

1121 Warning:- Please write your Roll No. in the space provided and sign. Roll No-----
(Inter Part - I) (Session 2017-19 to 2020-22) Sig. of Student -----

Chemistry (Objective)

(Group - II) **540-62-21** Paper (I)

Time Allowed:- 20 minutes

PAPER CODE 2488

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 circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE**, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

- 1) If the salt bridge is not used between two half cells, then the voltage
(A) Decrease rapidly (B) Decrease slowly (C) Does not change (D) Drops to zero
- 2) If the rate equation of a reaction $2A + B \longrightarrow$ products is, $\text{rate} = k[A]^2[B]$ and A is present in large excess, then order of reaction is
(A) 1 (B) 2 (C) 3 (D) 1.5
- 3) The angle between sides 'b' and 'c' is _____
(A) Beta (B) Alpha (C) Theta (D) Gamma
- 4) Isotopes differ in
(A) Properties which depend upon mass (B) Arrangement of electrons in orbitals (C) Chemical properties (D) The extent to which they may be affected in electromagnetic field
- 5) The number of atoms in 1.79 g of gold and _____ g of sodium are equal.
(A) 0.023 (B) 23 (C) 230 (D) 2300
- 6) The comparative rates at which the solutes move in paper chromatography depend on
(A) R_f values of solutes (B) The size of paper (C) Temperature of the experiment (D) Size of the chromatographic tank used
- 7) Equal masses of methane and oxygen are mixed in an empty container at 25°C . The fraction of total pressure exerted by methane is
(A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) $\frac{1}{9}$ (D) $\frac{8}{9}$
- 8) The molar volume of CO_2 is maximum at
(A) 127°C and 1 atm (B) 0°C and 2 atm (C) S.T.P (D) 273°C and 2 atm
- 9) Intermolecular forces present in ammonia are _____
(A) Hydrogen bonding (B) Ion-dipole forces (C) Dipole-induced dipole forces (D) London-dispersion forces
- 10) Quantum number values for '3d' orbitals will be
(A) $n=3, \ell=0$ (B) $n=3, \ell=1$ (C) $n=3, \ell=2$ (D) $n=3, \ell=3$
- 11) Orbitals having same energy are called
(A) Valence orbitals (B) Hybrid orbitals (C) d-orbitals (D) Degenerate orbitals
- 12) Bond order of helium molecule is _____.
(A) Two (B) One (C) Zero (D) Three
- 13) Berylliumdichloride follows _____ hybridization
(A) sp (B) sp^3 (C) sp^2 (D) sp^3d^2
- 14) The Born-Haber cycle is the application of _____ law.
(A) Hess's (B) Le-chatlier (C) Coulomb (D) Pascal
- 15) The pH of $0.001 \text{ mol dm}^{-3}$ of an aqueous solution of H_2SO_4 is
(A) 3 (B) 2.7 (C) 2.0 (D) 1.5
- 16) The pH of human blood is maintained at _____.
(A) 7 (B) 7.35 (C) 7.95 (D) 8.00
- 17) The molal boiling point constant is the ratio of the elevation in boiling point to
(A) Molarity (B) Molality (C) Mole fraction of solvent (D) Mole fraction of solute

1121 (Inter Part - I) Warning:- Please, do not write anything on this question paper except your Roll No.
Chemistry (Subjective) (Session 2017-19 to 2020-22) **Group (II)** **Paper (I)**

Time Allowed: 2.40 hours **Section ----- I** Maximum Marks: 68

2. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

- (i) Justify that 180 g of glucose and 342 g of sucrose have the same number of molecules but different number of atoms present in them. (ii) Define isotopes. Give one example.
- (iii) What is gram atom? How we can calculate gram atom of an element? Give its relationship.
- (iv) What is chromatography? Write its two uses. (v) Define sublimation. Write two solids which can be sublimed.
- (vi) Differentiate between natural and artificial Plasma.
- (vii) Derive the units for gas constant R in general gas equation when the pressure is in atmosphere and volume in dm^3 .
- (viii) Verify Boyle's law from kinetic theory of gases.
- (ix) Write two applications of Dalton's law of partial pressure.
- (x) Define solubility. How it can be expressed? (xi) What is discontinuous solubility curve. Give one example.
- (xii) How do you Justify that freezing points are depressed due to the presence of solutes.

3. **Answer briefly any Eight parts from the followings:-** **8 × 2 = 16**

- (i) Why in a very cold winter the fish in gardens ponds owe their lives to hydrogen bonding?
- (ii) Why water and ethanol can mix easily and in all proportions.
- (iii) Define unit cell. Give one example. (iv) Define transition temperature. Give one example.
- (v) What is hydrogen spectrum. Name four spectral lines.
- (vi) Write down two defects in Bohr's atomic model.
- (vii) Whichever gas is used in discharge tube, the nature of the cathode rays remains the same. Why?
- (viii) Give any two properties of cathode rays. (ix) Define (a) Reversible reactions (b) state of equilibrium.
- (x) Define Buffer capacity. (xi) Define instantaneous and average rates of reaction
- (xii) Define specific rate constant or velocity constant.

4. **Answer briefly any Six parts from the followings:-** **6 × 2 = 12**

- (i) Differentiate between polar and non polar covalent bond.
- (ii) Explain the formation of co-ordinate covalent bond between NH_3 & BF_3
- (iii) Explain the geometry of H_2S molecule on the basis of VSEPR theory.
- (iv) How ionization energy varies in the periodic table.
- (v) Define standard enthalpy of formation with two examples.
- (vi) Differentiate between atomization energy and Lattice energy.
- (vii) How electrochemical series helps to predict the feasibility of a chemical reaction? Give an example.
- (viii) Write the function of salt bridge in Galvanic cell.
- (ix) Differentiate between Galvanic cell and electrolytic cell.

Section ----- II

Note: Attempt any three questions. **(8 × 3 = 24)**

- 5. (a) Calculate the number of grams of K_2SO_4 and water produced when 14 gram of KOH are reacted with excess of H_2SO_4 . Also calculate the number of molecules of water produced.
- (b) How does hydrogen bonding explains the following
 - (i) Structure of DNA (ii) Structure of Ice.
- 6. (a) Write down the postulates of Kinetic molecular theory of gases.
- (b) Explain Millikan's oil drop experiment to determine the charge of an electron.
- 7. (a) Draw and discuss the geometry of Ethylene with respect to sp^2 -hybridization.
- (b) How can you measure enthalpy of reaction by glass calorimetric method.
- 8. (a) The following reaction was allowed to reach the state of equilibrium
 $2\text{A}_{(\text{aq})} + \text{B}_{(\text{aq})} \rightleftharpoons \text{C}_{(\text{aq})}$ the initial amount of the reactants present in one dm^3 of solution were 0.50 moles of A and 0.60 moles of B. At equilibrium the amounts were 0.20 moles of A and 0.45 moles of B and 0.15 moles of C. Calculate the equilibrium constant K_c .
- (b) Define half life period. Explain with two examples.
- 9. (a) Give differences between Ideal and Non-Ideal solution.
- (b) Write different rules for assigning oxidation number by giving one example.