SECOND TERM SUMMATIVE ASSESSMENT 2026-27

ANSWER KEY / SCORING INDICATORS

CHEMISTRY

Std: X SET 1 **Score: 40**

For teachers **Time: 1½ Hours**

Note to the teacher: Accept any correct alternative answer. Give the split scores shown in brackets.

Questions 1 to 4 **(1 score each)**

1. B. Chlorine (1)

2. B. Statement 1 is correct but statement 2 is wrong (one mole of O_2 contains 6.022×10^{23} molecules, i.e. $2 \times 6.022 \times 10^{23}$ atoms). (1)

3. B. a-(iii), b-(i), c-(ii) (1)

4. A. Both A and R are correct and R is the correct explanation of A. (1)

Questions 5 to 11 **(2 scores each)**

5. a) 2-Methylpropane (1)

b) $CH_3–CH_2–CHO$ (1)

6. a) 10 (1)

b) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^6\ 4s^2$ (1)

7. (A) a) p block (1)

b) Period 4, Group 17 (1)

(B) Any two: they show variable oxidation states; they form coloured compounds; most are metals with high melting points; many act as catalysts; similarity in properties along a period. (2)

8. a) $P_1V_1 = P_2V_2 \Rightarrow 1 \times 6 = 3 \times V_2$, $V_2 = 2$ L (1)

b) Boyle's law: at constant temperature, the volume of a fixed mass of gas is inversely proportional to its pressure. (1)

9. a) The iron spoon (1)

b) A solution of a silver salt, e.g. silver nitrate (or potassium argentocyanide). (1)

10. a) Ores are minerals from which a metal can be extracted easily and profitably; not every mineral is suitable for this. (1)

b) Bauxite (1)

11. (A) a) 36/18 = 2 moles (1)

b) $2 \times 6.022 \times 10^{23} = 1.2044 \times 10^{24}$ molecules (1)

(B) a) 40 + 12 + 3 × 16 = 100 g (1)

b) 0.5 × 100 = 50 g (1)

Questions 12 to 17 **(3 scores each)**

12. (A) a) Zinc (1)

b) From zinc (anode) to copper (cathode) (1)

www.educationobserver.com

c) $Cu^{2+} + 2e^- \rightarrow Cu$ (1)

(B) a) $Cu^{2+} + 2e^- \rightarrow Cu$ (1)

b) $Cu \rightarrow Cu^{2+} + 2e^-$ (1)

c) Electrorefining of copper (also electroplating). (1)

13. a) $V_1/T_1 = V_2/T_2$; $T_1 = 300$ K, $T_2 = 400$ K; $V_2 = 300 \times 400/300 = 400$ cm^3 (2)

b) Charles's law: at constant pressure, the volume of a fixed mass of gas is directly proportional to its absolute temperature. (1)

14. a) Cr: $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5\ 4s^1$; Cu: $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^1$ (2)

b) Half-filled (d^5) and completely filled (d^{10}) subshells are more stable. (1)

15. a) 4.4/44 = 0.1 mole (1)

b) $0.1 \times 22.4 = 2.24$ L (1)

c) $0.1 \times 6.022 \times 10^{23} = 6.022 \times 10^{22}$ molecules (1)

16. a) Dissolving the ore in a suitable solvent (chemical) in which the impurities do not dissolve, and separating it. (1)

b) Sodium hydroxide (NaOH) solution (1)

c) Sulphide ore particles are wetted by the oil and rise with the froth, while the gangue is wetted by water and settles down. (1)

17. (A) a) $CH_3–CH_3$ (ethane); addition reaction (1)

b) CH_3Cl (chloromethane); substitution reaction (1)

c) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ (1)

(B) a) Chlorine (1)

b) Hydrogen (1)

c) Sodium hydroxide (1)

Question 18 **(4 scores)**

18. (A) a) 3 mol H_2 gives 2 mol NH_3, so 6 mol gives 4 mol NH_3. (1)

b) 34 g NH_3 = 2 mol; needs 1 mol N_2 = 28 g (1)

c) 2 mol NH_3 needs 3 mol H_2 = $3 \times 22.4 = 67.2$ L (1)

d) $2 \times 6.022 \times 10^{23} = 1.2044 \times 10^{24}$ molecules (1)

(B) a) S (1)

b) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2$ (1)

c) PQ (ionic compound, like NaCl) (1)

d) Period 4, Group 8 (1)

www.educationobserver.com