SRI BHAGAWAN MAHAVEER JAIN COLLEGE Vishweshwarapuram, Bangalore. **II PUC Mock Paper – 2 (FEB-2023)**	**Course:**	II PUC
	Subject:	**Chemistry**
	Max. Marks:	70
	Duration:	3:00 Hrs 15 Mins

Instructions: (i) The question paper has four parts. All the four parts are compulsory
(ii) PART -A carries 20 marks, each question carries one mark.
(iii) PART- B carries 8 marks. Each question carries two marks
(iv) PART -C carries 12 marks. Each question carries three marks PART-D carries 30 marks.
(v) Each question carries five marks ii. Write balanced chemical equations and draw diagrams
(vi) wherever necessary Use log table and simple calculators if necessary (use of scientific
(vii) calculator is not allowed)

PART-A

I. Select the correct option from the given choices. **1 × 15 = 15**

1. In the calculation of density of unit cell, the value of Z for FCC is
   (a) 1 (b) 2 (c) 3 d) 4
2. The Vant Hoff's factor for K_2SO_4 is
   (a) 2 (b) 1 (c) 4 (d) 3
3. Osmotic pressure of a solution can be increased by
   (a) Increase in temperature (b) Decrease in temperature of the solution
   (c) Increase in volume of the container (d) Adding more solvent
4. Which of the following metals cannot displace Cu from $CuSO_4$
   (a) Silver (b) Magnesium (c) Iron (d) Aluminium
5. A first order reaction is 50% complete in t seconds. The rate constant in s^{-1} is
   (a) 0.693 × t (b) 6.93 × t (c) 0.693 / t (d) 0.693 × (t/2)
6. In the process of adsorption
   (a) $\Delta H = 0$, $\Delta S = 0$ (b)ΔH = +ve, ΔS = +ve
   (c) ΔH = -ve, ΔS = -ve (d) ΔH = +ve, ΔS = -ve
7. In Hall Herault's process, cryolite is added to
   (a) Lower the melting point of the mix (b) Increase the conductivity
   (c) Reduce the ore (d) both a and b
8. Identify the incorrect statement with respect to noble gas
   (a) Soluble in water (b) Monoatomic
   (c) Low boiling point (d) Occur in very small amounts in air
9. The element Mn in MnO_2 has an oxidation state of
   (a) +7 (b) +4 (c) +2 (d) +3
10. The color in co-ordination compound is explained by
    (a) Werner's Theory (b) Synergic bond (c) CFT (d) VBT
11. Tertiary alkyl halides prefer to undergo
    (a) $S_N1$reaction (b) S_N2 reaction (c) Addition reaction (d) Condensation reaction
12. The IUPAC name of picric acid is
    (a) m-nitro phenol (b) o-nitro benzoic acid
    (c) 2,4,6-trinito phenol (d) 2,4,6-tribromophenol
13. In Clemmensen reduction, carbonyl compound is treated with……to form corresponding hydrocarbon.
    (a) Zinc amalgam + HCl (b) Sodium amalgam + HCl
    (c) Zinc amalgam + HNO_3 (d) Sodium amalgam + HNO_3

14. The only amine that can be synthesized by Gabriel-phthalimide synthesis is
    a) Aromatic primary amine b) aliphatic primary amine c) both aromatic &aliphatic primary amine d) all types of aliphatic amines
15. During denaturation of amines the only structure which remains intact is
    a) primary b) secondary c) tertiary d) quaternary

II. Fill in the blanks by choosing the appropriate word from those given in the brackets:
[London forces, DDT, ppm, Sodium benzoate, Pseudo] **1 x 5 = 5**

16. _____ is the concentration method used to express if solute is present in trace amounts.
17. The hydrolysis of ethyl acetate in acidic medium is _____ order reaction.
18. The interatomic interaction among the noble gases is _____.
19. The non-biodegradable insecticide is _____.
20. _____ is an example of food preservative.

PART-B

III. Answer any four of the following. Each question carries two marks. **4 x 2 = 8**

21. What are ferromagnetic substances? Give an example
22. State Kohlraush law. Mention an application of the law.
23. In a first order reaction, the reaction is 40% completed in 40 minutes. Calculate the rate constant of the reaction.
24. How does acidified $KMnO_4$ react with $FeSO_4$ solution? Write the balanced chemical equation
25. Explain Riemer- Tiemann Reaction using a suitable example.
26. Explain Hell Volhard Zelensky reaction.
27. What are anti-fertility drugs? Give an example
28. What are cationic detergents? Give an example

PART –C

IV. Answer any four of the following. Each question carries three marks **4 x 3 = 12**

29. Write the reactions involved in the process of leaching of bauxite ore to prepare pure alumina. (3)
30. a) Explain the laboratory method of preparation of phosphine? (2+1)
    b) Ammonia is more basic than phosphine. Give reason
31. Explain the manufacture of sulphuric acid by contact process. (3)
32. a) How does chlorine react with dilute and concentrated NaOH ? Give equations
    b) Write the composition of bleaching powder. (2+1)
33. a) Why transition elements from complex compounds?
    b) Name the element which shows maximum oxidation state.
34. a) What is lanthanoid contraction? Mention its consequences.
    b) What is the commom oxidation state of actinoids? (2+1)
35. On the basis of valence bond theory, explain hybridization, structure and magnetic Property of the complex $[Ni(Cl)_4]^{2-}$. (3)
36. a) Draw the energy level diagram to show splitting of degenerated orbitals in tetrahedral Crystal field.
    b) Draw cis and trans isomer of $[Pt(NH_3)_2Cl_2]$

PART-D

V. Answer any three of the following. Each question carries five marks. 3 x 5 = 15

37. a) Calculate the packing efficiency in simple cubic lattice. (3)
    b) Calculate the number of particles present in FCC (2)
38. a) 18g of glucose is dissolved in 1 Kg of water. K_b of water is 0.52 $KKgmole^{-1}$. If the elevation in boiling point is 0.052 K, then calculate the molar mass of the solute. (3)
    b) What is reverse osmosis? Mention one of its application (2)
39. a) The molar conducatances of NaCl, HCl and CH_3COONa at infinite dilution are 126.45, 426.16 and 91.0 Scm^2mol^{-1} respectively. Calculate the limiting molar conductance of acetic acid. (3)
    c) State Faraday's First Law of Electrolysis. Give its mathematical form. (2)
40. a) Mention any 3 differences between order and molecularity. (3)
    b) What is collision frequency? (1)
    c) Define temperature coefficient (1)
41. a) Give any two differences between lyophilic and lyophobic colloids. (2)
    b) Explain shape selective catalysis with an example (2)
    c) What is peptisation? (1)

VI. Answer any three of the following each question carries five marks 3 x 5 = 15

42. a) Explain Wurtz Fitting reaction with an example (2)
    b) Explain Finkelsteins reaction with a suitable example. (2)
    c) Name the poisonous gas liberated when Chloroform undergoes oxidation (1)

43. a) Explain the mechanism of dehydration of alcohols to give alkenes (2)
    b) How does phenol react with nitrating mixture? Write the chemical equation (2)
    c) Name the alkyl halide formed when methoxy-methane reacts with hydrogen iodide (1)
44. a) Explain Aldol Condensation with suitable example (2)
    b) How does acetone react with a mixture of NaOH and Chlorine? Write the chemical equation (2)
    c) Why is Chloroacetic acid stronger than acetic acid? (1)
45. a) How does secondary amine react with Hinsberg reagent? Write the equation (2)
    b) Write chemical equation for the conversion of ethanoic acid to methyl amine (2)
    c) Write the IUPAC name of diethyl-methylamine (1)
46. a) Write the Haworth structure of Sucrose (2)
    b) Name the nitrogenous base present in DNA but not in RNA (1)
    c) Name the vitamin whose deficiency causes rickets (1)
    d) Give an example for fibrous protein. (1)
47. a) Write the partial structure of Bakelite (2)
    b) What are bio-degradablepolymers? Give an example. (2)
    c) What is vulcanization? (1)