## (INTERMEDIATE PART - I) (III) Paper: Chemistry (New Scheme) (Academic Session 2017 - 2019) Marks: 1' Code: 6485 (Objective) Time: 20 Minutes 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. 1- i. Number of bonds in $N_2$ molecule are: $2 \sigma$ and one $\pi$ (D) three $\sigma$ only (A) one $\sigma$ and $2\pi$ (B) one $\sigma$ and one $\pi$ (C) ii. Name the electron is given by: Chadwick (D) (C) J.J. Thomson Stoney William Crooks (B) iii. Bohr's model of atom is contradicted by: Heisenberg uncertainty principle (B) Plank's quantum theory (A) Rutherford atomic model (D) Duel Nature of matter (C) iv. Molecules of CO2 in dry ice form the: (D) covalent crystals (A) molecular crystals (B) ionic crystals (C) metallic crystals v. Which one of the following is in liquid state at room temperature? Propane (D) Hexane (C) Ethane (B) Methane vi. The spreading of fragrance of scent is due to: Diffusion (D) Effusion (C) Density Osmosis (B) $(\Lambda)$ vii. The drying agent used in desiccator is: CaCl, NaCl (D) AgCl NH Cl (C) (B) $(\Lambda)$ viii. Mass of one mole of electrons is 1.673 mg (D) 0.55 mg (C) 0.184 mg 1.008 mg (B) ix. Which one of the following is a molecular ion: $K^{+}$ (D) $Mg^{2+}$ (C) $CH_{\Lambda}^{*}$ (B) SO. $(\Lambda)$ The enzyme used for hydrolysis of urea is Zymase (D) lipase (C) invertase (B) urease (A) xi. Cathode in NICAD cell is of NiO2 (D) Cd Zn (C) Ag,O $(\Lambda)$ xii. A solution of glucose is 10%, the volume to which 1 gm/mole of it dissolved will be 900Cm3 (D) $1.8dm^3$ 200Cm3 (C) 1dm3 (B) $(\Lambda)$ xiii. Which of the following concentration unit is temperature dependent? mole fraction (D) percentage w/w (C) molarity (B) $(\Lambda)$ molality $_{\rm XIV.}$ The units of $K_{\rm c}$ for the reaction of ammonia synthesis are moles-2dm2 moles-2dm3 (D) (C) moles dm6 moles-2dm6 (B) $(\Lambda)$ XV. The term pH was introduced by (D) Sorenson Le-chattilier Millikan (C) (B) Henderson (A) NVI. For the reaction $NaOH + HCl \rightarrow NaCl + H_2O$ , the change in enthalpy is called (A) heat of neutralization (B) heat of reaction (C) heat of formation (D) heat of combustion xvii. Which one of the following molecule do not obey the Octet rule?

CS,

(D)

214 - 318 - 21000 \*\*\*

PF

CO,

 $(\Lambda)$ 

 $CH_{*}$ 

(B)

(C)

Marks : 68 LIVER JENETTIES (Academic Session 2017 - 2014) Time: 2: 40 Hours Subjective · Note :- Section I is compulsory. Attempt any three (3) questions from Section II. (Section I)  $(8 \times 2 = 16)$ Write short answers to any Eight Parts. Mg atom is twice heavier than that of a carbon atom. How? i. Why 23 g of 'Na' and 238 g of uranium have equal number of atoms? ii. Define limiting reactant with an example. iii. Why is there a need to crystallize a crude product? iv. Give two uses of chromatography. V. Describe two causes of deviation of gases from ideality. vi. Pilots feel un-comfortable in breathing at high altitude. Why? vii. Give unit of Vander walls constant 'a' and 'b'. viii. What is the ionization constant of acid? ix. What is the effect of catalyst on equilibrium constant? X. What is the effect of common ion on solubility? xi. Define acids and bases by Lowry- Bronsted concept. xii.  $(8 \times 2 = 16)$ Write short answers to any Eight parts. 3. One feels sense of cooling under the fan after bath, explain with reason. . i. What are liquid crystals? Who discovered it? ii. Ionic crystals do not conduct electricity in the solid state, give reason. iii. Explain the term 'Anisotropy' with an example. iv. CS, HCN (b) Write the Lewis structures for the given compounds:. (a) v. Explain the formation of coordinate covalent bond between NH, and BF, vi.  $\pi$ -bonds are More diffused than sigma bond, give reason. vii. viii. NH, and BF, are tetra atomic but different geometries, why? Explain the term "Atomization energy" with an example. ix. What is internal energy? What is effect of increase in internal energy on the system? X.

Define mole fraction; also give its mathematical expression.

Explain the term hydrolysis with an example.

xi.

xii.

(Turn Over)

(4)

4. Write short answers to any Six parts.

 $(2 \times 6 = 12)$ 

- i. Calculate potential energy of an electron at a distance "r" from a nucleus.
- ii. Define Moseley's Law and give its mathematical equation.
- iii. Define (n+1) rule and Pauli's Exclusion principle.
- iv. Distribute electrons in orbital of Cu with atomic number 29.
- v. Write down electrode reactions occurring during electrolysis of aqueous sodium Nitrate.
- vi. Explain Alkaline battery giving its electrode reactions.
- vii. Give differences between electrolytic cell and voltaic cell.
- viii. Explain mechanism of enzyme catalysis with diagram, briefly.
  - ix. How does nature of reactants affect rate of reaction, give an example.

## (Section - II)

## Note: Attempt any three (3) questions from Section II. Each question carries 08 marks.(3 x 8 = 24)

- 5. (a) A well known ideal gas is enclosed in a container having volume 500Cm<sup>3</sup> at S.T.P. Its mass comes out to be 0.72 g. What is the molar mass of this gas?
  - (b) Define vapour pressure. How is vapour pressure measured by Manometeric method?
- 6. (a) Write down eight postulates of Kinetic Molecular theory of gases.
  - (b) Explain Millikan's oil drop experiment to determine the charge of an electron.
- 7. (a) Define electronegativity. How does it vary in periodic table? And also discuss its effect on bond strength.
  - (b) Prove that.  $\Delta H = q_p$
- 8. (a) What is the common ion effect? Describe it with an example and give its two applications in salt analysis with two examples.
  - (b) Describe (i) silver oxide battery (ii) Nickel Cadmium cell
- 9. (a) Hydrochloric acid available in the laboratory is 36 % (w/w). The density of HCl solution is 1.19 g cm<sup>-3</sup>. Determine the Molarity of HCl solution.
  - (b) How energy of activation can be determined from Arrhenius equation.