

SCIENCE
Sample Question Paper 8
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. Why does a mammal require a continuous supply of food even while resting? [1]

- (A) Only movement consumes food
- (B) Cellular maintenance and repair require energy
- (C) Every cell stops respiration at rest
- (D) Food replaces inhaled oxygen

2. The growth of a pollen tube towards an ovule is an example of: [1]

- (A) chemotropism
- (B) phototropism
- (C) thigmonasty
- (D) negative geotropism

3. A chromosome is composed mainly of: [1]

- | | |
|-------------------------|----------------------|
| (A) only starch | (B) only lipids |
| (C) cellulose and water | (D) DNA and proteins |

4. The number of chromosome sets is restored after meiosis by: [1]

- (A) respiration
- (B) pollination alone
- (C) fertilisation
- (D) transpiration

5. The Vas deferens and the Oviduct are both targets for surgical contraception (Vasectomy and Tubectomy respectively). Analysing the process of reproduction, what common biological event is prevented by blocking both these structures? [1]

- (A) The production of gametes (sperm and egg).
- (B) The implantation of the fertilized egg into the uterine wall.
- (C) The successful meeting and fusion of the male and the female gametes.
- (D) The release of hormones - testosterone and estrogen.

6. 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

7. Which structure carries sperm from a testis towards the urethra? [1]

- (A) Oviduct
- (B) Ureter
- (C) Bile duct
- (D) Vas deferens

8. Assertion (A): Auxin can cause a shoot to bend towards light.

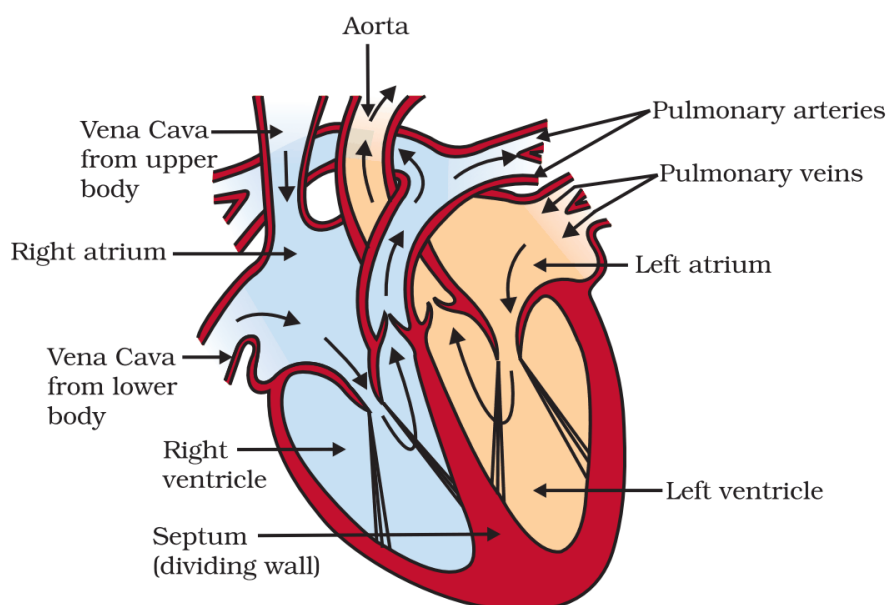
Reason (R): Cells on the shaded side can elongate more than cells on the illuminated side. [1]

9. Assertion (A): Variation may help a population survive environmental change.

Reason (R): Different individuals may differ in tolerance to the changed conditions. [1]

10. Attempt either A or B. [2]

A. In the heart diagram, explain the significance of the septum and the direction of flow through the pulmonary artery. (2)



OR

B. Why is the artery-to-lung route in the diagram an exception to the common statement that arteries carry oxygenated blood? [2]

11. Distinguish between producers and consumers in an ecosystem. [2]

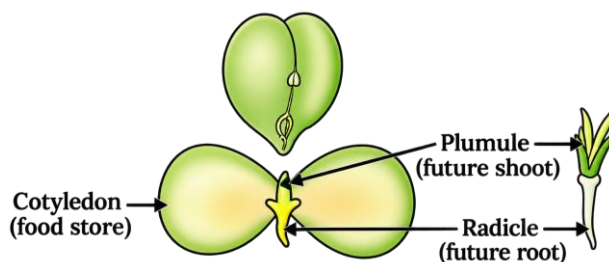
12. Attempt either A or B. [2]

A. Why does the release of an egg not guarantee pregnancy? [2]

OR

B. What is the biological significance of the thickened uterine lining? [2]

13. Use the seed diagram to explain the roles of stored food, radicle and plumule during germination. [3]



14. Describe how oxygen and carbon dioxide are transported in humans. [3]

15. A Tiwari Academy ecology group records grass → rabbit → fox, with 20,000 J at the grass level. (a) Name the primary consumer. (b) Estimate energy reaching rabbits. (c) Estimate energy reaching foxes and explain the decline. [4]

16. Describe three forebrain functions. [5]

Attempt either A or B for the remaining 2 marks.

A. Why need balance and breathing no continuous conscious planning? [2]

OR

B. How are the brain and spinal cord protected? [2]

SECTION B

(Chemistry | Questions 17–29 | 25 marks)

17. The substance commonly used to make plaster casts is: [1]

- (A) sodium hydroxide (B) plaster of Paris
(C) common salt (D) quicklime

18. The reaction $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$ is an example of: [1]

- (A) decomposition (B) combination
(C) neutralisation (D) double displacement

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. A mild base used to neutralise an ant sting is:

[1]

(A) sodium chloride

(B) ethanoic acid

(C) sodium hydrogencarbonate

(D) hydrochloric acid

21. Which pair is most likely to form an ionic compound?

[1]

(A) Carbon and oxygen

(B) Sodium and chlorine

(C) Carbon and hydrogen

(D) Hydrogen and oxygen

22. The general formula of an open-chain alkane is:

[1]

(A) C_nH_{2n+2}

(B) C_nH_{2n}

(C) C_nH_{2n-2}

(D) C_nH_n

23. A solution has pH 3. Adding a small amount of sodium hydroxide will initially:

[1]

(A) make its pH exactly 14 immediately

(B) decrease its pH

(C) remove all water

(D) increase its pH

24. Assertion (A): Distilled water conducts electricity as well as concentrated salt solution.

Reason (R): Salt solution contains many more mobile ions.

[1]

25. Attempt either A or B.

[2]

A. Why do glucose and ethanol solutions not behave as acids despite containing hydrogen?

(2)

OR

B. Give two uses of washing soda.

(2)

26. Explain why an aqueous solution of sodium chloride is neutral, sodium carbonate is basic and ammonium chloride is acidic.

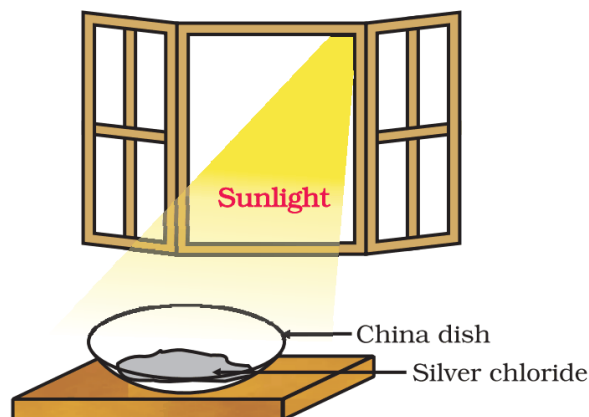
[3]

27. Attempt either A or B.

[3]

A. Silver chloride is exposed as shown. Predict its colour change, write the equation and identify the energy source.

(3)



OR

B. Why should a photographically sensitive silver salt be protected from light? Explain with the illustrated reaction and reaction class. [3]

28. An oil sample is treated with hydrogen over nickel and becomes a more saturated fat. (a) Name the reaction type. (b) State the role of nickel. [4]

Attempt either A or B for the remaining 2 marks.

A. Explain the bond change and how this distinguishes the original oil from a saturated hydrocarbon. (2)

OR

B. Explain why the catalyst is written over the reaction arrow rather than as a consumed main reactant. (2)

29. Explain a homologous series using the first three alcohols, including their formulae and common group. [5]

Why do chemical properties remain similar while physical properties change gradually? (2)

SECTION C

(Physics | Questions 30–39 | 25 marks)

30. A convex lens forms a real point-sized image at its focus when the object is: [1]

- | | |
|----------------------|------------------|
| (A) at infinity | (B) at the focus |
| (C) between F and 2F | (D) at 2F |

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): Covering half a lens removes half of the image.

Reason (R): Each uncovered part can form the whole image. [1]

33. State the near point and far point of a normal adult human eye. [2]

34. A 60 W lamp runs for 10 hours. Calculate energy in kWh and joules. [2]

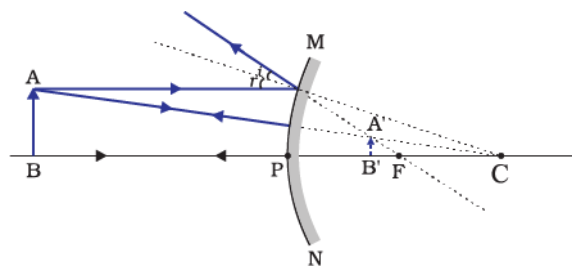
35. Explain why stars appear higher than their actual positions near the horizon. [3]

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 convex mirror shown has $f = +20$ cm and an object 30 cm in front. Find image position, magnification and nature.



OR

B. Explain three reasons a convex mirror's image in the diagram suits a rear-view application.

38. A school replaces ten 60 W lamps with ten 9 W lamps, used five hours daily. Find total power saved, daily energy saved and saving over 20 days. [5]

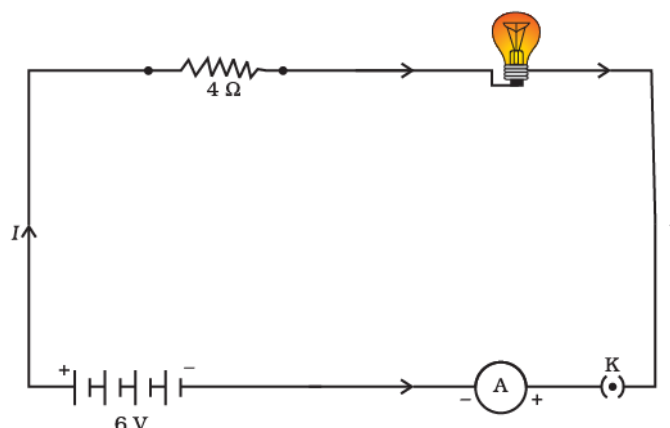
Attempt either A or B for the remaining 2 marks.

A. At ₹6 per unit, find the money saved and explain why power rating alone does not give the bill. (2)

OR

B. Find the original and replacement total currents at 240 V. (2)

39. The lamp in the illustrated 6 V circuit has resistance $20\ \Omega$ and is in series with $4\ \Omega$. (a) Find total current. (b) Find the lamp voltage. [4]



Attempt either A or B for the remaining 2 marks.

A. Find the lamp power and heat in the $4\ \Omega$ resistor in one minute. (2)

OR

B. If the $4\ \Omega$ resistor is bypassed, calculate the lamp's new current and explain the change. (2)