

SCIENCE
Sample Question Paper 6
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 person has very few platelets. Which immediate problem is most likely? **[1]**
(A) Failure of starch digestion (B) Loss of nerve impulses
(C) Reduced urine storage (D) Delayed clotting at a wound

2. A nerve impulse first reaches a typical neuron at its: **[1]**
(A) myelin sheath (B) muscle fibre
(C) dendrite (D) axon terminal

3. The hormone whose deficiency in childhood can cause dwarfism is: **[1]**
(A) oestrogen (B) growth hormone
(C) adrenaline (D) insulin

4. Which reproductive method can rapidly multiply disease-free plants from a small tissue sample? **[1]**
(A) Tissue culture (B) External fertilisation
(C) Cross-pollination alone (D) Binary fission of seeds

5. The male gamete of an apple plant has seventeen chromosomes. What is the number of chromosomes in the female gamete and in the cells of the adult plant respectively? **[1]**
(A) 17,17 (B) 17,34
(C) 34,34 (D) 34,51

6. 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

7. Which sequence shows increasing trophic levels? [1]

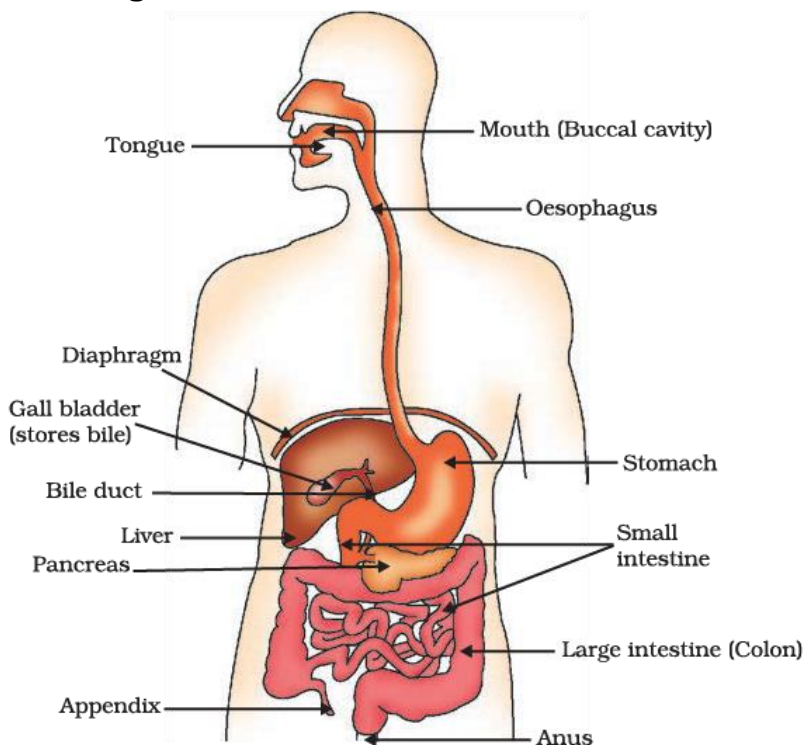
- (A) Grass → tiger → deer (B) Grass → deer → tiger
(C) Tiger → grass → deer (D) Deer → tiger → grass

8. Assertion (A): The brain receives information from different receptors.
Reason (R): Sensory neurons carry information towards the central nervous system. [1]

9. Assertion (A): A consumer may be part of several food chains.
Reason (R): Natural feeding relationships are interconnected. [1]

10. Attempt either A or B. [2]

A. Study the digestive system. Why are the liver and pancreas important even though food does not pass through them? (2)



OR

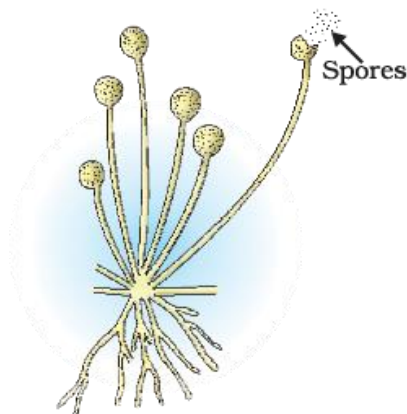
B. Explain why digestion can continue after acidic food leaves the stomach in the diagram. (2)

11. What would be the effect of removing phytoplankton from an aquatic food chain? [2]

12. Why is diffusion alone insufficient to supply oxygen to all cells in a large multicellular animal? [2]

13. Attempt either A or B. [3]

A. Study the bread-mould figure. Explain the roles of the sporangium and protective spore wall, and state a condition for germination. (3)



OR

B. Compare the hyphae and spores in bread mould by function and survival. (3)

14. Explain why a mother should not be blamed for the birth of a girl, using gamete types and fertilisation. [3]

15. A Tiwari Academy discussion considers a student startled by a loud sound. (a) Name the emergency hormone. (b) Name its gland. (c) Explain increased heart rate and blood flow to muscles. [4]

16. Explain the relationship between blood, tissue fluid and lymph. [5]

Attempt either A or B for the remaining 2 marks.

A. State two additional lymph functions. (2)

OR

B. Why are capillary walls thinner than artery walls? (2)

SECTION B

(Chemistry | Questions 17–29 | 25 marks)

17. The natural colour of ferrous sulphate crystals is: [1]

- | | |
|-----------------|-----------------|
| (A) bright blue | (B) deep red |
| (C) black | (D) light green |

18. When iron displaces copper from its salt solution, iron is: [1]

- | | |
|-------------------------------|-------------------------------|
| (A) a non-metal | (B) chemically unchanged |
| (C) more reactive than copper | (D) less reactive than copper |

19. Chameleons contain crystals that reflect light and produce colour. Adjusting the spacing between these crystals, they can alter the wavelengths of light reflected, thus changing their skin colour. Based on the above information, we can infer that the change in colour by chameleons is a: **[1]**

- (A) chemical change because change in colour takes place.
- (B) chemical change because wavelength of reflected light changes.
- (C) physical change because the space between crystals is adjusted.
- (D) physical change because light is reflected by crystals.

20. Which natural indicator is obtained from lichens? **[1]**

- (A) Litmus
- (B) Phenolphthalein
- (C) Methyl orange
- (D) Universal indicator paper only

21. Which oxide reacts with both acids and bases? **[1]**

- (A) Sodium oxide only
- (B) Carbon dioxide only
- (C) Sulphur dioxide only
- (D) Aluminium oxide

22. The conversion of vegetable oil into a saturated fat uses: **[1]**

- (A) water and litmus
- (B) nitrogen and limewater
- (C) hydrogen and a catalyst
- (D) oxygen and sunlight only

23. A strip of copper is placed in zinc sulphate solution. The expected result is: **[1]**

- (A) complete disappearance of copper
- (B) no displacement of zinc
- (C) rapid deposition of zinc
- (D) formation of hydrogen in every case

24. Assertion (A): Rusting is simply a reversible change of shape.

Reason (R): Iron reacts with substances in its surroundings to form rust. **[1]**

25. Attempt either A or B. **[2]**

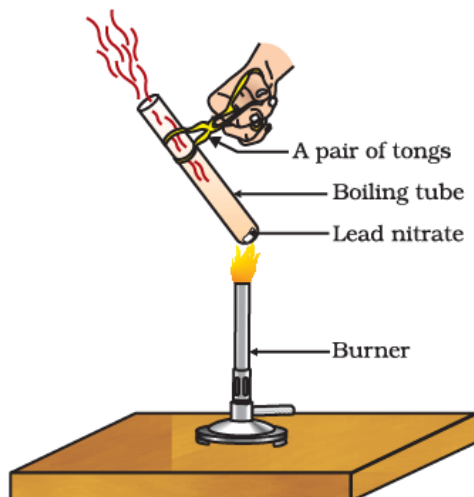
A. Explain why toothpaste is generally basic. **(2)**

OR

B. Why is an antacid used for indigestion? Give an example. **(2)**

26. Explain the preparation of washing soda from baking soda using equations. **[3]**

27. In the lead-nitrate heating experiment, give the balanced equation and explain the brown fumes and solid residue. **[3]**



28. An old iron railing is cleaned, dried and painted before the rainy season. (a) Name the corrosion process. (b) State the two essential environmental requirements. **[4]**

Attempt either A or B for the remaining 2 marks.

A. Explain why cleaning and a continuous paint coat improve protection. **(2)**

OR

B. Suggest another protective coating and explain why a scratch in paint can start local corrosion. **(2)**

29. Explain how ethanol and ethanoic acid differ in litmus behaviour, reaction with sodium carbonate and functional group. **[5]**

Attempt either A or B for the remaining 2 marks.

A. Write the sodium-carbonate reaction of ethanoic acid. **(2)**

OR

B. Explain why both substances can contain hydrogen but have different acidity. **(2)**

SECTION C

(Physics | Questions 30–39 | 25 marks)

30. A medium with a higher refractive index is described as: **[1]**

- (A) necessarily heavier per unit volume
- (B) a perfect reflector
- (C) optically denser
- (D) optically rarer

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 ray striking a plane mirror normally is reflected back along its path.

Reason (R): The angle of incidence and reflection are both zero. [1]

33. Define one dioptre and find the focal length of a lens of power -2.0 D. [2]

34. Attempt either A or B. [2]

A. Two wires of the same material and length have radii r and $2r$. Compare their resistances. (2)

OR

B. Two wires have equal length and area but resistances $3\ \Omega$ and $9\ \Omega$. What is the ratio of resistivities, and what can account for it? (2)

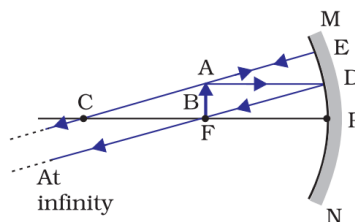
35. The refractive indices of glass and water are $3/2$ and $4/3$. If light travels at 2×10^8 m/s in glass, find its speed in water. [3]

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. Attempt either A or B. [3]

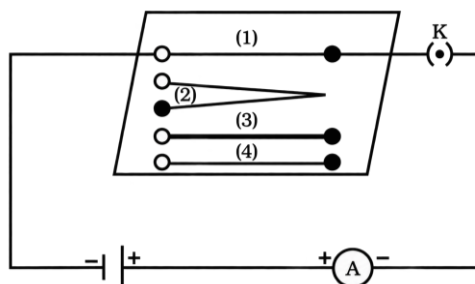
A. The object is at the focus of the concave mirror. Explain the reflected-ray direction, the image location and why a nearby screen gives no sharp image. (3)



OR

B. Explain how placing a small lamp at this concave mirror's focus differs from placing it beyond C. (3)

38. In the wire-comparison apparatus, wire 2 is twice the length of wire 1 with the same material and area. (a) Compare their resistances. (b) Compare currents at the same voltage. [4]



Wire 3 has the original length but twice the area. Explain its resistance and current relative to wire 1. (2)

39. A 100 W lamp and a 1000 W heater are both rated at 200 V and connected in parallel at that voltage. Calculate their resistances and total current. **[5]**

Attempt either A or B for the remaining 2 marks.

A. Explain why the higher-power device has lower resistance and calculate its current. (2)

OR

B. Calculate their combined energy use in two hours and cost at ₹5 per kWh. (2)