing both voltage and current signs does not make resistance negative. (2)