



SRI BHAGAWAN MAHAVEER JAIN COLLEGE
Vishweshwarapuram, Bangalore.

II PUC Mock Paper – 1 (FEB-2023)

Course: II PUC

Subject: Chemistry

Max. Marks: 70

Duration: 3:00 Hrs 15 Mins

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

PART-A

I. Select the correct option from the given choices.

1 × 15 = 15

- The substance containing zero unpaired electrons is
(a) diamagnetic (a) paramagnetic (c) ferromagnetic (d) antiferromagnetic
- Which of the following statement is not correct according to Henry's law
(a) $K_H \propto 1/\text{solubility}$ (b) $K_H \propto 1/T$ (c) $K_H \propto T$ (d) $T \propto 1/\text{solubility}$
- van't Hoff factor of glucose solution is
(a) 0 (b) 1 (c) 2 (d) 3
- When the concentration of electrolyte solution changes from 0.1 M to 0.05 M ,the conductance value decreases in
(a) Specific conductance (b) equivalence conductance
(c) molar conductance (d) both a and c
- For a zero order reaction with rate constant k the slope of plot of reactant concentration against time is
(a) $k / 2.303$ (b) k (c) $-k/2.303$ (d) - k
- The coagulating power of an electrolyte for an arsenic sulphide decreases in the order
(a) $\text{Na}^+ > \text{Al}^{3+} > \text{Ba}^{2+}$ (b) $\text{PO}_4^{3-} > \text{SO}_4^{2-} > \text{Cl}^-$
(c) $\text{Cl}^- > \text{PO}_4^{3-} > \text{SO}_4^{2-}$ (d) $\text{Al}^{3+} > \text{Ba}^{2+} > \text{Na}^+$
- The metal extracted by leaching with cyanide is
(a) Cu (b) Au (c) Al (d) Lu
- The structure of XeO_3 is
(a) Trigonal planar (b) Bent structure (c) pyramidal (d) linear
- Which of the following is colored
(a) Sc^{3+} (b) V^{4+} (c) Fe^{3+} (d) Zn^{2+}
- IUPAC name of cuprammonium sulphate is
(a) Hexaammine copper (II) sulphate (b) tetraammine copper (II) sulphate
(c) pentaammine copper (II) sulphate (d) Hexaammine copper (I) sulphate
- The reactivity alkyl halide towards $\text{S}_{\text{N}}1$ reaction is
(a) $3^\circ \text{RX} > 2^\circ \text{RX} > 1^\circ \text{RX}$ (b) $2^\circ \text{RX} > 1^\circ \text{RX} > 3^\circ \text{RX}$
(c) $3^\circ \text{RX} > 1^\circ \text{RX} > 2^\circ \text{RX}$ (d) $1^\circ \text{RX} > 3^\circ \text{RX} > 2^\circ \text{RX}$

12. The major product formed when sodium phenoxide is heated to 413 K with CO_2 under a pressure of 6-7 atm is
 (a) 3-hydroxy benzoic acid (b) 2-hydroxy benzoic acid
 (c) picric acid (d) salicylaldehyde
13. $\text{CH}_3\text{COONa} \xrightarrow[\text{heat}]{\text{soda lime}} \text{A} + \text{Na}_2\text{CO}_3$, identify A
 (a) Methane (b) ethane (c) Propane (d) butane
14. The product formed when benzamide is reduced in presence of lithium aluminium hydride is
 (a) Benzyl amine (b) benzene amine (c) benzaldehyde (d) benzoic acid
15. The amino acid containing phenolic OH group is
 (a) tyrosine (b) tryptophan (c) phenyl alanine (d) histidine

II. Fill in the blanks by choosing the appropriate word from those given in the brackets:

[Xenon, chlorobenzene, cetyl trimethyl ammonium bromide, negative, zero]

1 x 5 = 5

16. During dilution of concentrated acid change in enthalpy is -----
17. For ----- order reaction half life depends on initial concentration of reactant
18. The noble gas having comparable ionization enthalpy as that of O_2 is -----
19. ----- is formed when benzenediazonium chloride is treated with a mixture of copper chloride and HCl
20. ----- is an example of cationic detergent

PART-B

III. Answer any four of the following. Each question carries two marks.

2 x 4 = 8

21. A unit cell of an element of atomic mass 96 g and density 10.3 g/cm^3 and edge length is 314 pm. Find the structure of the lattice.
22. Mention any 2 differences between metallic and electrolytic conductors.
23. Define molecularity. For a zero-order reaction will the molecularity be equal to zero?
24. Give two differences between lanthanoids and actinoids.
25. i) What is the composition of Lucas reagent?
 ii) What is the inference observed when 3° alcohol is treated with Lucas reagent?
26. What is the action of nitrating mixture on benzoic acid? Give the chemical equation.
27. What are food preservatives? Give an example.
28. Mention any two differences between soaps and detergents

PART –C

IV. Answer any four of the following. Each question carries three marks

3 x 4 = 12

29. a) Write the balanced chemical equations for the reactions involved in hydrometallurgy of gold.
 b) Write the composition of copper matte. (2+1)
30. Write the optimum conditions to get ammonia by Haber's process? (3)
31. a) Give an example for each i) basic oxide ii) neutral oxide. (2+1)
 b) Complete the reaction
 $\text{PbS} + 4\text{O}_3 \rightarrow \text{-----} + 4\text{O}_2$
32. a) Write two anomalous properties of fluorine.
 b) Name the halogen which forms only one oxoacid. (2+1)
33. a) Name the 3d element which does not exhibit variable oxidation state.
 c) The second ionisation enthalpy of copper is exceptionally high. Give reason
 d) $\text{Cu}^{2+}(\text{aq})$ is more stable than $\text{Cu}^{1+}(\text{aq})$. Give reason. (1+1+1)

34. Explain the preparation of KMnO_4 from pyrolusite ore (3)
35. On the basis of valence bond theory, explain hybridization, structure and magnetic property of the complex $[\text{Co}(\text{NH}_3)_6]^{3+}$ (3)
36. a) Explain ionisation isomerism with an example
b) Write the type of isomerism exhibited by coordinate complexes having ambidentate ligands. (2+1)

PART-D**V. Answer any three of the following. Each question carries five marks.****5 × 3 = 15**

37. a) An element crystallizes in a structure having fcc unit cell of an edge of 300 pm. Calculate its density if 200 g of this element contains 4.12×10^{24} atoms. (3)
b) A compound is formed by two elements M and N. The element N forms ccp and M atom occupy $1/3$ of the tetrahedral voids. What is the formula of the compound? (2)
38. (a) Calculate the mass of ascorbic acid ($\text{C}_6\text{H}_8\text{O}_6$) to be dissolved in 75g of acetic acid to lower its melting point by 1.5°C . (K_f for CH_3COOH is $3.9 \text{ K Kg mol}^{-1}$)
(b) Which type of azeotrope show a large deviation from Raoult's Law? Give an example. (2)
39. a) Calculate equilibrium constant of a reaction
 $\text{Cu(s)} + 2\text{Ag}^+(\text{aq}) \rightarrow \text{Cu}^{2+}(\text{aq}) + 2\text{Ag(s)}; E^\circ_{\text{cell}} = 0.46 \text{ V}$ (3)
b) Name the cathode in lead storage battery and write the discharge reaction taking place at cathode. (2)
40. a) Derive the relation between half life & k for first order reaction. (3)
b) What are the two criteria for effective collision according to collision theory? (2)
41. a) Give any 2 application of colloids. (2)
b) Explain electrolysis. (2)
c) Why do colloidal solutions exhibit Tyndall effect? (1)

VI. Answer any three of the following. Each question carries five marks**5 × 3 = 15**

42. a) Explain Swarts reaction using an example. (2)
b) Explain Friedel craft's Acylation reaction taking chlorobenzene as an example. (2)
c) Chlorobenzene is less reactive towards nucleophilic substitution reaction. Give one reason (1)
43. a) Explain hydrolysis of alcohol using an example (2)
b) Explain nitration on anisole. (2)
c) Give the IUPAC name of diethyl ether. (1)
44. a) Explain Rosenmund reaction with a suitable example (2)
b) Explain the addition of hydrazine on acetone..Give equation. (2)
c) Among benzoic acid & acetic acid, which is a stronger acid? (1)
45. a) Explain ammonolysis of benzyl chloride. (2)
b) How do you convert aniline to p-nitro aniline? (2)
c) Why primary amines have higher boiling point than tertiary amines? (1)
46. a) With equation explain the presence of aldehydic group in glucose. (2)
b) Mention two differences between globular and fibrous protein. (2)
c) Name the vitamin whose deficiency causes beri-beri (1)
47. a) How is Buna-S prepared? Write the equation. (2)
b) How is HDPE prepared? (2)
c) What are homopolymers? Give an example. (2)
d) Write the IUPAC name of the isoprene. (1)