

TERM-I EXAMINATION (2026–2027)

SUBJECT – SCIENCE (086)

STD – X

Time: 03:00 Hours

M.M.: 80

General Instructions:

1. This question paper contains 39 questions. All questions are compulsory.
2. The question paper is divided into three sections: A, B and C.
3. Section A covers Biology, Section B covers Chemistry and Section C covers Physics.
4. Internal choice has been provided in selected questions.
5. Write answers in the respective sections and show all necessary steps in numerical questions.

SECTION – A (BIOLOGY)

Q.1 The breakdown of glucose to pyruvate during the first stage of respiration takes place in the:

- (a) Nucleus (b) Cytoplasm (c) Mitochondria (d) Chloroplast

Q.2 Which component of blood is mainly responsible for transporting oxygen?

- (a) Plasma (b) Platelets (c) Red blood cells (d) White blood cells

Q.3 The directional growth movement of a plant shoot towards light is called:

- (a) Geotropism (b) Phototropism (c) Hydrotropism (d) Chemotropism

Q.4 Which hormone promotes cell division in plants?

- (a) Auxin (b) Cytokinin (c) Abscissic acid (d) Ethylene

Q.5 The part of the human brain primarily associated with thinking, memory and voluntary actions is the:

- (a) Cerebellum (b) Medulla (c) Cerebrum (d) Spinal cord

Q.6 Assertion (A): The small intestine has numerous finger-like projections called villi.

Reason (R): Villi increase the surface area available for absorption of digested food.

- (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.

Q.7 What is the role of saliva in digestion? Name the enzyme present in saliva.

Q.8 What is a reflex action? Describe the path followed by a nerve impulse when a person accidentally touches a hot object.

SECTION – A (BIOLOGY) — CONTINUED

Q.9 Answer the following:

- (i) Name any two nitrogenous waste products removed from human blood by the kidneys.
- (ii) What is the capillary network formed inside the Bowman's capsule called?
- (iii) Write the pathway followed by urine from the kidney until it leaves the body.

Q.10 State one function each of the following plant hormones:

- (i) Auxins (ii) Cytokinins (iii) Absciscic acid.

Q.11 Explain the digestion of proteins in the small intestine. Name the enzymes involved.

OR

Explain how urine is formed in a nephron. Mention the three main processes involved.

Q.12 What are peristaltic movements? Explain their importance in the human digestive system.

OR

Name the regions of the brain where the following are located and state one function of each: (i) Cerebrum (ii) Medulla.

Q.13 Read the following passage and answer the questions that follow:

Plants coordinate their activities mainly through chemical substances called plant hormones. Tropic movements are directional growth responses to stimuli such as light, gravity, water and chemicals. In a young shoot illuminated from one side, auxin redistributes and promotes greater cell elongation on the shaded side, causing the shoot to bend towards light.

- (a) Name the movement shown by the shoot. [1]
- (b) Explain how auxin causes the shoot to bend towards the light. [2]
- (c) Give one example of a plant movement other than phototropism. [1]
- (d) Name the hormone associated with inhibition of growth and promotion of dormancy. [1]

SECTION – B (CHEMISTRY)

Q.14 Which of the following is an endothermic process?

- (a) Condensation of steam (b) Sublimation of camphor (c) Respiration (d) Freezing of water

Q.15 What happens when dilute hydrochloric acid is added to zinc granules?

- (a) Hydrogen gas is evolved (b) Chlorine gas is evolved (c) No reaction occurs (d) Oxygen gas is evolved

Q.16 An aqueous solution turns blue litmus red. Which substance would neutralise it most effectively?

- (a) Sodium hydroxide (b) Lime water (c) Hydrochloric acid (d) Ammonium chloride

Q.17 Which of the following does not contain water of crystallisation?

- (a) Washing soda (b) Gypsum (c) Plaster of Paris (d) Baking soda

SECTION – B (CHEMISTRY) — CONTINUED

Q.18 The reaction $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$ is an example of:

- (a) Combination reaction (b) Decomposition reaction (c) Displacement reaction (d) Double displacement reaction

Q.19 Assertion (A): Silver chloride turns grey when exposed to sunlight.

Reason (R): Silver chloride decomposes into silver and chlorine in the presence of light.

- (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.

Q.20 Answer the following:

- (i) Write the balanced chemical equation for the thermal decomposition of calcium carbonate.
(ii) Name the gas evolved.
(iii) State whether the reaction is endothermic or exothermic.

OR

A compound X is used in baking and in some fire extinguishers.

- (i) Identify X.
(ii) Write its chemical formula.
(iii) Write the chemical equation for its decomposition on heating.

Q.21 (i) What is a neutralisation reaction? Give one balanced chemical equation.

(ii) Define pH. How does the pH change when milk turns into curd?

Q.22 Identify the type of chemical reaction in each case:

- (i) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
(ii) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$
(iii) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

Q.23 (i) What is Plaster of Paris? Give its chemical name and formula.

(ii) Write the balanced equation for its preparation from gypsum.

OR

- (i) State two important uses of baking soda.
(ii) Write the formula of washing soda and mention two of its uses.

Q.24 (i) Differentiate between combination and decomposition reactions with one balanced equation of each.

(ii) Why is respiration considered an exothermic reaction? Explain.

OR

Explain the chlor-alkali process under the following heads: (i) chemical reaction involved, (ii) products formed, (iii) one use of sodium hydroxide.

SECTION – B (CHEMISTRY) — CONTINUED

Q.25 Read the following passage and answer the questions that follow:

Chemical indicators are substances that show characteristic changes in acidic and basic media. Litmus is obtained from lichens. A student tests three unknown liquids A, B and C. Liquid A turns blue litmus red. Liquid B turns phenolphthalein pink. Liquid C produces no change with either red or blue litmus.

- (a) Identify the nature of A, B and C. [2]
- (b) What will happen when liquid A reacts with zinc? Name the gas evolved and give its test. [2]
- (c) Name one natural olfactory indicator and state its behaviour in a basic medium. [1]

OR

What is corrosion? State the formula of rust, name two factors that promote rusting and suggest two methods of preventing rusting.

SECTION – C (PHYSICS)

Q.26 A convex mirror has a radius of curvature of 2.4 m. An object is placed 4.8 m in front of it. The image formed is approximately at:

- (a) 0.48 m behind the mirror
- (b) 0.80 m behind the mirror
- (c) 1.20 m behind the mirror
- (d) 2.40 m behind the mirror

Q.27 A beam of light enters a transparent block through two small holes and emerges through two corresponding holes without changing its direction. Which object could be inside the block?

- (a) A rectangular glass slab
- (b) A prism
- (c) A concave lens
- (d) A convex lens

Q.28 The focal length of a spherical mirror whose radius of curvature is 40 cm is:

- (a) 10 cm
- (b) 20 cm
- (c) 40 cm
- (d) 80 cm

Q.29 The sky appears blue mainly because:

- (a) Blue light has the longest wavelength.
- (b) Blue light is scattered more strongly by the atmosphere than most longer-wavelength visible light.
- (c) The atmosphere produces blue light.
- (d) All colours are scattered equally.

Q.30 When the ciliary muscles contract, the eye lens generally becomes:

- (a) thinner and less curved
- (b) thicker and more curved
- (c) completely flat
- (d) opaque

Q.31 The splitting of white light into its constituent colours is called:

- (a) Reflection
- (b) Refraction
- (c) Dispersion
- (d) Scattering

SECTION – C (PHYSICS) — CONTINUED

Q.32 Assertion (A): A ray passing through the optical centre of a thin lens emerges without appreciable deviation.

Reason (R): The optical centre lies at the point where the principal axis passes through the lens.

- (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.

Q.33 Assertion (A): Stars appear to twinkle whereas planets generally do not.

Reason (R): Stars behave approximately as point sources for the observer, while planets have appreciable angular size.

- (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.

Q.34 A concave mirror forms a real image three times the size of an object placed 12 cm in front of it. Find the position of the image.

OR

Define absolute refractive index. If the refractive index of a medium is 1.5, what does this value indicate about the speed of light in that medium compared with vacuum?

Q.35 Why does the Sun often appear reddish near sunrise and sunset? Explain the phenomenon responsible.

Q.36 Draw neat labelled ray diagrams for a convex lens when the object is placed:

- (a) beyond $2F$
- (b) between F and the optical centre O .

Q.37 An object 4 cm high is placed 30 cm in front of a converging lens of focal length 15 cm.

- (i) Calculate the position of the image.
- (ii) Find the height of the image.
- (iii) State the nature of the image.

OR

What is myopia? State two causes, name the lens used for correction and explain the correction with a ray diagram.

Q.38 (a) State Snell's law of refraction.

- (b) A convex lens has a focal length of 12 cm. An object is placed at a distance of 18 cm from the lens. Find the position and magnification of the image.
- (c) Draw a neat ray diagram supporting your answer.

OR

- (a) What is the power of accommodation of the eye?
- (b) Why does the power of accommodation decrease with age?
- (c) Explain the working of the human eye with a neat labelled diagram.

SECTION – C (PHYSICS) — CONTINUED

Q.39 Read the following passage and answer the questions that follow:

When a narrow beam of white light passes through a glass prism, it spreads into a band of colours. The different colours deviate by different amounts because the refractive index of glass depends on wavelength. The resulting band is called a spectrum.

- (a) Which colour deviates the most and which deviates the least through a glass prism? [1]
- (b) Explain how a rainbow is formed after a rain shower. Name the three optical phenomena involved. [2]
- (c) What happens if a second identical prism is placed inverted after the first prism so that the dispersed rays pass through it? [2]

End of Question Paper

www.questionbodh.com