



Jain College, Bangalore
II PUC Mock Paper I Jan - 2020
Subject: Chemistry (34)

Max.Marks: 70

Instructions: (i) The question paper has four parts: A, B, C and D. All parts are compulsory
(ii) Write balanced chemical equations and draw labeled diagrams wherever required
(iii) Use log tables and simple calculator if necessary.

PART A

I. Answer all the following. Each question carries 1 mark. 10×1=10

1. On what factor the value of colligative property depends?
2. In a binary solution the mole fraction of one component is 0.068. What is the mole fraction of another component?
3. Which gas is evolved at cathode during electrolysis of an aqueous solution of NaCl?
4. Unit of Rate constant of a reaction is same as that its rate. What is the order of the reaction.
5. Give an expression for Freundlich's adsorption isotherm.
6. Name the method used for the refining of silicon.
7. Noble gases have very low boiling point. Why?
8. Name the product formed for the reaction of isopropyl iodide on alcoholic KOH.
9. Write the IUPAC name of $\text{CH}_2=\text{CH}-\text{CHO}$.
10. Mention one water soluble vitamin.

PART-B

II. Answer any FIVE of the following. Each question carries 2 marks. 5×2=10

11. How many tetrahedral and octahedral voids are possible if the number of close packed spheres in two layers is N?
12. What is corrosion? Name one method to prevent it.
13. Show that half life period of a zero order reaction is directly proportional to initial concentration of reactant.
14. Give reasons (i) Actinoids show variable oxidation state. (ii) cerium exhibits +4 oxidation state.
15. Name the product formed when phenol is treated with acidified solution of $\text{Na}_2\text{Cr}_2\text{O}_7$. Give equation.
16. Explain Hell-Volhard-Zelinsky(HVZ) reaction with equation.
17. What are antibiotics? Give an example
18. What are anionic detergents? Give an example.

PART-C

III. Answer any FIVE of the following. Each question carries 3 marks. 5×3=15

19. Explain the process of obtaining blister copper with equations.
20. Write the equations involved in the preparation of nitric acid by Ostwald's process.
21. Write any three anomalous behavior of oxygen.
22. Complete the following equations.
 - i) $\text{SO}_2 + \text{Cl}_2 \rightarrow$
 - ii) $2\text{FeSO}_4 + \text{H}_2\text{SO}_4 + \text{Cl}_2 \rightarrow$
 - iii) $2\text{NaOH} + \text{Cl}_2 \rightarrow$
excess
23. Give reason for the following. (i) transition elements are good catalytic agent. (ii) second ionisation enthalpy of copper is very high. (iii) The spin only magnetic moment of Sc^{+3} is zero ($Z=21$)
24. How potassium permanganate is prepared from MnO_2 ? Give equations.
25. Using VBT, explain the geometry, hybridization and magnetic property of $[\text{Ni}(\text{CN})_4]^{-2}$. Atomic number of nickel is 28.
26. (i) Explain ionisation isomerism with an example.
(ii) Write the IUPAC name of $\text{K}_3[\text{Cr}(\text{C}_2\text{O}_4)_3]$

PART D

IV. Answer any THREE of the following. Each question carries 5 marks. 3×5=15

27. (a) Calculate the packing efficiency in a Face centred cubic lattice.
(b) Give any two differences between amorphous and crystalline solids. [3 + 2]
28. (a) A solution containing 18g of a non-volatile solute is dissolved in 200g of water freezes at 272.07K. K_f value 1.86K kgmol⁻¹. Freezing point of water is 273K. Calculate the molar mass of the solute.
(b) Write any two differences between ideal and non-ideal solutions. [3 + 2]
29. (a) Calculate the standard free energy change for the reaction
 $\text{Fe}^{+2} + \text{Ag}^+(\text{aq}) \rightarrow \text{Fe}^{+3}(\text{aq}) + \text{Ag}(\text{s}) : E^0_{\text{cell}} = 0.03\text{V}, 1\text{F} = 96500\text{Cmol}^{-1}$
(b) Write half cell reaction and E^0 value of SHE. [3 + 2]
30. (a) Derive integrated rate equation for a zero order reaction. [3 + 2]
(b) What is pseudo first order reaction? Give an example.
31. (a) Give the differences between Macromolecular, Multimolecular and Associated colloids.
(b) What is peptization? Give an example [3 + 2]

- V. Answer any FOUR of the following. Each question carries 5 marks. 4×5=20
32. (a) Write S_N^2 mechanism for the conversion of methyl chloride to methanol.
 (b) Explain Fittig's reaction with an example. [3 + 2]
33. a) (i) Explain the preparation of phenol from cumene.
 (ii) Complete the reaction $C_6H_5OH + Zn \xrightarrow{\text{heat}}$
 b) Explain decarboxylation reaction with example. [3 + 2]
34. (a) Explain aldol condensation reaction with an example.
 (b) Among methanoic acid and ethanoic acid, which is more acidic and why?
 (c) Mention the hybridised state of carbonyl carbon atom. [2 + 2 + 1]
35. (a) (i) $CH_3CONH_2 \xrightarrow{Br_2/NaOH} P$ (ii) $P \xrightarrow{NaNO_2 + HCl, 273K} Q$
 What are P and Q? Name the reaction occurring in step (i)
 (b) Explain carbylamine reaction with example. [3 + 2]
36. (a) How do you show that glucose contains a linear chain of six carbon atoms?
 (b) What are essential amino acids? Is glycine an essential amino acid?
 (c) What is nucleoside? [3 + 2]
37. (a) Name the monomers used for getting following polymers. (i) PVC (ii) Bakelite
 (iii) Polystyrene.
 (b) Explain vulcanisation of rubber. [3 + 2]
