INTERMEDIATE PART-I (11ᵗʰ CLASS)

CHEMISTRY   PAPER-I   (OLD SCHEME)   TIME ALLOWED: 2.40 Hours

GROUP-I   **SUBJECTIVE**   MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

2.   **Attempt any eight parts.**   **8 × 2 = 16**

(i)   No individual Neon atom in the sample of the element has a mass of 20.18 amu. Explain

(ii)   What is Limiting Reagent? How it helps to control a chemical reaction?

(iii)   What is R_f value? Give its units.

(iv)   Give four features of a solvent used for crystallization.

(v)   What is Plasma? How is it formed?

(vi)   State under what conditions the real gases deviate from ideal behaviour?

(vii)   Define Absolute Zero.

(viii) Define Critical Temperature and Critical Volume of a gas.

(ix)   Explain why evaporation takes place at all temperatures?

(x)   Explain the solubility of Hydrogen Bonded Molecules.

(xi)   Define Lattice Energy and on what factor it depends?

(xii)   Define Transition Temperature with an example.

3.   **Attempt any eight parts.**   **8 × 2 = 16**

(i)   Why is it necessary to decrease the pressure in the discharge tube to get the cathode rays?

(ii)   Why the e/m value of positive rays obtained from hydrogen gas is 1836 times less than that of cathode rays.

(iii)   What are X – rays? What is their origin?

(iv)   Define Bond Energy. Name various factors which determine it strength.

(v)   The bond angles of H_2O and NH_3 are not 109.5^o like that of CH_4. Although O and N atoms are sp^3 hybridized.

(vi)   The abnormality of bond length and bond strength in HI is less prominent than that of HCl. Explain

(vii)   Define Standard Enthalpy of solution and give example.

(viii) Define the State Function and name two State Functions.

(ix)   Explain that burning of candle is a spontaneous process.

(x)   The change of volume disturbs the equilibrium position for some of the gaseous phase reaction but not the equilibrium constant.

(xi)   Explain the term Buffer Capacity.

(xii)   Give the equation to relate Kp and Kc.

4.   **Attempt any six parts.**   **6 × 2 = 12**

(i)   Define Solution. What is meant by concentrated and dilute solution?

(ii)   Define: (a) Consulate temperature   (b) Mole fraction

(iii)   Why decrease in vapour pressure of the solutions is same when 60g of urea and 180g of glucose is added in $1 dm^3$ of water?

(iv)   Differentiate between Hydration and Hydrolysis.

(v)   Define Oxidation Number and find the oxidation number of Mn in $KMnO_4$.

(vi)   What are the functions of Salt Bridge?

(vii)   Define: (a) Reaction Kinetics   (b) Order of Reaction

(viii) Differentiate between Homogeneous Catalysis and Heterogeneous Catalysis.

(ix)   Define Energy of Activation and Activated Complex.

SECTION-II

NOTE: -   Attempt any three questions.

5.(a)   Define Actual Yield. How percentage yield is calculated? What factors are responsible for low yield in chemical reactions?   4

 (b)   Explain with example the following two applications of Chemical Equilibrium Constant:-
 (i) Direction of reaction   (ii) Extent of reaction   4

6.(a)   Explain the experimental measurement of Freezing Point Depression.   4

 (b) $250\,cm^3$ of Hydrogen gas is cooled from $127^o C$ to $-27^o C$ keeping the pressure constant. Calculate its new volume.   4

7.(a)   Briefly explain Manometric Method for the measurement of vapour pressure.   4

 (b)   10.16g of graphite is burnt in a bomb calorimeter and the temperature rise recorded is 3.87K. Calculate the enthalpy of combustion of graphite, if the heat capacity of the calorimeter (bomb, water etc) is 86.02 $kj\,K^{-1}$.   4

8.(a)   Write the defects of Bohr model. What are Sommerfeld suggestions?   4

 (b)   How the order of reaction can be determined by Half-life Method?   4

9.(a)   Define Sp-Hybridization and discuss with example.   4

 (b)   Discuss Lead Accumulator Battery.   4