SECOND TERM SUMMATIVE ASSESSMENT 2025

STANDARD IX - CHEMISTRY ANSWER KEY

Score: 40

PART I: Objective Type (1 Score Each)

(4 × 1 = 4)

1. (B) Both A and R are true, and R is the correct explanation of A. (1)
2. D. Statements 1 and 4 are incorrect, but 2 and 3 are correct. (1)
3. Vanadium pentoxide (V_2O_5) (1)
4. C) X → q (3), Y → r (1), Z → s (2) (1)

PART II: Short Answer (2 Scores Each) (7 × 2 = 14)

5. a) K_2O. (1)

   b) Ionic Bond. Because the electronegativity difference (3.44 - 0.82 = 2.62) is greater than 1.7. (1)

6. (A) a) 2, 8, 7. ^{17}
   b) 35 (Protons 17 + Neutrons 18). (1)

OR

(B) a) $^{18}Ar^{40}$ and $^{19}K^{40}$ (1)
b) Isobars. (1)

7. a) $N_2 + 3H_2 \rightarrow 2NH_3$. (1)
   b) 34 g. (Based on Law of Conservation of Mass: 28g + 6g = 34g). (1)

8. (A) a) $NaNO_3 + AgCl$ (1)
   b) A Double Decomposition Reaction is a chemical reaction in which two compounds react by an exchange of their ions to form two new compounds. (1)

OR

   (B) a) Chemical Decomposition. (1)
   b) $CaCO_3 \rightarrow CaO + CO_2$ (or any correct example). (1)

9. a) +7 (for Mn_2O_7). (1)
   b) +4 (for MnO_2). (1)

10. a) They show a gradual change (transition) in properties from reactive metals to non-metals. (1) b) Penultimate shell (or d-subshell). (1)

11. a) NaCl (Sodium Chloride). (1) b) 10% [Calculation: (2/20) × 100]. (1)

PART III: Short Answer (3 Scores Each)

(6 × 3 = 18)

12. a) [Electron dot diagram showing Mg losing 2 electrons to O, forming Mg^{2+} and O^{2-} → MgO] (1)
    b) 2. (1)
    c) Oxide ion (O^{2-}). (1)

13. a) Hydrogen (H_2). (1)
    b) Magnesium. (1)
    c) Displacement Reaction: A displacement reaction is a chemical reaction in which a more reactive element displaces a less reactive element from its compound. When Magnesium (Mg) reacts with Hydrochloric acid, Magnesium displaces Hydrogen from the acid because Magnesium is more reactive. (1)

14. (A) a) Chlorine (Cl). (1)
    b) Magnesium (Mg). (1) c) $Mg \rightarrow Mg^{2+} + 2e^-$. (1)

OR

(B) a) Hydrogen. (1)
b) Chlorine. (1)
c) Both oxidation and reduction occur simultaneously. (1)

15.

a) Procedure: Add HCl to Sodium Thiosulphate in two boiling tubes. Heat one and keep the other at room temp. Note time for precipitate to form. (2) b) Temperature increases the kinetic energy and number of effective collisions. (1)

16. a) Surface Area. (1)
    b) Carbon dioxide (CO_2). (1)
    c) $CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$. (1)

17. (A) a) 2, 8, 3. (1)
    b) Oxygen family (Chalcogens). (1)
    c) X (Size decreases across a period). (1)

OR

(B) a) 2, 8, 2. (1)
b) Group 2. (1) c) 2, 8, 8. (1)

Question 18 (4 Scores)

(1 × 4 = 4)

18. (A) a) Acid: Phosphoric acid (H_3PO_4); Alkali: Calcium hydroxide ($Ca(OH)_2$). (2)

    b) Calcium ion (Ca^{2+}). (1) c) $Ca_3(PO_4)_2$. (1)

OR

(B)
a) KOH. (1)
b) H_2SO_4. (1)
c) $2KOH + H_2SO_4 \rightarrow K_2SO_4 + 2H_2O$. (1)
d) Potassium sulphate. (1)