

CHEMISTRY PAPER-I GROUP-II MTN-62-21 TIME ALLOWED: 20 Minutes
OBJECTIVE MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) Total number of electrons in f orbital is:
 (A) 14 (B) 10 (C) 6 (D) 2
- (2) Bohr model of atom is contradicted by:
 (A) Plank's quantum theory (B) Dual nature of matter
 (C) Heisenberg's uncertainty principle (D) All of these
- (3) The bond order of He_2 is:
 (A) Two (B) Three (C) Zero (D) One
- (4) How many types of bonds in NH_4Cl are:
 (A) One type (B) Two types (C) Three types (D) Four types
- (5) $\sum \Delta H$ (cycles) = 0 The above law is known as:
 (A) Henry's law (B) Hess's law (C) Kohlrausch law (D) Darwins law
- (6) $2O_3 \rightleftharpoons 3O_2$ K_C at $25^\circ C$ is:
 (A) 10^{55} (B) 10^{-13} (C) 2.5 (D) 10^4
- (7) Among the following which equation has no unit of K_C :
 (A) $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ (B) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
 (C) $CH_3 - \overset{\overset{O}{\parallel}}{C} - OC_2H_5 + H_2O \xrightleftharpoons{H^+} CH_3 - \overset{\overset{O}{\parallel}}{C} - OH + C_2H_5OH$
 (D) $N_2O_4 \rightleftharpoons 2NO_2$
- (8) The correct equation of Raoult's law:
 (A) $\frac{\Delta p}{p^0} = X_2$ (B) $\frac{\Delta p}{p^0} = X_1$ (C) $\frac{p^0}{\Delta p} = X_2$ (D) $\frac{p^0}{\Delta p} = x_2 - x_1$
- (9) The standard redox potential of following reaction is $Zn^{2+} + 2e^- \longrightarrow Zn$
 (A) -0.76 V (B) 2.87 V (C) -0.026 V (D) -3.045 Volt
- (10) The order of following reaction is $CHCl_3 + Cl_{2(g)} \longrightarrow CCl_4 + HCl_{(g)}$
 (A) 1st (B) 1.5 (C) 2.5 (D) Zero
- (11) In 98g of sulphuric acid H_2SO_4 number of O atoms:
 (A) 6.02×10^{23} (B) 2.408×10^{24} (C) 1.2×10^{24} (D) 6.02×10^{24}
- (12) S_n (Tin) has number of isotopes:
 (A) 10 (B) 11 (C) 5 (D) 6
- (13) The solvent extraction technique is particularly useful when the product is:
 (A) Volatile and thermally unstable (B) Volatile and thermally stable
 (C) Non volatile and thermally stable (D) Non volatile and thermally unstable
- (14) Kinetic equation $PV = \frac{1}{3} mN\overline{c^2}$ is derived by:
 (A) Maxwell (B) Boltzmann (C) Clausius (D) Bernulli
- (15) The sun is a _____ ball of plasma heated by nuclear fusion process.
 (A) 1.5 million kilometer (B) 1.5 billion kilometer (C) 3 million kilometer (D) None of these
- (16) The order of acidic strength:
 (A) $HF > HCl > HBr > HI$ (B) $HCl > HF > HI > HBr$
 (C) $HI > HBr > HCl > HF$ (D) $HBr > HF > HI > HCl$
- (17) London dispersion forces are the only forces present among:
 (A) The molecules of H_2O in liquid state at high temperature
 (B) The atoms of Helium in gaseous state at high temperature

INTERMEDIATE PART-I (11th CLASS)**CHEMISTRY PAPER-I GROUP-II MTN-62-21**

TIME ALLOWED: 2.40 Hours

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) Why actual yield is always less than theoretical yield?
- (ii) Define limiting reactant with an example.
- (iii) Define Stoichiometry.
- (iv) Give examples of subliming solids.
- (v) What are three ways used for paper chromatography?
- (vi) State Boyle's law with its equation.
- (vii) State Charles's law with its equation.
- (viii) Briefly derive general gas equation.
- (ix) Derive value of 'R' in S.I units.
- (x) Define heat of solution with one example.
- (xi) Justify all solutions containing 1 mole of non-volatile, non-electrolyte solutes in same solvent will have the same freezing point depression.
- (xii) What is Raoult's Law?

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

- (i) Explain Dipole-Dipole forces in chloroform ($CHCl_3$).
- (ii) Describe solubility of Hydrogen bonded molecules.
- (iii) Define polymorphism. Write one example.
- (iv) Describe triclinic system. Give its dimensions.
- (v) Why positive rays are called canal rays?
- (vi) Differentiate between frequency and wave length.
- (vii) Describe atomic emission spectrum.
- (viii) State Heisenberg's uncertainty principle. Write its mathematical form.
- (ix) Define acid and base according to Lowry Bronsted.
- (x) Define Buffer solutions. Write its two characteristics.
- (xi) Define rate of reaction. Write its unit.
- (xii) What is Pseudo first order reaction? Give one example.

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

- (i) Define polar covalent bond. Give two examples.
- (ii) Differentiate between covalent bond and co-ordinate covalent bond.
- (iii) Discuss AB_2 type molecules in the light of VSEPR theory. Give two examples.
- (iv) Define atomic orbital hybridization. Name its two types.
- (v) Differentiate between system and surroundings.
- (vi) State first law of thermodynamics. Also define enthalpy of a system.
- (vii) What is Standard Hydrogen Electrode(SHE)? Explain with the help of diagram.
- (viii) Define electrochemical series.
- (ix) Calculate the oxidation number of chromium in the following compounds.
 (a) $K_2Cr_2O_7$ (b) K_2CrO_4

SECTION-II**NOTE: Attempt any three questions.****3 × 8 = 24**

- 5.(a) What are liquid crystals? Give their uses in daily life. 4
- (b) Magnesium metal reacts with HCl to give hydrogen gas. What is minimum volume of HCl solution (27% by weight) required to produce 12.1g of H_2 . The density of HCl solution is $1.14 g/cm^3$ 4
 $Mg_{(s)} + 2HCl_{(aq)} \longrightarrow MgCl_{2(aq)} + H_{2(g)}$
- 6.(a) Derive Boyle's and Charles's law with the help of kinetic theory of gases. 4
- (b) Explain Rutherford's atomic model. Give its defects. 4
- 7.(a) Define sp^3 hybridization. Draw the structure of ammonia molecule according to hybridization concept. 4
- (b) Explain the following terms: 4
 (i) Standard heat of Neutralization (ii) Standard Enthalpy of solution
- 8.(a) What's the percentage Ionization of acetic acid in a solution in which 0.1 mole of it has been dissolved per dm^3 of solution while K_a of acetic acid is 1.85×10^{-5} . 4
- (b) Explain the Rate determining step with suitable example. 4