

SCIENCE (Subject Code 086)**Class X (2026-27) · PRACTICE QUESTION PAPER — SET 1****Time Allowed:** 3 Hours**Maximum Marks:** 80**General Instructions:**

- (a) This question paper has **39 questions** in **3 sections**. Section A is Biology, Section B is Chemistry and Section C is Physics.
- (b) All questions are compulsory. An **internal choice** is given in some questions; attempt only one of the choices.
- (c) Marks for every question are shown against it.
- (d) Question numbers 1 to 9, 17 to 24 and 30 to 32 are one-mark objective type questions, including assertion-reason questions.
- (e) Wherever a numerical answer is asked for, show the formula, the substitution and the unit.
- (f) Use of a calculator is **not** allowed.

SECTION A — BIOLOGY*(Unit II: World of Living, and Unit V: Natural Resources) — 30 marks*

- 1.** A student collects four samples of digestive fluid from four different parts of the human digestive system. The sample that will turn blue litmus paper red most strongly was collected from the: **[1]**
 - (A) mouth (oral cavity)
 - (B) stomach
 - (C) duodenum
 - (D) ileum
- 2.** A sprinter's leg muscles begin to ache after running a 400 m race at full speed. The substance that has built up in those muscle cells is: **[1]**
 - (A) ethanol and carbon dioxide
 - (B) lactic acid
 - (C) pyruvate and oxygen
 - (D) glucose
- 3.** Which one of the following blood vessels carries oxygen-rich blood? **[1]**
 - (A) pulmonary artery
 - (B) pulmonary vein
 - (C) superior vena cava
 - (D) renal vein
- 4.** In a nephron, blood is filtered under pressure in the: **[1]**
 - (A) loop of Henle
 - (B) glomerulus
 - (C) collecting duct
 - (D) urinary bladder
- 5. Assertion (A):** A person pulls the hand away from a hot pan before actually feeling the pain. **[1]**
Reason (R): In a reflex action the impulse travels from the sensory neuron to a relay neuron in the spinal cord and then to the motor neuron, without waiting for a decision from the brain.
 - (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.

6. A potted plant kept in a room bends towards an open window. This happens because auxin: **[1]**
- collects on the lit side and makes those cells longer
 - collects on the shaded side and makes those cells longer
 - collects on the lit side and makes those cells shorter
 - is completely destroyed on the shaded side
7. Which of the following contraceptive methods works purely as a mechanical barrier? **[1]**
- oral pills
 - Copper-T
 - condom
 - vasectomy
8. In the food chain grass → grasshopper → frog → snake, 10 000 J of energy is available at the level of the grass. Using the ten per cent law, the energy available to the snake is: **[1]**
- 1000 J
 - 100 J
 - 10 J
 - 1 J
9. **Assertion (A):** Polythene carry bags remain in the soil almost unchanged for decades. **[1]**
Reason (R): Polythene is a non-biodegradable substance, so it is not broken down by the enzymes of decomposer micro-organisms.
- Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.
10. Aquatic animals such as fish breathe much faster than land animals of a similar size. Give two reasons. **[2]**
11. State two differences between the nervous system and the hormonal (endocrine) system in the way each carries information in the human body. **[2]**
- OR**
- Name the plant hormone that promotes cell elongation and the one that inhibits growth, and state one function of each.
12. Two farmers grow the same crop. Farmer A sows, year after year, tubers saved from his own previous harvest. Farmer B sows seed obtained by crossing two different varieties. A new fungal disease then spreads through the district. In whose field are some plants more likely to survive? Give a reason. **[2]**
13. (a) Name the process by which plants lose water as vapour through the stomata. **[3]**
 (b) Explain how this process helps water to move upwards in a tall tree.
 (c) State one condition in which the rate of this process falls.
- OR**
- Name the pigment that captures light energy in a leaf.
 - Write the balanced chemical equation for photosynthesis.
 - State what happens to the glucose that the plant does not use immediately.
14. (a) What is meant by biological magnification? **[3]**
 (b) Why are organisms at the highest trophic level worst affected by it?
 (c) Suggest one practical step a school can take to reduce non-biodegradable waste.
15. Read the following and answer the questions that follow. **[4]**

*Meera set up two identical potted plants, P and Q. She covered the soil of both pots with a plastic sheet so that no water could evaporate from the soil. She then smeared petroleum jelly on the **lower** surface of every leaf of plant P and on the **upper** surface of every leaf of plant Q. Both plants were enclosed in transparent plastic bags and kept side by side in the same well-lit place for four hours. At*

the end, far more water droplets had collected inside the bag of plant Q than inside the bag of plant P.

- (a) Name the process responsible for the droplets. **(1)**
- (b) Explain why more droplets appeared in the bag of plant Q. **(1)**
- (c) Why was the soil covered with a plastic sheet? **(1)**
- (d) A third plant R had jelly smeared on both surfaces of its leaves and was treated in the same way. State what would be observed, with a reason. **(1)**

16. A. (i) List three features of the alveoli that make them well suited for the exchange of gases.

(3) [5]

- (ii) Explain why the wall of the left ventricle of the human heart is thicker than that of the right ventricle. **(2)**

OR

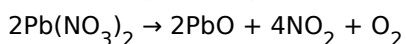
B. (i) Describe how food is moved along and acted upon in the human alimentary canal from the mouth to the small intestine, naming the secretions involved. **(3)**

- (ii) State the role of bile in the digestion of fats. **(2)**

SECTION B — CHEMISTRY

(Unit 1: Chemical Substances — Nature and Behaviour) — 25 marks

17. On strong heating, lead nitrate gives lead oxide, nitrogen dioxide and oxygen: **[1]**



This reaction is best classified as:

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

18. When the equation $__\text{Al} + __\text{H}_2\text{SO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + __\text{H}_2$ is balanced using the smallest whole numbers, the coefficients of Al, H_2SO_4 and H_2 respectively are: **[1]**

- (A) 2, 3, 3
- (B) 2, 3, 2
- (C) 1, 3, 3
- (D) 3, 2, 3

19. Four solutions have pH values 2, 6, 8 and 12. Adding a pinch of sodium carbonate will produce the most vigorous fizzing in the solution of pH: **[1]**

- (A) 2
- (B) 6
- (C) 8
- (D) 12

20. A white crystalline solid X is used in baking. On heating, X gives a solid residue Y, water vapour, and a gas that turns lime water milky. X is: **[1]**

- (A) washing soda
- (B) baking soda
- (C) bleaching powder
- (D) plaster of Paris

21. Assertion (A): A clean piece of copper placed in zinc sulphate solution shows no visible change. **[1]**

Reason (R): Copper lies below zinc in the reactivity series and cannot displace zinc from its salt solution.

- (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.

22. Ionic compounds such as sodium chloride: **[1]**

- (A) conduct electricity in the solid state
- (B) have very low melting points
- (C) conduct electricity when molten or dissolved in water
- (D) dissolve readily in petrol

23. Two successive members of a homologous series differ by: **[1]**

- (A) a $-\text{CH}_3$ group and 14 u
- (B) a $-\text{CH}_2-$ group and 14 u
- (C) a $-\text{CH}_2-$ group and 12 u
- (D) a $-\text{C}_2\text{H}_4-$ group and 28 u

24. Soap is not effective for washing clothes in hard water because: **[1]**

- (A) soap does not dissolve in hard water at all
- (B) calcium and magnesium ions in hard water form an insoluble scum with soap
- (C) hard water has a very low pH
- (D) soap breaks down into fatty acid and glycerol in hard water

25. Write a balanced chemical equation with state symbols for the reaction of dilute sulphuric acid with zinc granules, and name the gas evolved. **[2]**

26. (a) Name the process used to convert a sulphide ore into its oxide before reduction. **[3]**

- (b) Write the balanced equation for the reduction of zinc oxide by carbon.
- (c) Why is the metal obtained by such reduction usually refined afterwards?

OR

- (a) What is corrosion?
- (b) Name the metal that develops a green coating on long exposure to moist air, and name the coating.
- (c) State one method of preventing the rusting of an iron gate.

27. (a) Name the compound formed when chlorine is passed over dry slaked lime. **[3]**

- (b) Write the balanced chemical equation for this reaction.
- (c) State one use of the product.

28. Read the following and answer the questions that follow. **[4]**

Ravi tested five household liquids with a universal indicator and recorded the pH of each:

Lemon juice 2 | Milk 6 | Distilled water 7 | Baking-soda solution 9 | Oven cleaner 13

- (a) Which liquid has the highest concentration of hydrogen ions? **(1)**
- (b) Tooth enamel begins to corrode below pH 5.5. Using the table, explain why rinsing the mouth with the baking-soda solution after a lemon drink helps. **(1)**
- (c) A farmer finds that his field soil has pH 5. Name a substance he could add, and state why. **(1)**
- (d) Arrange milk, distilled water and oven cleaner in increasing order of hydroxide ion concentration. **(1)**

29. A. (i) Write the IUPAC name of the second member of the alkane series and describe its electron dot structure. **(2) [5]**

- (ii) Give two reasons why carbon forms a very large number of compounds. **(2)**
- (iii) Write the balanced equation for the complete combustion of ethanol in air. **(1)**

OR

- B. (i) Write the balanced equation for the reaction of ethanoic acid with sodium hydrogencarbonate and name the gas released. **(2)**
(ii) What is esterification? Write the equation for the formation of ethyl ethanoate. **(2)**
(iii) State one test that distinguishes ethanol from ethanoic acid. **(1)**

SECTION C — PHYSICS

(Unit III: Natural Phenomena, and Unit IV: Effects of Current) — 25 marks

30. An object is placed between the pole and the principal focus of a concave mirror. The image formed is: **[1]**

- (A) real, inverted and diminished
- (B) real, inverted and magnified
- (C) virtual, erect and magnified
- (D) virtual, erect and diminished

31. Assertion (A): The sky appears blue to an observer standing on the surface of the Earth. **[1]**

Reason (R): The molecules of air scatter light of shorter wavelengths much more strongly than light of longer wavelengths.

- (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.

32. A uniform metal wire has resistance R . It is cut into three equal pieces and the three pieces are joined in parallel. The resistance of the combination is: **[1]**

- (A) $R/3$
- (B) $R/9$
- (C) $3R$
- (D) $9R$

33. A $6\ \Omega$ and a $3\ \Omega$ resistor are joined in parallel, and this combination is joined in series with a $4\ \Omega$ resistor across a 12 V battery of negligible internal resistance. Calculate (a) the total resistance of the circuit and (b) the current drawn from the battery. **[2]**

34. An electric iron rated 1500 W , 230 V is used for 45 minutes each day. Calculate the electrical energy it consumes in 30 days, in kWh. **[2]**

35. An object 4 cm high is placed 15 cm in front of a concave mirror of focal length 10 cm . Find the position, nature and size of the image. **[3]**

OR

An object is placed 30 cm from a convex mirror of focal length 20 cm . Find the position and nature of the image and the magnification.

36. (a) Name the defect of vision in which a person sees distant objects clearly but cannot see nearby objects clearly. **[3]**

- (b) State the type of lens used to correct it and explain why.
- (c) A person needs a corrective lens of power $+2.5\text{ D}$. Find its focal length in cm.

37. A $4\ \Omega$ and a $12\ \Omega$ resistor are connected in parallel across a 24 V supply. Calculate (a) the current through each resistor, (b) the total current drawn and (c) the total power dissipated. **[3]**

OR

Three resistors of $2\ \Omega$, $3\ \Omega$ and $6\ \Omega$ are connected in parallel across a 6 V battery. Find (a) the equivalent resistance, (b) the total current and (c) the current through the $3\ \Omega$ resistor.

38. Read the following and answer the questions that follow. **[4]**

Tanvi mounts a convex lens of focal length 20 cm on an optical bench. She places a 5 cm tall candle on the principal axis, 30 cm from the optical centre, and moves a white screen on the other side of

the lens until a sharp image appears on it. She then repeats the experiment with the candle placed 15 cm from the lens.

- (a) Using the lens formula, find where the screen must be placed in the first case. **(1)**
- (b) Find the height and the nature of the image in the first case. **(1)**
- (c) In the second case no image can be caught on the screen. Explain why. **(1)**
- (d) Where is the image in the second case, and what are its nature and size? **(1)**

39. A. A room circuit is connected to a 220 V supply and protected by a 5 A fuse. An electric kettle of resistance $40\ \Omega$ and a bulb of resistance $440\ \Omega$ are connected in parallel across the supply. **[5]**

- (i) Calculate the current drawn by each appliance. **(2)**
- (ii) Calculate the total current drawn from the supply. **(1)**
- (iii) State, with a calculation, whether the 5 A fuse will blow. **(1)**
- (iv) Give one reason why household appliances are connected in parallel and not in series. **(1)**

OR

B. (i) State Joule's law of heating. **(1)**

(ii) Two resistors of $5\ \Omega$ and $10\ \Omega$ are connected in series across a 30 V battery for 2 minutes. Calculate the heat produced in each resistor. **(3)**

(iii) In which resistor is more heat produced, and why? **(1)**

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