Name…….. **Date: -** 06 – 05 – 2020

Chemistry:- 1st year **Test # 4** **Time: -** 20 min… **Marks** 17

i. Which one of the following substance when dissolved in water give acidic solution:
(a)NaCl (b)Na_2SO_4 (c)NH_4Cl (d)CH_3COONH_4

ii. The molal boiling point constant of water is $0.52^0C/m$. The ΔT_b for 0.2m solution of a non-volatile solute in water will be
(a) 0.52^0C (b)$0.052\ ^0C$ (c)0.104^0C (d) 0.208^0C

iii. 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

iv. The cryoscopic constant of water is 1.86°C/m. The ΔT_f for a 0.1m solution of a solute in water is:
(a)18.6 °C (b)1.86 °C (c) 0.186 °C (d)sufficient data not given

v. Freezing point of equimolal aqueous solutions will be minimum for:
(a)Fructose (b) Urea (c) Glucose (d) Common salt

vi. 3.42 g of sucrose and 1.8 g of glucose in 100 g of H_2O separately have the elevation of boiling point as 0.052°C How much quantity of urea in 100 g of H_2O is required to have the same effect:(a) 1.2 g (b) 0.6 g (c) 1.8 g (d)10.1 g

vii. During the electrolysis aqueous $CuSO_4$, the material liberated at anode is:
(a) Copper (b) Oxygen (c) Sulphure dioxide (d) Hydrogen

viii. What types of sheets between the grids of lead accumulator prevent shorting by accidental physical contact?
(a) Silica gel (b) Glass wool (c) Optic fibre (d) Fibre glass

ix. Which one metal will not react with steam to produce the metallic oxide and hydrogen gas:
(a) Iron (b) Copper (c) Magnesium (d) Zinc

x. Stronger the reducing agent, greater is the(a) Oxidation potential (b) reduction potential (c) redox potential (d) e.m.p of cell

xi. When S.H.E. is connected with $Al_{(s)}/Al^{+3}{}_{(aq)}$(1M) half cell then reaction at anode is
(a) $H_{2(g)}(Pt)/2H^+{}_{(aq)}$1M (b) $Al_{(s)}/Al^{3+}{}_{(aq)}$1M (c) $2H^+{}_{(aq)}$1M/$H_{2(g)}(Pt)$ (d) $Al^{3+}{}_{(aq)}$ 1M / $Al_{(s)}$

xii. In fuel cells, oxygen is reduced into (a) Water (b) Hydroxide ions (c) Carbon dioxide (d) Hydrogen ions

xiii. Half life period is inversely proportional to the initial concentration of reactant raised to a power one less than that of
(a) Rate of reaction (b)) order of reaction (c) unity (d) infinity

xiv. For a given reaction $A+2B \rightarrow$ Products the rate equation is Rate= $[A][B]^2$ if B is present in large excess, then order of reaction is:
(a)1 (b)2 (c)3 (d)Zero

xv. The equation log K= -Ea/2.303RT+log A called equation of straight line, in this equation a quantity called intercept of straight line is
(a)log K (b)log A (c)Ea (d)-Ea/2.303R

xvi. According to potential energy diagram, the quantity equal to the difference in potential energy of the reactants and the products is called: (a)Rate of reaction(b)enthalpy of reaction (c)order of reaction (d)Activation of reaction

xvii. The presence of which one impurity decreases the catalytic activity of catalyst in the Haber's process?
(a) Hydrogen (b) Nitrogen (c) Carbon monoxide (d) Iron

Chemistry: - 1st year **Time: -** 2hrs: 40min…. **Date: -** 06 – 05 – 2020

(**Subjective**) Section- **I** 22 x 2 = 44

Q. No 2. Give short answers of all questions **8x2=16**

i. Why a salt produced from a weak acid and a strong base gives a basic aqueous solution? **ii.** What are hydrates?
iii. Why one molal solution of urea in water is dilute as compared to one molar solution of urea but the number of particles of the solute is same?
iv. Prove that the colligative properties like ΔT_b and ΔT_f are inversely proportional to the molar masses of the solute. **v.** Define molarity & molality.
vi. How will you prepare 5% v/w ethanol solution in water? **vii.** What do you mean by ppm unit?
viii. What do you mean by discontinuous solubility curves?

Q. No 3 Give short answers of all questions **8x2=16**

i. What is meant by "electrochemistry"? **ii.** How sodium metal is extracted commercially?
iii. Calculate the oxidation number of Cr in Chromic Acid. **iv.** Balance the equation $Fe^{+3} + Sn^{+2} \rightarrow Fe^{+2} + Sn^{+4}$
v. How an electrolytic cell can be used for the purification copper? vi. Differentiate between electrode and standard electrode potential.
vii. Is the reaction $Zn^{+2}{}_{(aq)} + Cu_{(s)} \rightarrow Cu^{+2}{}_{(aq)} + Zn_{(s)}$ be spontaneous? **viii.** What are the some important uses of Ni – Cd Battery?

Q. No 4 Give short answers of any 6 questions **6x2=12**

i. How will you define Activation energy ad activated complex? **ii.** What is function of a catalyst?
iii. What is the slope in Arrhenius equation? Give its unit **iv**. What is mechanism for enzyme catalysis?
v. What do you meant by the average and instantaneous rate of reaction? **vi**. What is meant by Reaction Kinetics?

Section- **II**

Note: Attempt all three extensive questions 3x8=24

Q. No 5. (a) Discuss the chemical Method of finding the rate of reaction **(b)** Discuss various forms of Raoult's Law 4+4
Q. No 6. (a) What is **S.H.E**? Discuss its applications **(b)** Describe the importance of Arrhenius Equation 4+4
Q. No 7. (a) Describe the structure and working of Fuel cells
(b) Explain graphically, boiling point elevation and a method for its measurement 4 + 4