SECOND TERM SUMMATIVE ASSESSMENT 2026-27

ANSWER KEY / SCORING INDICATORS

CHEMISTRY

Std: X SET 2 **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. C. anode (1)

2. B. Statement 1 is correct but statement 2 is wrong (volume is directly proportional to the number of moles). (1)

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

4. B. 3d (1)

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

5. a) $CH_3–CH=CH–CH_3$ (but-2-ene) (1)
b) Methoxymethane ($CH_3–O–CH_3$) (1)

6. a) 3 (1)
b) 4s: 4 + 0 = 4; 3d: 3 + 2 = 5. 4s is filled first (lower n + l). (1)

7. (A) a) d block (1)
b) Period 4, Group 6 (configuration $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5\ 4s^1$) (1)
(B) Their last electrons enter the f subshell (anti-penultimate shell); placing them in the main table would make it too wide, so they are placed separately. They are called inner transition elements (lanthanoids and actinoids). (2)

8. a) Charles's law (1)
b) As temperature rises, the volume of the air increases at (nearly) constant pressure; when the expansion exceeds the limit of the rubber, the balloon bursts. (1)

9. a) Cathode – sodium; anode – chlorine (1)
b) In the molten state the ions are free to move and conduct electricity (solid NaCl does not conduct). (1)

10. a) Zinc plate in copper sulphate solution (1)
b) The blue colour of the solution fades (becomes colourless). (1)

11. (A) a) 11.2/22.4 = 0.5 mole (1)
b) 0.5 × 32 = 16 g (1)
(B) a) 46/23 = 2 moles (1)
b) $2 \times 6.022 \times 10^{23} = 1.2044 \times 10^{24}$ atoms (1)

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

12. (A) a) Anode – magnesium; cathode – copper (1)
b) $Mg + Cu^{2+} \rightarrow Mg^{2+} + Cu$ (1)

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c) It completes the circuit (allows ions to move) and keeps the solutions electrically neutral. (1)

(B) a) A gold plate (rod) (1)

b) The copper ornament (1)

c) A solution of a gold salt (e.g. gold chloride / potassium aurocyanide) (1)

13. a) $V \propto n$: $48/2 = V/5$, $V = 120$ L (1)

b) Avogadro's law: at constant temperature and pressure, the volume of a gas is directly proportional to the number of moles (molecules). (1)

c) The volume will also be halved (24 L). (1)

14. a) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^1$ (1)

b) d block (1)

c) Period 4, Group 11 (1)

15. a) GMM of $CaCO_3$ = 100 g; 10/100 = 0.1 mole (1)

b) 0.1 mole $CO_2 = 0.1 \times 44 = 4.4$ g (1)

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

16. a) Sulphide ore particles are wetted by oil and rise with the froth; gangue particles are wetted by water and settle down. (1)

b) Any one: zinc blende, galena, copper pyrites (1)

c) It acts as the frothing agent; the ore particles stick to the oil froth and float. (1)

17. (A) a) Ethene (1)

b) Many small unsaturated molecules (monomers) join together without losing any atom to form a large molecule (polymer). (1)

c) Vinyl chloride (chloroethene) (1)

(B) a) Chlorine, hydrogen and sodium hydroxide (1)

b) $2Cl^- \rightarrow Cl_2 + 2e^-$ (1)

c) Any one: chlorine – bleaching powder/water purification/PVC; NaOH – soap, paper; hydrogen – fuel, ammonia. (1)

Question 18 **(4 scores)**

18. (A) a) 16 g CH_4 = 1 mol; needs 2 mol O_2 (1)

b) 1 mol CO_2 = 44 g (1)

c) 22.4 L (1)

d) 2 mol $H_2O = 2 \times 6.022 \times 10^{23} = 1.2044 \times 10^{24}$ molecules (1)

(B) a) Mg–Cu (largest difference in reactivity) (1)

b) Zinc (1)

c) $Ag^+ + e^- \rightarrow Ag$ (1)

d) Copper and silver (1)

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