Paper Chemistry **Total Marks** 85

Month Test 2nd Half **Obtained Marks** _____

Chapter/ Unit No. 8,9,10,11 **Grand Total** _____

Objective/ Subjective **ID#** _____ **Time** _____

Name _____ **Class** 1st Year **Section** A

Q# 1: Choose the right answer (17 marks).

(1) The electrolyte used in fuel cell is:

(a) Aqueous NaCl (b) Molten NaCl (c) KOH (d) $NaNO_3$

(2) The pH of 10^{-3} mol dm^{-3} of an aqueous solution of H_2SO_4 is:

(a) 3.0 (b) 2.7 (c) 2.0 (d) 1.5

(3) Molarity of pure water is:

(a) 1.55 (b) 18.2 (c) 35.5 (d) 55.5

(4) The unit of the rate constant is the same as that of the rate of reaction in:

(a) First order reaction (b) Second order reaction (c) Third order reaction (d) Zero order reaction

(5) By adding NH_4Cl in a solution of NH_4OH in water, the ionization of NH_4OH:

(a) Increases (b) Decreases (c) Remain same (d) can't be predicted

(6) Which of the following salt gives acidic solution when dissolved in water?

(a) Na_2SO_4 (b) NaCl (c) NH_4Cl (d) CH_3COONH_4

(7) Which of the following solution has highest boiling point elevation?

(a) 5.85% of NaCl (b) 18% of Glucose (c) 6% of Urea (d) 34.2% of Sucrose

(8) The cathodic reaction in electrolysis of dil. H_2SO_4 with Pt electrodes is:

(a) Reduction (b) Oxidation (c) Redox (d) None of these

(9) The pH of Milk of Magnesia is:

(a) 10.5 (b) 3.5 (c) 8.5 (d) 11.1

(10) The number of moles of solute per kg of solvent is called:

(a) Molarity (b) Molality (c) Normality (d) Mole fraction

(11) Law of mass action was derived in:

(a) 1865 (b) 1866 (c) 1864 (d) 1881

(12) If the value of Kc is small it indictes the position of equilibrium on:

(a) Right side (b) Left side (c) In between (d) Constant

(13) The synthesis of Ammonia through Haber's process is about:

(a) 110 million tons (b) 100 million tons (c) 210 million tons (d) 220 million tons

(14) Mist is the example of solution:

(a) Gas in liquid (b) liquid in gas (c) Gas in gas (d) liquid in liquid

(15) The boiling point of Ethanol-water mixture is

(a) 78ºC (b) 76.2ºC (c) 75ºC (d) 78.1ºC

(16) Fuel cell converts about how much of bond energy into electricity?

(a) 30% (b) 60% (c) 65% (d) 75%

(17) Chemical formula of "Epsom Salt" is:

(a) $BaCl_2.2H_2O$ (b) $CaSO_4.2H_2O$ (c) $MgSO_4.7H_2O$ (d) $AlCl_3.7H_2O$

Q# 2: Briefly explain all questions (2 marks each)

1. Briefly explain SHE.
2. What is the function of salt bridge?
3. How electrochemical series help us to predict the feasibility of reaction? Give example.
4. State Le-Chatelier's principle.
5. What is meant by the term infinite dilution?
6. Write optimum conditions to prepare Sulphur trioxide.
7. How Buffer solution can be prepared?
8. What is the effect of common ion on solubility?
9. Define the term parts per million. How it can be calculated?
10. Aqueous solution of $CuSO_4$ is acidic in nature. Justify it.
11. What is Anodized Aluminum? How is it prepared?
12. Why Na and K can displace H_2 but Pt, Pd and Cu can't displace?
13. Calculate oxidation number of S in SO_4^{-2}.
14. What is auto-catalysis? Give exp.
15. What is Ebullioscopic constant?
16. Define the term Colligative properties. Enlist conditions to observe them.
17. Give the relationship of equilibrium constants Kc and Kp.
18. Define fractional crystallization.
19. How a finely divided catalyst can prove more effective?
20. How impure Cu can be purified by electrolytic process.
21. How surface area effect the rate of reaction?
22. The radioactive decay is always a first order reaction. Why?

Q# 3: Long Questions (8 marks each 4+4)

1. 1) Give three statements of Roult's law.
   2) Describe how rate of reaction can be measured by a chemical method?

2. 1) Balance the equation by Ion-Electron method.
   $$CN^- + MnO_4^{1-} \rightarrow CNO^- + MnO_2 \quad \text{(Basic Media)}$$
   2) Define pH and pOH. How are they related with pKw?

3. 1) Explain elevation of boiling point by Landsberger's method.
   2) Pure Benzene has vapour pressure of 122.0 torr at 32ºC.When 20g of a non-volatile solute were dissolved in 300g of Benzene, a vapour pressure of 120 torr was observed. Calculate the Molecular mass of solute. The molecular mass of Benzene is 78.1.