

SCIENCE
Sample Question Paper 9
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. Which plant tissue transports dissolved mineral salts mainly from roots to leaves? [1]

- | | |
|--------------------|----------------------|
| (A) Xylem | (B) Phloem |
| (C) Epidermis only | (D) Guard cells only |

2. The main thinking and memory centre in the brain is the: [1]

- | | |
|------------------|----------------|
| (A) medulla | (B) cerebellum |
| (C) spinal nerve | (D) forebrain |

3. The breakdown of glucose into lactic acid during oxygen shortage in muscles occurs in the: [1]

- | | |
|-----------------|---------------|
| (A) chloroplast | (B) cell wall |
| (C) cytoplasm | (D) nucleus |

4. Which condition is essential for sexual reproduction but not for simple fission? [1]

- | | |
|-------------------------------------|-----------------------|
| (A) Transfer of hereditary material | (B) Fusion of gametes |
| (C) DNA replication | (D) Cell division |

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. Only a small part of the solar energy falling on leaves is converted to: [1]

(A) sound energy in roots

(B) electrical energy in soil

(C) chemical energy in food

(D) nuclear energy in seeds

8. Assertion (A): Hormones act on every cell in precisely the same way.

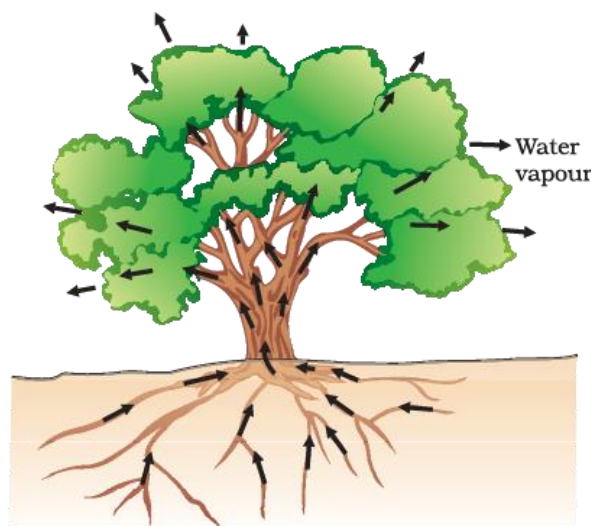
Reason (R): Different hormones act on specific target tissues. [1]

9. Assertion (A): A bisexual flower cannot undergo cross-pollination.

Reason (R): Pollen may be transferred between different flowers of the same species. [1]

10. Attempt either A or B. [2]

A. The arrows in the figure show water movement through a tree. Explain how evaporation at the leaves can draw water from the roots. (2)



OR

B. Predict two effects on the illustrated water stream if many stomata close on a hot dry day. (2)

11. Distinguish between autosomes and sex chromosomes in humans. [2]

12. Attempt either A or B. [2]

A. How does closure of stomata help a plant in dry conditions, and what disadvantage can it have? (2)

OR

B. How do guard cells regulate stomatal aperture when their water content changes? (2)

13. Attempt either A or B. [3]

A. In a pea population, 90 tall and 30 dwarf plants arise from two tall parents. Infer the likely parental genotypes and explain the result. (3)

OR

B. Two parents produce equal numbers of tall and dwarf pea plants; one parent is dwarf. Infer the other parent's genotype and explain. (3)

14. Explain how sperm receive nourishment and are transported in the human male reproductive system. [3]

15. A Tiwari Academy class models an ecosystem in a jar without adequate light. (a) Which energy input is missing? (b) Which process declines? (c) Explain why reserves cannot sustain it indefinitely. [4]

16. Explain how a chemical growth signal bends a shoot. [5]
Compare with Mimosa folding. (2)

SECTION B

(Chemistry | Questions 17–29 | 25 marks)

17. Which of these salts has no water of crystallisation in its formula? [1]

- (A) Baking soda
- (B) Washing soda
- (C) Gypsum
- (D) Copper sulphate pentahydrate

18. Which change commonly accompanies oxidation of a metal surface over time? [1]

- | | |
|-----------------------|------------------|
| (A) Sublimation | (B) Melting only |
| (C) Condensation only | (D) Corrosion |

19. Electrical wires made of aluminum [1]

- (A) corrode easily as aluminium is a very reactive metal.
- (B) corrode easily because porous flaky aluminium oxide is formed.
- (C) do not corrode easily as aluminium oxide forms a protective layer.
- (D) do not corrode easily as aluminium is less reactive than metals like sodium, magnesium and zinc.

20. Which salt is formed from a strong acid and a strong base and gives an approximately neutral solution? [1]

- (A) Sodium ethanoate (B) Sodium chloride
(C) Sodium carbonate (D) Ammonium chloride

21. The impurities associated with a naturally occurring ore are called: [1]

- (A) gangue (B) alloy
(C) amalgam (D) electrolyte

22. Which compound belongs to the carboxylic acid family? [1]

- (A) CH_3OH (B) CH_3CHO
(C) CH_3COCH_3 (D) CH_3COOH

23. Which is a suitable chemical test for carbon dioxide? [1]

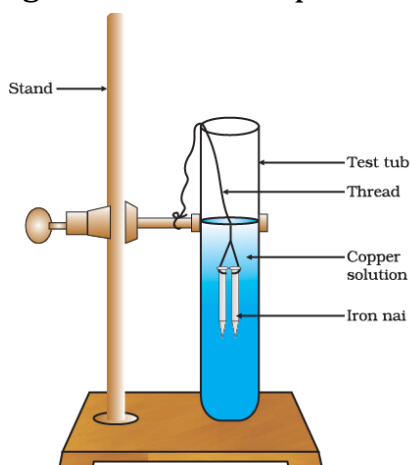
- (A) Observe a pop on burning
(B) Use dry starch paper only
(C) Pass it through limewater
(D) Insert a glowing splint to relight it

24. Assertion (A): A strong acid and a concentrated acid mean exactly the same thing.
Reason (R): Strength concerns ionisation while concentration concerns amount per volume. [1]

25. Why should curd and sour food not be kept in copper or brass vessels? [2]

26. Attempt either A or B. [3]

A. An iron nail is immersed as shown. Write the equation and explain why reversing the metals and salt does not give the same displacement. (3)

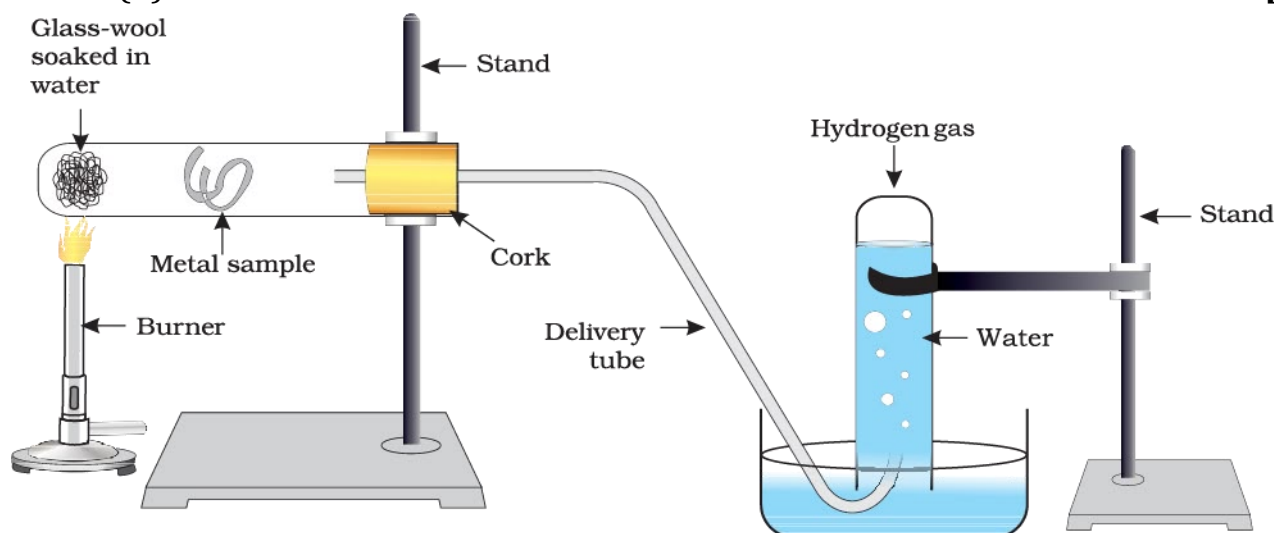


OR

B. Explain the electron-transfer roles of iron and copper ions in the illustrated displacement. (3)

27. Give chemical equations for zinc oxide reacting separately with hydrochloric acid and sodium hydroxide. What property is shown? [3]

28. Steam is passed over hot iron using the apparatus shown. (a) Name the gaseous product. (b) State a suitable test for it. [4]



Attempt either A or B for the remaining 2 marks.

A. Write the balanced equation and explain why copper is unsuitable for the same displacement. (2)

OR

B. Explain why the water is heated separately and why the metal tube must also be heated. (2)

29. Explain how the reactivity series predicts reactions of iron, copper and zinc with dilute non-oxidising acids. [5]

Attempt either A or B for the remaining 2 marks.

A. Write equations for Zn and Fe with HCl. (2)

OR

B. Why is nitric acid an exception to a simple metal–acid hydrogen rule? (2)

SECTION C

(Physics | Questions 30–39 | 25 marks)

30. The SI unit of power of a lens is: [1]

- (A) metre (B) centimetre
(C) ohm (D) dioptre

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 absolute refractive index of a medium equals c/v .
Reason (R): Light travels more slowly in an optically denser transparent medium. [1]

33. What is the Tyndall effect? Give one example. [2]

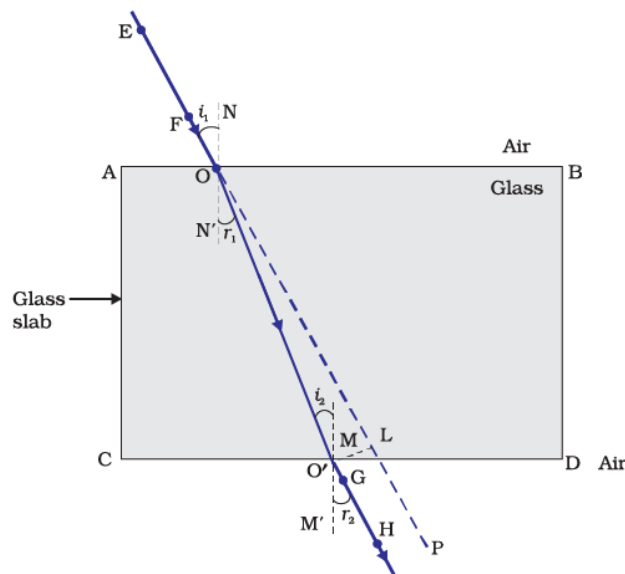
34. Attempt either A or B. [2]

A. Why should a switch be connected in the live wire rather than only in the neutral wire? (2)

OR

B. Why should an appliance's metal casing be earthed even when it has a fuse? (2)

35. At the first face of the slab shown, $\sin i = 0.60$ and $\sin r = 0.40$. Find glass's refractive index relative to air and light speed in it; explain the emergent direction. [3]

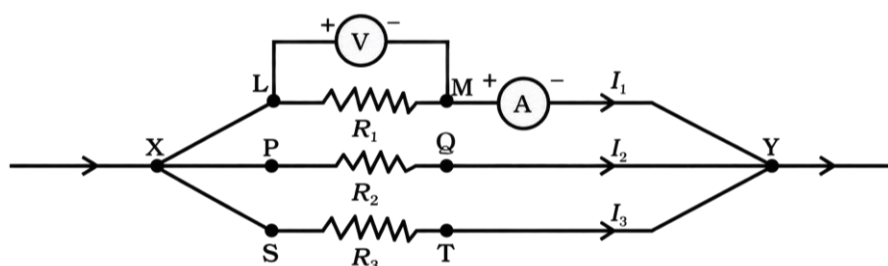


36. A. State the Right-Hand Thumb Rule and describe how it helps determine the direction of magnetic field around a current-carrying conductor.

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

37. Explain why planets generally do not twinkle as noticeably as stars. [3]

38. In the parallel arrangement, $R_1 = 6 \Omega$, $R_2 = 12 \Omega$ and $R_3 = 4 \Omega$, all across 12 V. (a) What does the branch ammeter read? (b) What does the voltmeter across R_1 read? [4]



Attempt either A or B for the remaining 2 marks.

A. Calculate the other branch currents and the total current. (2)

OR

B. If the R_2 branch breaks, find the new total current and explain the other branch currents. (2)

39. A heater contains two identical $20\ \Omega$ elements. It can connect them in series or parallel across 200 V. Find the two equivalent resistances and the series-mode power. [5]

Attempt either A or B for the remaining 2 marks.

A. Find parallel-mode power and compare heating rates. (2)

OR

B. Calculate supply current in both modes and explain why the switch must be rated for the larger value. (2)