

PRACTICE PAPER 01 (2026-27)
CHAPTER 01: CHEMICAL REACTIONS AND EQUATIONS

SUBJECT: SCIENCE

MAX. MARKS : 40

CLASS : X

DURATION : 1½ hrs

General Instructions:

- (i) All questions are compulsory.
- (ii) This question paper contains **20** questions divided into five Sections A, B, C, D and E.
- (iii) **Section A** comprises 10 MCQs and Assertion-Reason questions of **1 mark** each. **Section B** comprises 4 Very Short Answer questions of **2 marks** each. **Section C** comprises 3 Short Answer questions of **3 marks** each. **Section D** comprises 1 Long Answer question of **5 marks**. **Section E** comprises 2 Case Study Based questions of **4 marks** each.
- (iv) There is no overall choice. Internal choice is provided in Section E.
- (v) Use of calculators is not permitted.

SECTION - A

Questions 1 to 10 carry 1 mark each.

1. A student mixes lead nitrate solution with potassium iodide solution in a test tube. Which of the following correctly describes the precipitate formed?
(a) White, PbI_2 (b) Yellow, PbI_2
(c) Yellow, KNO_3 (d) Black, $\text{Pb}(\text{NO}_3)_2$
2. Aluminium reacts with oxygen to form aluminium oxide. Which of the following is the correctly balanced equation?
(a) $2\text{Al} + 3\text{O}_2 \rightarrow \text{Al}_2\text{O}_3$ (b) $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$
(c) $4\text{Al} + \text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$ (d) $2\text{Al} + \text{O}_2 \rightarrow \text{Al}_2\text{O}_3$
3. When ferrous sulphate crystals are heated strongly in a dry boiling tube, the colour of the crystals changes
(a) from blue to white (b) from green to reddish-brown
(c) from white to grey (d) from white to yellow
4. Which one of the following is an endothermic process?
(a) Respiration (b) Burning of natural gas
(c) Decomposition of calcium carbonate on heating (d) Decomposition of vegetable matter into compost
5. In the reaction $\text{CuO} + \text{H}_2 \xrightarrow{\text{Heat}} \text{Cu} + \text{H}_2\text{O}$, the substance that gets oxidised is
(a) CuO (b) H_2
(c) Cu (d) H_2O
6. Manufacturers fill packets of potato chips with a gas to keep the chips fresh. The gas used is
(a) Oxygen (b) Chlorine
(c) Nitrogen (d) Hydrogen
7. During the electrolysis of acidified water, the ratio of volumes of hydrogen and oxygen collected is
(a) 1 : 2 (b) 2 : 1
(c) 1 : 1 (d) 4 : 1

8. An iron nail is kept dipped in copper sulphate solution for about 20 minutes. Which of the following observations are correct?
- (i) The iron nail becomes brownish in colour.
 - (ii) The blue colour of the solution fades.
 - (iii) The iron nail becomes shiny silver.
 - (iv) The solution becomes a deeper blue.

- (a) (i) and (ii) (b) (iii) and (iv)
(c) (i) and (iv) (d) (ii) and (iii)

In the following questions 9 and 10, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:

- (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.

9. **Assertion (A):** White silver chloride kept in a china dish turns grey when left in sunlight.

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

10. **Assertion (A):** Burning of a magnesium ribbon in air is a combination reaction.

Reason (R): Magnesium gets reduced to magnesium oxide in this reaction.

SECTION - B

Questions 11 to 14 carry 2 marks each.

11. A china dish containing about 1 g of copper powder is heated. The brown surface of the powder turns black.
- (a) Name the black substance formed and write the balanced equation for its formation.
 - (b) How can the black coating be turned brown again? Write the equation for this change.
12. Write balanced chemical equations with state symbols for the following:
- (a) Solid potassium chlorate on heating decomposes to give solid potassium chloride and oxygen gas.
 - (b) Lead nitrate solution reacts with potassium iodide solution to form a precipitate of lead iodide and potassium nitrate solution.
13. A small amount of a white solid 'X' is taken in a beaker and water is added slowly. The beaker becomes very hot and a substance used for whitewashing walls is formed.
- (a) Identify 'X' and the product formed, and write the balanced equation.
 - (b) Classify this reaction in two different ways.
14. Packets of potato chips look 'puffed up' when bought from a shop.
- (a) Which gas is filled in such packets and why?
 - (b) Name the process this prevents, and suggest one way of slowing it down for oily food kept at home.

SECTION - C

Questions 15 to 17 carry 3 marks each.

15. About 2 g of lead nitrate powder is taken in a boiling tube and heated over a flame.
- (a) What would you observe? Name the gas responsible for the observation.
 - (b) Write the balanced chemical equation for the reaction.
 - (c) Identify the type of reaction. Is it exothermic or endothermic? Give a reason.
16. Identify the substance oxidised and the substance reduced in each of the following reactions:
- (a) $\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$
 - (b) $2\text{H}_2\text{S} + \text{SO}_2 \rightarrow 3\text{S} + 2\text{H}_2\text{O}$
 - (c) $\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$

17. (a) Differentiate between a displacement reaction and a double displacement reaction. Write one balanced equation for each.
(b) A copper strip is placed in zinc sulphate solution. No change is observed even after several hours. Explain why.

SECTION - D

Question 18 carries 5 marks.

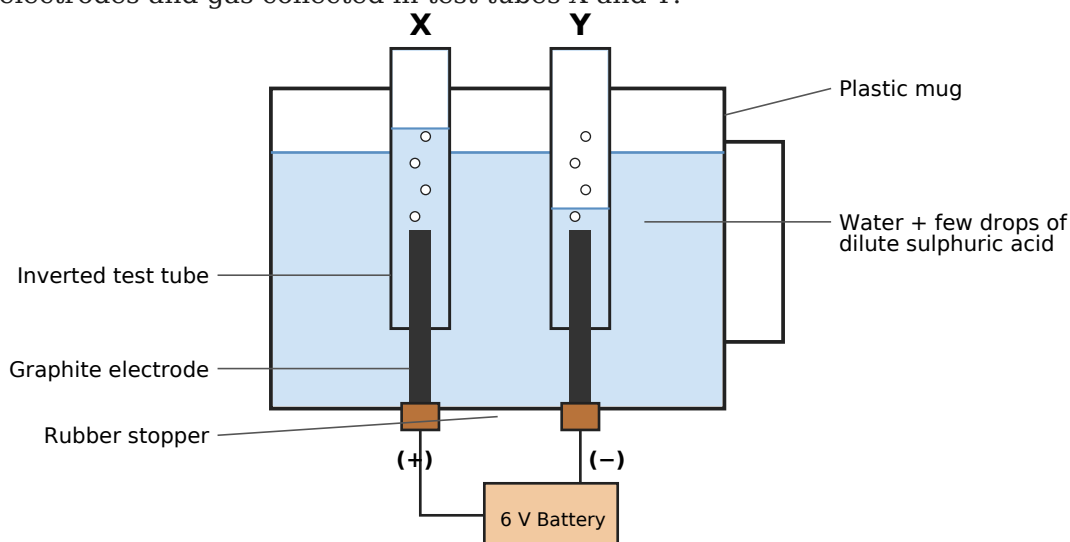
18. (a) What is a skeletal chemical equation? Why must a skeletal equation be balanced?
Balance: $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$.
(b) Balance the following equations, showing the steps:
(i) $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$
(ii) $\text{Fe}_2\text{O}_3 + \text{CO} \rightarrow \text{Fe} + \text{CO}_2$
(iii) $\text{H}_2\text{S} + \text{O}_2 \rightarrow \text{H}_2\text{O} + \text{SO}_2$

SECTION - E (Case Study Based Questions)

Questions 19 and 20 carry 4 marks each.

19. Read the passage and answer the questions that follow.

A student set up the apparatus shown below. Two graphite electrodes fitted through rubber stoppers at the base of a plastic mug were connected to a 6 V battery. The mug was filled with water containing a few drops of dilute sulphuric acid, and two test tubes filled with the same water were inverted over the electrodes. After the current was switched on, bubbles formed at both electrodes and gas collected in test tubes X and Y.



- (a) Name the gas collected in test tube Y. Why is its volume double that in test tube X? **(1)**
(b) Why were a few drops of dilute sulphuric acid added to the water? **(1)**
(c) Write the balanced chemical equation for the reaction and name the type of reaction. How would you test the gas in each test tube? **(2)**

OR

- (c) Decomposition reactions need energy in some form. Write one balanced equation each for a decomposition reaction caused by (i) heat and (ii) light. **(2)**

20. Four beakers A, B, C and D were taken. 25 mL of water was put in A, B and C, and 25 mL of copper sulphate solution in D. After recording the temperature of each liquid, two spatulas of a different substance were added to each beaker and stirred. The final temperatures were recorded as shown:

Beaker	Liquid taken (25 mL)	Substance added	Initial temp. (°C)	Final temp. (°C)
A	Water	Potassium sulphate	26.0	26.0
B	Water	Ammonium nitrate	26.0	19.5
C	Water	Anhydrous copper sulphate	26.0	32.5
D	Copper sulphate solution	Fine iron filings	26.0	28.0

- (a) In which beaker is heat absorbed? How do you conclude this from the data? **(1)**
 (b) Name the beakers in which heat is released. **(1)**
 (c) For beaker D, write the balanced chemical equation, name the type of reaction, and state the colour change you would observe in the solution. **(2)**

OR

- (c) Explain why the temperature in beaker A did not change. Give one example of an endothermic reaction from this chapter with its balanced equation. **(2)**