

INTERMEDIATE PART-I (11th CLASS)**CHEMISTRY PAPER-I (NEW SCHEME)**

TIME ALLOWED: 3.10 Hours

GROUP-I**SUBJECTIVE**

MAXIMUM MARKS: 83

**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 element has a mass of 20.18 amu. Explain.
- (ii) How many Oxygen atoms are present in 4.8g of Ozone (O = 16 amu)
- (iii) What is the function of Ionization Chamber in Mass Spectrometer?
- (iv) What is the difference between Adsorption and Partition Chromatography?
- (v) Give two uses of Chromatography.
- (vi) What are the causes for deviation of gases from Ideality?
- (vii) Give two applications of Plasma.
- (viii) What are Spontaneous and Non-spontaneous processes? Give one example of each case.
- (ix) State the Hess's Law of Constant Heat Summation.
- (x) What is the effect of increase of temperature on the yield of the product for the reaction

$$SO_{2(g)} + O_{2(g)} \rightleftharpoons SO_{3(g)} + Heat$$
- (xi) What is Buffer Solution? Give an example.
- (xii) How does a buffer act? Explain with an example.

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

- (i) Why the values of boiling points of noble gases increase from top to bottom within a group?
- (ii) Why the temperature of a boiling liquid does not rise even if heat is continuously supplied to it?
- (iii) Ionic solids do not conduct electricity in the solid state but become good conductors in the solution or molten state. Justify it.
- (iv) Explain the term unit cells dimensions.
- (v) Whichever gas is used in the discharge tube, the nature of cathode rays remains same? Why?
- (vi) Distribute electrons in the orbitals of ^{29}Cu and ^{24}Cr .
- (vii) How do you come to know that the velocities of electrons in higher orbits, are less than those in lower orbits of Hydrogen atom?
- (viii) State Hund's rule and Pauli's exclusion principle.
- (ix) The size of Chlorine atom is smaller than Cl^{-1} ion. Justify it.
- (x) Define Electron Affinity and give an example.
- (xi) Represent the molecular orbitals of N_2 molecule in the increasing order of energy.
- (xii) Why NH_3 molecule and NH_4^+ ion have different structures?

4. Attempt any six parts. 6 × 2 = 12

- (i) Define Molarity of a solution. How is Molarity related to mass of solute?
- (ii) What is critical solution temperature? Give an example.
- (iii) Why the Beckmann's thermometer is used to note the depression of freezing point?
- (iv) What is Oxidation Number? Determine the Oxidation Number of Phosphorus in H_3PO_4 .
- (v) How is Anodized Aluminium prepared? Give the advantages of Anodization of Al .
- (vi) What is a Salt Bridge? How it maintains electrical neutrality in the half cell solutions?
- (vii) The order of a reaction may be in fractions. Justify with the help of an example.
- (viii) Name two physical methods used to determine the rate of a reaction.
- (ix) A catalyst is specific in its action. Explain.

SECTION-II**NOTE: - Attempt any three questions of the following:-**

- 5.(a) Define Ionic Solids. Discuss the properties of Ionic Solids. 4
- (b) Silicon Carbide (SiC) is an important ceramic material. It is produced by allowing sand (SiO_2) to react with Carbon at high temperature.
 $SiO_2 + 3C \rightarrow SiC + 2CO$
 When 100 kg sand is reacted with excess of Carbon, 51.4kg of SiC is produced.
 What is the percentage yield of SiC ? 4
- 6.(a) What is Dalton's law of Partial Pressure? Also discuss its applications. 4
- (b) Explain Rutherford's Model of Atom. 4
- 7.(a) Explain bonding in O_2 according to Molecular Orbital Theory. Also describe its paramagnetic property. 4
- (b) Define Enthalpy. Prove $\Delta H = qp$ 4
- 8.(a) The solubility of CaF_2 in water at $25^\circ C$ is found to be $2.05 \times 10^{-4} \text{ mol dm}^{-3}$.
 What is the value of K_{sp} at this temperature? 4
- (b) What is Catalysis? Differentiate between Homogeneous and Heterogeneous Catalysis with one example in each. 4
- 9.(a) Write a comprehensive note on Raoult's law. 4
- (b) Discuss the Working and Chemistry of Alkaline Battery and Fuel Cells. 4

SECTION-III (PRACTICAL PART)

10. **NOTE:-** (i) Attempt any three parts. (3 x 5 = 15)
- (ii) Write down material required, diagram and procedure for part A & B. (1 + 1 + 3) = 5
- (iii) Write down standard solution, chemical equation with mole ratio, indicator with end point, procedure and supposed reading with calculation for part C, D & E. (1 + 1 + 1 + 1 + 1) = 5
- (A) Separate the mixture of three inks by Chromatography.
- (B) Purify commercial sample of Sodium Chloride by common Ion effect.
- (C) 15.0 grams of Na_2CO_3 is dissolved per dm^3 of solution.
 Determine percentage purity of sample volumetrically. (Molecular mass of $Na_2CO_3 = 106$)
- (D) 10.0 g of $KMnO_4$ and K_2SO_4 dissolved per dm^3 of solution.
 Find percentage purity of the sample volumetrically. (Molecular mass of $KMnO_4 = 158$)
- (E) 14.0 grams of I_2 (iodine) dissolved per dm^3 .
 Find out the percentage purity of the sample volumetrically. (Molecular mass of $I_2 = 254$)