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 (I)** **Paper (I)**

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

2. Answer briefly any Eight parts from the followings:- 540-61-21 **8 × 2 = 16**

(i) Justify the statement 23g sodium and 238g of uranium have equal no of atoms.

(ii) Magnesium atom is twice heavier than that of carbon atom.

(iii) 180 g glucose and 342g of sucrose have same number of molecules but different number of atoms present in them.

(iv) What is difference between partition and adsorption type of chromatography.

(v) Define sublimation by giving one example.

(vi) Sate charless law by giving its mathematical expression.

(vii) Do you think that some of the postulates in kinetic molecular theory of gases are faulty? Point out these postulates.

(viii) State Avogadro's law of gases?

(ix) Where is plasma found?

(x) Define fractional crystallization by giving one example.

(xi) Why $Na_2SO_4 .10H_2O$ shows discontinuous solubility curve.

(xii) Define colligative properties.

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

(i) Define dipole-dipole forces with one example.

(ii) What is dipole-induced dipole force?

(iii) Define London dispersion forces.

(iv) Why methane is gas while hexane is a liquid.

(v) Define spectrum.

(vi) What is St[illegible]

(vii) Define Heisenberg's uncertainity principle.

(viii) Define atomic orbital.

(ix) Define the Le Ch[illegible]s principle.

(x) Why catalyst does not affect the equilibrium position.

(xi) Define order of reaction.

(xii) What is half life period?

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

(i) Define ionization energy and electron affinity with one example in each case.

(ii) Write the Lewis Structures for the following compounds.

(a) HCN (b) $CC\ell_4$

(iii) Define hybridization. What type of hybridization is found in CH_4?

(iv) Write down four postulates of VSEPR Theory.

(v) Define the following with one example in eac[illegible]

(a) Standard enthalpy of reaction. **(b)** Sta[illegible] en[illegible]of combustion.

(vi) Differentiate between internal energy of the system and the enthalpy of the system.

(vii) Why the standard oxidation potential of Zn is+0.76 V and its reduction potential is -0.76 V?

(viii) Why the equilibrium is set up between metal atoms of electrode and ions of metal in a cell?

(ix) Why a salt bridge maintains the electrical neutrality in the cell?

Section ---------- II

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

5. **(a)** Calculate the masses of 10^{-3} moles of $MgSO_4$ and 2.74 moles $KMnO_4$.

(b) Describe any four crystal systems.

6. **(a)** Write down eight postulates of Kinetic molecular theory of gases.

(b) Derive the equation for the radius of n^{th} orbit of hydrogen atom using Bohr's model.

7. **(a)** Define ionization energy. Name the factors on which it depends. Also explain its trends in the periodic table.

(b) Define enthalpy and prove that $\Delta H = q_p$.

8. **(a)** What is the percentage ionization of acetic acid in a solution in which 0.1 mol of it has been dissolved per dm^3 of the solution (K_a=1.85 × 10^{-5})

(b) What is Arrhenius Equation? How can you calculate the energy of activation of a reaction from this equation.

9. **(a)** Briefly explain the working of Galvanic Cell.

(b) Explain Beckmann method to determine depression of Freezing Point.

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 - I) SGD-G-I-21 Paper (I)**

Time Allowed:- 20 minutes **PAPER CODE 2481** 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) Isotopes differ in the presence of
(A) Electrons (B) Protons (C) Neutrons (D) Positrons

2) Average atomic mass of Neon is
(A) 20.81 (B) 21.81 (C) 22.18 (D) 20.18

3) The rate at which solutes move in paper chromatography depend on
(A) Size of paper (B) R_f values of solutes (C) Temperature (D) Pressure

4) Kinetic energy of gas molecules is zero at
(A) $0C°$ (B) $0F°$ (C) 0k (D) $-10C°$

5) The number of molecules of water in one dm^3 is close to
(A) $\frac{6.02}{22.4} \times 10^{23}$ (B) 18×10^{23} (C) $\frac{12.04}{22.4} \times 10^{23}$ (D) $55.6 \times 6.02 \times 10^{23}$

6) The number of unit cell parameters ar
(A) 2 (B) 4 (C) 6 (D) 8

7) The maximum boiling point of NH_3 among the hydrides of group V is due to
(A) Small size of N atom (B) Lone pair of electron (C) Enhanced electro negative character of Nitrogen (D) Pyramidal shape of NH_3

8) Splitting of spectral lines in a strong Electric field is called
(A) Zeeman effect (B) Stark effect (C) Compton effect (D) Photoelectric effect

9) Bohr Model of atom is contradicted by
(A) Plank's quantum Theory (B) Dual nature (C) Heisen berg's principle (D) Pauli's exclusion principle

10) The number of bonds in oxygen molecule is
(A) Two σ bonds (B) Two π bonds (C) one σ , one π (D) one σ , Two π

11) Bond order of Helium molecule is
(A) Zero (B) One (C) Two (D) Three

12) Which of these is not a state function.
(A) Temperature (B) Pressure (C) Volume (D) Heat

13) How much nitrogen fixation is carried out by Haber's process.
(A) 13% (B) 35% (C) 50% (D) 73%

14) The value of pK_w at 25 $°C$ for water is
(A) 10^{-7} (B) 7 (C) 10^{-14} (D) 14

15) 18g Glucose is dissolved in 90g of water the relative lowering of vapour pressure is
(A) $\frac{1}{5}$ (B) 5.1 (C) $\frac{1}{51}$ (D) 6

16) Stronger the oxidizing agent, greater is the
(A) Oxidation potential (B) Reduction potential (C) Redox potential (D) E.M.F. of cell

17) In Zero order reaction the rate is independent of
(A) Temperature (B) Pressure (C) Concentration (D) Volume