SRI BHAGAWAN MAHAVEER JAIN COLLEGE Vishweshwarapuram, Bangalore. **Mock Examination 1 – February 2015**	**Course:** II PUC **Subject:** **Chemistry** **Max. Marks:** 70 **Duration:** 3:15hrs.

Instructions:

1. ***The question paper has four parts: A, B, C & D. All parts are compulsory.***
2. ***Write balanced chemical equations and draw labelled diagrams wherever required.***
3. ***Use log tables and the simple calculator if necessary.***
   (Use of scientific calculators is not allowed)

Part – A

I. Answer ALL of the following (Each question carries 1 Mark). 1 x 10 = 10

1. Define hypotonic solution.
2. Why is the boiling point of a solution always greater than the boiling point of pure solvent?
3. What are the products of electrolysis of aqueous sodium chloride?
4. Give an example for a reaction which has the same molecularity and order.
5. What is the dispersed phase in gel?
6. Mention the significance of leaching in the extraction of aluminum from Bauxite ore.
7. Identify 'A' in the following reaction: $XeF_6 + 2H_20 \rightarrow$ 'A' + 4 HF.
8. Name the following reaction: $2CH_3CH_2Cl + Hg_2F_2 \rightarrow 2CH_3CH_2F + Hg_2Cl_2$
9. Which of the following will not react with $NaHSO_3$ to give addition product?
   (i) Ethanal (ii) Propanone (iii) Acetophenone.
10. Which naturally occurring α- amino acid is optically inactive?

Part – B

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

11. Gold crystallizes in a face centered unit cell. What is the edge length of the unit cell, if atomic radius of gold is 0.144 nm?
12. State Faraday's second law of electrolysis.
13. In a reaction between A & B, the initial rate of reaction was measured for different initial concentrations of A and B as given below.

Expt. No.	[A] mol L^{-1}	[B] mol L^{-1}	Rate (mol L^{-1} s^{-1})
1	0.20	0.30	5.07×10^{-5}
2	0.20	0.10	5.07×10^{-5}
3	0.40	0.05	7.56×10^{-5}

What is the order of the reaction with respect to A & B?

14. Give the general electronic configuration of f-block elements and the formula of the product formed when a lanthanide reacts with nitrogen.
15. How is dimethyl ether prepared from methanol?
16. How is acetaldehyde prepared using Stephen's reduction?
17. What are artificial sweetening agents? Give example.
18. Give an example for a) Tranquilizers b) Antimicrobials

Part - C

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

19. Describe the extraction of copper from copper pyrite ore.
20. Give the balanced chemical equation for the following.
    i) Formation of nitrosoferrous sulphate
    ii) Reaction of conc. HNO_3 with Zn metal
    iii) Formation of phosphine from white phosphorous.
21. How is dioxygen obtained from potassium perchlorate? Give an example for an amphoteric oxide & a neutral oxide.
22. a) Explain the bleaching action of chlorine water. **[2]**
    b) What is aquaregia? **[1]**

23. Why do transition metals exhibit variable oxidation states? Name a transition element which does not exhibit variable oxidation states.
24. Give the equations for conversion of pyrolusite to potassium permanganate.
25. On the basis of valence bond theory, explain the hybridization, geometry and magnetic property of $[Ni(CN)_4]^{2-}$
26. With a suitable example, explain ionization isomerism and give an example for an ambidentate ligand.

Part – D_4

IV. Answer any THREE of the following. [Each question carries 5 Marks]. 5 x 3 = 15

27. a) Calculate the packing efficiency of a Body centered cubic unit cell. **[3]**
    b) Explain impurity defects in crystals. **[2]**
28. a) At 300K, 36g glucose is present per litre in its solution which has an osmotic pressure of 4.98 bar. If the osmotic pressure of the solution is 1.52 bar at the same temperature, what would be its concentration? **[3]**
    b) Give any four differences between ideal and non- ideal solutions. **[2]**
29. a) Define standard electrode potential. Calculate the electrode potential of Zn rod in 0.IM $ZnSO_4$ Solution. **[3]**
    b) Explain the reactions occurring during the corrosion of iron in the atmosphere. **[2]**
30. a) Explain the collision theory of chemical reactions. **[3]**
    b) Derive the integrated rate equation for the rate constant of zero order reaction. **[2]**
31. a) Explain heterogenous catalysis with an example. Name the adsorbate and adsorbent used in thehydrogenation of vegetable oil. **[3]**
    b) What is electrodialysis? How is electrodialysis carried out? **[2]**

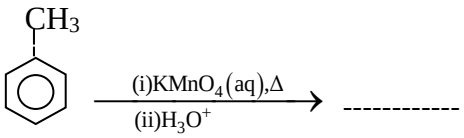
Part – D_5

V. Answer any FOUR of the following. [Each question carries 5 marks] 5 x 4 = 20

32. a) Explain S_N1 mechanism with a suitable example. **[3]**
    b) Describe Dow's process for the conversion of haloarenes to phenol with the reaction. **[2]**
33. a) i) Name the reagent used in conversion of primary alcohol to aldehyde. **[3]**
    ii) What is the product formed when acetaldehyde reacts with methyl magnesium bromide followed by hydrolysis?
    iii) Name the product obtained when tertiary alcohol reacts with copper at 573 K
    b) Among alcohols & phenols, which is more acidic & why? **[2]**
34. a) Predict the products in the following reactions **[3]**

    i) $CH_3CHO + NH_2OH \xrightarrow{H^+}$ ---------- + H_2O

    ii) $C_2H_5COOH + SOCl_2 \xrightarrow{Pyridine}$ ----------+ SO_2+HCl

    iii) 

    b) How does acetone react with ethylene glycol? Give the chemical reaction. **[2]**
35. a) What is Hinsberg reagent? How do you distinguish between 1^o,2^o, 3^o amines using Hinsberg reagent? **[3]**
    b) Methanamine is a stronger base than aniline. Explain why? **[2]**
36. a) What is a peptide bond? How many peptide bonds are present in a tripeptide? **[2]**
    b) Give suitable reactions to indicate the presence of carbonyl group and the presence of five hydroxyl groups in the structure of glucose. **[2]**
    c) Rickets is caused due to the deficiency of which vitamin? **[1]**
37. a) What are condensation polymers? Give the monomers of Nylon -6 and sketch its partial structure. **[3]**
    b) What kind of intermolecular forces are exhibited by
    i) Elastomers ii) Fibers. **[2]**

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