

**SURANA IND. PU COLLEGE, BENGALURU – 04**  
**II PUC CHEMISTRY MODEL QUESTION PAPER - 3**

**Time: 3 Hrs 15 Mins**

**Max. Marks: 70**

**Instructions:**

1. This question paper has four parts A, B, C and D. Answer all the parts.
2. Write balanced chemical equations and draw labeled diagrams wherever needed.
3. Use log tables and simple calculators if necessary.  
(Use of scientific calculators is not allowed)

**PART – A**

**I. Answer ALL of the following**

**10 x 1 = 10**

1. State Henry's law.
2. Name any one concentration term which is independent of temperature.
3. State Faraday's I law of electrolysis.
4. The rate of a reaction is found to be independent of concentration of the reactants.  
What is the order of the reaction?
5. State Hardy-Schultze rule.
6. Name the flux and reducing agent used in the extraction of iron from haemetite.
7. Why noble gases have very low boiling points?
8. What are enantiomers?
9. Name the oxidizing agent used in Etard's reaction.
10. Glucose on oxidation with Bromine water gives gluconic acid. What does this reaction indicate about the structure of glucose?

**PART – B**

**II. Answer any FIVE of the following.**

**10 x 2 = 20**

11. A compound  $A_xB_y$  crystallizes in FCC lattice in which A occupies each corner of the cube and B occupies the centre of each face of the cube. What is the formula of the compound?
12. Mention the factors affecting the conductance of an electrolytic solution.
13. Write Arrhenius equation and explain the terms used.
14. What is lanthanoid contraction? Mention the consequences of lanthanoid contraction?
15. Name the organic compound formed when vapours of tertiary butyl alcohol is passed over heated copper at 573K. Write the equation.
16. How is propanenitrile converted to propanal? Write the equation.
17. Give one example each for (i) an antacid (ii) an artificial sweetner.
18. What is a broad spectrum antibiotic? Give an example.

**PART – C**

**III. Answer any FIVE of the following.**

**5 x 3 = 15**

19. With a neat labeled diagram, explain the extraction of aluminium from purified alumina by Hall-Heroult process. Write the reactions taking place in the cell.
20. Explain the manufacture of nitric acid by Ostwald's process. Write the equations.
21. Mention the three anomalous behavior of oxygen.
22. What happens when (a) conc. HCl is heated with  $MnO_2$ .  
(b) Chlorine is passed through hot and conc. NaOH solution. Write the equations.
23. (a) Transition metals and their compounds are used as catalysts. Give reasons.  
(b) Write the general electronic configuration of d-block elements.
24. How is potassium dichromate obtained from chromite? Give equations.
25. Write the assumptions of Werner's coordination theory.
26. (i) What is a heteroleptic complex? Give example.  
(ii) When is linkage isomerism possible for a coordination compound?  
(iii) Write the IUPAC name of  $K_3[Cr(C_2O_4)_3]$ .

## PART – D

### IV. Answer any THREE of the following. (Each question carries 5 marks) $3 \times 5 = 10$

27. (a) Calculate the packing efficiency in hexagonal close packing arrangement.  
(b) Give one example each for ionic, covalent, molecular solids. (3 + 2)
28. (a) Draw a graph of vapour pressure against mole fractions of two volatile liquids forming an ideal solution. What is the change in enthalpy upon mixing the two components of an ideal solution?  
(b) A 4% solution of a non-volatile solute is isotonic with 0.702% urea solution. Calculate the molar mass of the non-volatile solute. (3 + 2)
29. (a) Explain the construction and working of standard hydrogen electrode. Write its symbolic representation and its standard potential.  
(b) The resistance of a solution of a salt occupying a volume between two platinum electrodes 1.8 cm apart and  $5.4 \text{ cm}^2$  in area was found to be 32 ohms. Calculate the conductivity of the solution. (3 + 2)
30. (a) Derive an integrated rate equation for the velocity constant for a first order reaction.  
(b) Show that half life period of a zero order reaction is directly proportional to initial concentration. (3 + 2)
31. (a) What is (i) multimolecular colloid, (ii) macromolecular colloid and (iii) associated colloid? Give examples.  
(b) Define (i) gold number and (ii) electrophoresis. (3 + 2)

### V. Answer any FOUR of the following.

$4 \times 5 = 20$

32. (a) How do you convert an aryl halide to diphenyl? Write the equation and name the reaction.  
(b) Write SN<sub>2</sub> mechanism for the conversion of methyl chloride to methyl alcohol. (3 + 2)
33. (a) Explain the mechanism of dehydration of ethanol to ethene.  
(b) How is salicylic acid converted to aspirin? Give equation. (3 + 2)
34. (a) Write the chemical equation for the following reactions:  
(i) Ethanoic acid to ethyl ethanoate (ii) Ethanoic acid to acetamide  
(iii) Benzoic acid to m-nitrobenzoic acid.  
(b) Explain Clemmensen's reduction with an example. (3 + 2)
35. (a) What is Hinsberg reagent? How is it used to distinguish between primary, secondary and tertiary amines?  
(b) How do you convert aniline to  
(i) acetanilide and (ii) sulphanilic acid? Write equations. (3 + 2)
36. (a) Name (i) the sugar unit present in DNA  
(ii) Nitrogenous base present only in DNA, but not in RNA.  
(b) What is peptide bond? How many peptide bonds are present in a pentapeptide?  
(c) Name the hormone which regulates the blood sugar level in the body. (2 + 2 + 1)
37. (a) What are thermoplastics and thermosetting plastics? Give examples.  
(b) Explain the preparation of neoprene, with equation.  
(c) Name the monomers used in the manufacture of terylene. (3 + 2 + 1)

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