

Summative Assessment – Term II 2025-26
Model Question Paper 2 – CHEMISTRY
Class : X Score : 40 Time : 1½ Hours

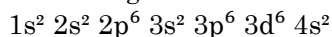
1-mark questions (4 × 1 = 4)

1. p
2. A. (a)–(ii) (b)–(i) (c)–(iii)
3. Pure copper
4. A. Both correct, II explains I

2-mark questions (7 × 2 = 14)

5. a) $1s^2 2s^2 2p^6 3s^2 3p^5$ b) Group 17, Period 3

OR Configuration:



Exception: Actual – $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$

Reason: Half-filled d-subshell ($3d^5$) is more stable

6. 11.2 L at STP = 0.5 mole → Molar mass = $16 / 0.5 = 32 \text{ g mol}^{-1}$ Gas = Oxygen (O_2)
 OR T = 300 K, P = 2 atm, V = 5 L At STP: P = 1 atm, T = 273 K $V_2 = (2 \times 5 \times 273) / (1 \times 300) = 9.1 \text{ L}$
- 7.

Electrolyte	Product at Cathode	Product at Anode
Aqueous $CuSO_4$ (Cu electrodes)	Copper	Oxygen
Acidified water	Hydrogen	Oxygen

9. OR Graphite is inert, does not react with molten alumina or oxygen produced at anode. Metal would react and contaminate aluminium.
10. A → Reduction / Smelting B → Leaching / Bayer's process C → Magnetic separation (for haematite) OR a) Homogeneous mixture of two or more metals / metal + non-metal. Example: Brass (Cu + Zn) b) High strength-to-weight ratio / corrosion resistant
11. Any two: Painting, oiling/greasing, electroplating, alloying, anodising, tin plating, enamel coating

3-mark questions (6 × 3 = 18)

12. a) N shell b) 16 orbitals ($n^2 = 16$) c) Subshells: 4s (2e), 4p (6e), 4d (10e), 4f (14e) → Total 32 electrons

OR a) 4s b) 1 electron c) s-block

13. a) $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
 b) Volume of $\text{NH}_3 = 2 \times 5.6 \text{ L} = 11.2 \text{ L}$
 c) Gay-Lussac's law of combining volumes OR a) $16 \text{ g O}_2 = 0.5 \text{ mole}$ b) $0.5 \times 6.022 \times 10^{23} = 3.011 \times 10^{23} \text{ molecules}$ c) 11.2 L
14. a) Sodium (Na) or Potassium (K)
 b) Magnesium (Mg) – more reactive than iron, acts as sacrificial anode
 c) No – Copper is below zinc in reactivity series, less reactive
15. a) Hydrated ferric oxide $\rightarrow \text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
 b) Coating aluminium with a thick layer of Al_2O_3 by electrolysis
 c) Tin reacts with food acids $\rightarrow$ toxic compounds formed
16. a) Molten alumina (Al_2O_3) dissolved in cryolite (Na_3AlF_6)
 b) Cathode: $\text{Al}^{3+} + 3\text{e}^- \rightarrow \text{Al}$ Anode: $2\text{O}^{2-} \rightarrow \text{O}_2 + 4\text{e}^-$
 c) To lower the melting point of alumina / increase conductivity
17. a) Sulphide ores (e.g., zinc blende, galena)
 b) Collectors: Pine oil / xanthates; Frothers: Sodium ethyl xanthate c) Collectors adsorb on ore particles making them water-repellent (hydrophobic)
- 4-mark question ($1 \times 4 = 4$)
18. (A) Any FOUR a) Cu^+ : $1\text{s}^2 2\text{s}^2 2\text{p}^6 3\text{s}^2 3\text{p}^6 3\text{d}^{10}$ – fully filled d-subshell is more stable
 b) $8.4 \text{ L} = 0.375 \text{ mole} \rightarrow M = 14 / 0.375 = 37.33 \approx 38 \text{ g/mol}$ (approx. HCl or Ar)
 c) CO reduces Fe_2O_3 to Fe and itself gets oxidised to CO_2 / strong reducing agent at high temperature
 d) Molten waste material; CaSiO_3 formed by reaction of SiO_2 impurity with CaO (limestone)
 e) Utensils, surgical instruments, automobile parts, etc.
 f) Good conductor of electricity and lightweight
- OR (B)
- a) Volume doubles ($600/300 = 2$ times)
 b) Charles' law
 c) (i) $\text{C}_2\text{H}_2 + 2.5 \text{ O}_2 \rightarrow 2\text{CO}_2 + \text{H}_2\text{O(g)}$ (or balanced as $\text{C}_2\text{H}_2 + 5/2 \text{ O}_2 \rightarrow 2\text{CO}_2 + \text{H}_2\text{O}$)
 (ii) Gas = Acetylene (Ethyne); Gay-Lussac's law