

**2. Write short answers to any EIGHT (8) questions :** 16

- (i) One mg of  $K_2CrO_4$  has twice the number of ions than the number of formula units when ionized.
- (ii) 4.9 g of  $H_2SO_4$  when completely ionized in water have equal number of positive and negative charges but the number of positively charged ions are twice the number of negatively charged ions.
- (iii) 23 g of sodium and 39 g of potassium have equal number of atoms in them.
- (iv) The desiccator is a safe and reliable method for drying the crystals. Explain.
- (v) Media which are used for filtration should be selected on the basis of precipitates. Explain.
- (vi) Hydrogen and Helium are ideal at room temperature but  $SO_2$  and  $Cl_2$  are non-ideal. Explain.
- (vii) Pressure of  $NH_3$  gas at given condition is less as calculated by Van der Waals equation than that calculated by general gas equation.
- (viii) Water vapours do not behave ideally at 273 K.
- (ix) Some of the postulates of kinetic molecular theory of gases are faulty. Justify.
- (x) Vacuum distillation can be used to avoid decomposition of a sensitive liquid. Explain.
- (xi) Heat of sublimation of iodine is very high. Justify.
- (xii) Earthenware vessels keep water cool. Explain.

**3. Write short answers to any EIGHT (8) questions :** 16

- (i) State Pauli-exclusion Principle.
- (ii) Calculate mass of an electron when  $\frac{e}{m} = 1.758 \times 10^{11} C \cdot kg^{-1}$
- (iii) What is " Moseley's law " ?
- (iv) Define " Dipole Moment " and give its SI unit.
- (v) What is octet rule? Give two examples of compounds which deviate from it.
- (vi) Draw labeled diagram of Bomb Calorimeter.
- (vii) Define standard enthalpy of formation with a suitable example.
- (viii) What are thermo chemical reaction, give their types?
- (ix) Aqueous solution of  $CuSO_4$  is acidic in nature. Justify it.
- (x) Define " Ebullioscopic Constant " with one example.
- (xi) Give two applications of electrochemical series.
- (xii) Define rate of chemical reaction and give its units.

**4. Write short answers to any SIX (6) questions :** 12

- (i) Explain why  $\pi$  – bonds are more diffused than  $\sigma$  - bonds.
- (ii) The melting points, boiling points, heat of vapourizations and heat of sublimations of electrovalent compounds are higher than covalent compounds. Explain.
- (iii) Explain the terms reversible reaction and state of equilibrium.
- (iv) The solubility of glucose in water is increased by increasing the temperature. Explain.