

SCIENCE
Sample Question Paper 12
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. The undigested material in a human digestive system leaves through the: **[1]**
(A) oesophagus (B) anus
(C) urethra (D) ureter

2. A tendril curls around a support because of a directional response to: **[1]**
(A) touch (B) gravity only
(C) oxygen only (D) temperature only

3. The first enzyme to mix with food in the human digestive tract is: **[1]**
(A) pepsin (B) trypsin
(C) lipase (D) salivary amylase

4. A mature Spirogyra filament breaks into pieces, each growing independently. This is: **[1]**
(A) implantation (B) multiple fission
(C) fragmentation (D) pollination

5. 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.

6. During urine formation, tubular reabsorption and secretion take place in the kidneys. Which of the following sets correctly indicates both the substances that are reabsorbed in the kidneys? [1]

- (A) Glucose and salts (B) Glucose and starch
(C) Glycogen and salts (D) Glycogen and starch

7. Which gamete types can a heterozygous plant Rr form? [1]

- (A) RR and rr (B) Rr only
(C) RR only (D) R and r

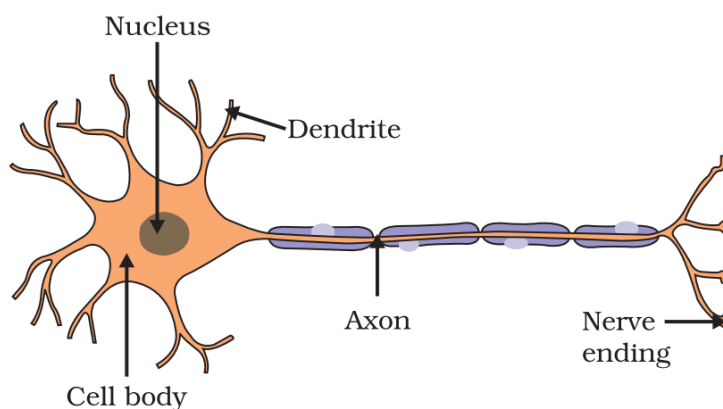
8. Assertion (A): A signal carried electrically along a neuron can cross a synapse through chemical transmission.

Reason (R): An arriving impulse can cause release of a chemical messenger. [1]

9. Assertion (A): Biodegradable waste can never cause environmental problems.
Reason (R): Large accumulations of decomposing waste can pollute surroundings. [1]

10. Attempt either A or B. [2]

A. Using the neuron diagram, trace an impulse from its receiving end to its transmitting end. (2)



OR

B. Why is the neuron's long axon useful, and why are its endings branched? (2)

11. Why was large-scale use of disposable clay cups considered environmentally problematic? [2]

12. Attempt either A or B. [2]

A. Why should kitchen waste be separated from plastic packaging before disposal? (2)

OR

B. Why is burning mixed plastic waste not a good substitute for separating and recycling it? (2)

13. A bacterial population contains a few heat-tolerant variants. Explain what may happen after the habitat becomes warmer. [3]

14. Compare nervous and hormonal coordination on the basis of pathway, speed and duration. [3]

15. At a Tiwari Academy plant activity, identical twigs are kept in humid still air and dry moving air, with equal light and temperature. (a) Which loses water faster? (b) Name the process. (c) Explain two reasons. [4]

16. State the roles of ovary, oviduct and uterus. [5]

Attempt either A or B for the remaining 2 marks.

A. What happens to the lining without fertilisation? (2)

OR

B. How does the placenta allow exchange without direct mixing? (2)

SECTION B

(Chemistry | Questions 17–29 | 25 marks)

17. The main metals in brass are: [1]

(A) lead and mercury (B) copper and zinc

(C) copper and tin (D) iron and carbon

18. The reaction of an acid with a base to form salt and water is: [1]

(A) neutralisation (B) sublimation

(C) polymerisation (D) hydrogenation

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. Tooth enamel begins to be attacked when mouth pH falls below about: [1]

(A) 9.5 (B) 12.5

(C) 5.5 (D) 7.5

21. Which material is an alloy? [1]

(A) Sulphur (B) Brass

(C) Graphite (D) Sodium chloride

22. When methane reacts with chlorine in sunlight, a hydrogen atom can be replaced by chlorine. This is: [1]

- (A) substitution (B) addition
(C) neutralisation (D) precipitation

23. A kettle develops calcium carbonate scale. A weak acid cleaner removes it by: [1]

- (A) forming metallic calcium
(B) making carbon dioxide insoluble
(C) converting all water to hydrogen
(D) reacting with the carbonate to release CO_2

24. Assertion (A): Sodium cannot be stored safely in an open water trough.
Reason (R): Sodium reacts vigorously with water. [1]

25. Attempt either A or B. [2]

A. Why is tin preferred over zinc for coating food cans? (2)

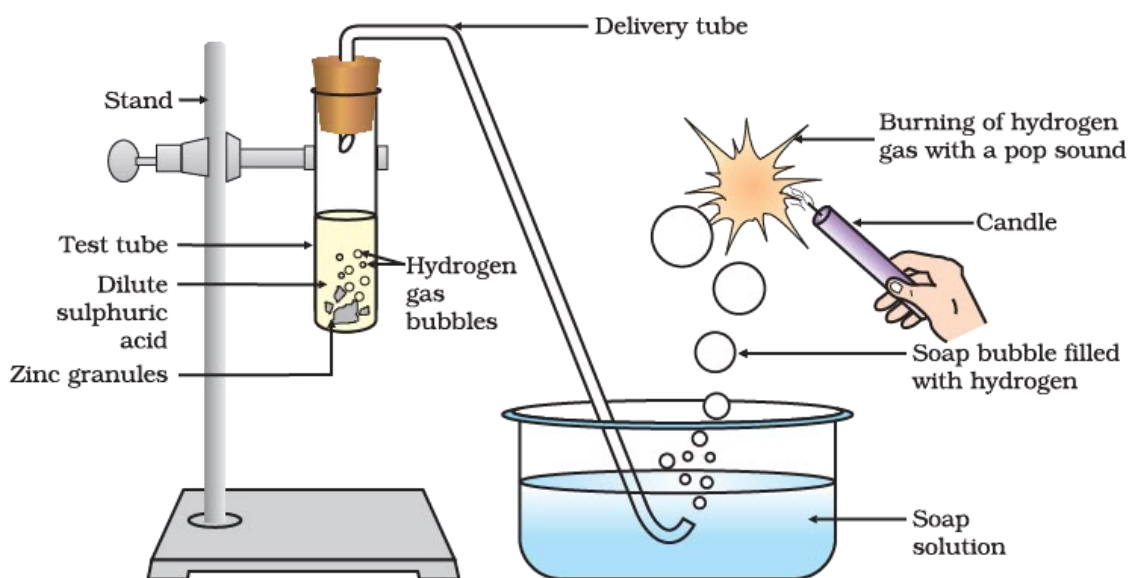
OR

B. What is anodising and why is it done to aluminium? (2)

26. What is an alloy? How is one generally prepared, and why is solder useful for joining wires? [3]

27. Attempt either A or B. [3]

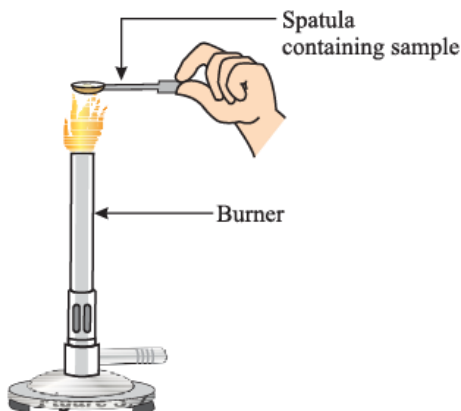
A. Use the soap-bubble apparatus to explain the gas test, write the metal-acid equation and distinguish the roles of acid and soap solution. (3)



OR

B. Why does the gas in the soap-bubble experiment float and burn differently from carbon dioxide? (3)

28. A student heats an ionic salt on the spatula shown and finds it difficult to melt. (a) What force chiefly holds its particles? (b) What does this suggest about melting point? [4]



Attempt either A or B for the remaining 2 marks.

A. Explain why adding water can allow conduction without heating to the melting point. [2]

OR

B. Contrast the particle mobility in its solid and molten states. [2]

29. Explain the terms mineral, ore and gangue with their relevance to extraction. [5]
Describe reduction of a moderately reactive metal oxide by carbon with one equation.

SECTION C

(Physics | Questions 30–39 | 25 marks)

30. The rate of flow of electric charge is: [1]

- | | |
|-------------------------|------------------------|
| (A) electric current | (B) electric potential |
| (C) electric resistance | (D) electric energy |

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): A person viewing a nearer object needs a thinner eye lens.
Reason (R): For near vision, the eye lens becomes more curved. [1]

33. What is electric charge's SI unit? Define the SI unit of current. [2]

34. Why do heating elements use materials with high melting points and resistance to oxidation? [2]

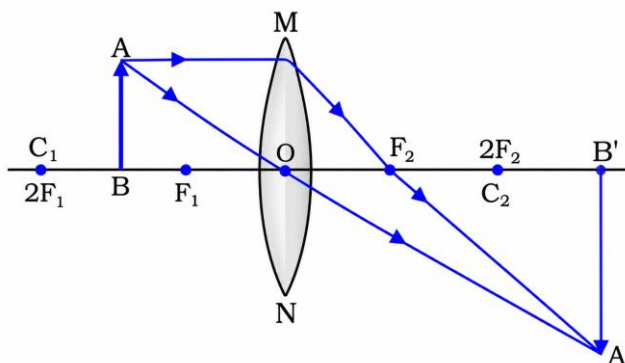
35. State Ohm's law and explain the significance of a straight V–I graph through the origin at constant temperature. [3]

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. For the convex-lens configuration shown, $f = +12$ cm and $u = -18$ cm. Calculate image distance and magnification and compare the size with the diagram. (3)



OR

B. Explain why a convex lens can project the enlarged image shown and what happens if the object is moved through the focus towards the lens. (3)

38. A concave mirror forms a threefold real image of an object 20 cm in front. Find image distance, focal length and radius magnitude. [5]

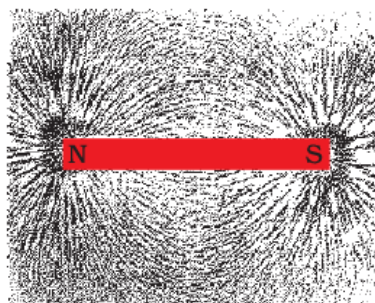
Attempt either A or B for the remaining 2 marks.

A. If the object's height is 2 cm, find image height and explain the sign. (2)

OR

B. Where must a small light source be placed to obtain a parallel reflected beam? Explain. (2)

39. Iron filings around a bar magnet form the illustrated pattern. (a) Why do the filings align? (b) Where is the field strongest according to the pattern? [4]



Attempt either A or B for the remaining 2 marks.

A. Explain why field lines form closed curves although their external direction is north to south. (2)

OR

B. Why are filings a pattern indicator rather than the field lines themselves? (2)