		Course:	II PUC
JGi	**SRI BHAGAWAN MAHAVEER JAIN COLLEGE**	Subject:	**Chemistry**
	Vishweshwarapuram, Bangalore.	Max. Marks:	70
	Mock Exam -1 Feb.2016	Duration:	3:15 Hrs.

Instructions: *DO NOT write or mark anything on the question paper*

 i)   *The question paper has five parts A,B,C , D_4 & D_5 All parts are compulsory.*
 ii) *Write balanced chemical equations and draw labeled diagrams wherever required.*
 iii) *Use log tables and simple calculators if necessary (Use of scientific calculators is not allowed)*

PART – A

I.   Answer ALL of the following [Each question carries 1 mark]   10 x 1 = 10

1.   Write the units of cryoscopic constant.
2.   What are maximum boiling azeotropes?
3.   State Faraday's second law of electrolysis.
4.   Temperature Co-efficient of a reaction is 2. To what extent the velocity of reaction increases for $30^{\circ}C$ rise in temperature?
5.   What is the dispersion medium in emulsion?
6.   Give the equation for the extraction of ZinC from ZnO.
7.   What is the product formed when xenon reacts with PtF_6?
8.   Give the IUPAC name of Allyl bromide.
9.   Write the name of the following reaction $R\text{-}CO\text{-}Cl + H_2 \xrightarrow[\text{Boiling in xylene}]{\text{Pd,BaSO}_4} RCHO + HCl$.
10.   Which nitrogenous base forms hydrogen bonds with guanine in DNA?

PART – B

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

11.   What are F – centres?
12.   The standard electrode potential for Daniel Cell is I.I v. Calculate the standard Gibb's energy for the reaction. $Zn_{(s)} + Cu^{2+}_{(aq)} \rightarrow Zn^{2+}_{(aq)} + Cu_{(s)}$
13.   All energetically effective collisions do not results in a chemical change. Explain with an example.
14.   What is Lanthanoid contraction? Give any one consequence of Lanthanoid contraction.
15.   Complete the following reactions.
       (i)

       (ii) $CH_3CH_2OH \xrightarrow[413K]{ConH_2So_4}$
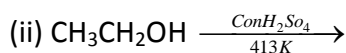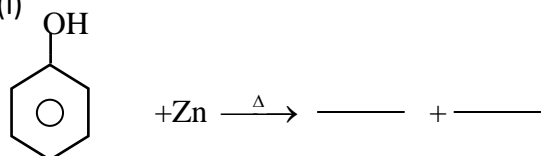
16.   Write the complete reaction when acetone reacts with:
       (i) Ethylene glycol in presence of dry HCl.
       (ii) Zinc amalgam and Con HCl.
17.   Explain saponification taking suitable example.
18.   Give an example for:
       (i) Anti histamine
       (ii) Synthetic detergent

PART - C

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

19.   a) How is gold extracted from cyanide process? Give equations.
       b) What is the principle involved in Zone refining method?   **[2+1]**
20.   a) Why does nitrogen dioxide dimerises?

       b) Write the equation for when Zinc reacting with Conc HNO_3.

c) How do you account for the reducing behavior of H_3PO_2 on the basis of its structure? **[1+1+1]**

21.   Describe the manufacturing method of H_2SO_4 by contact process.   **[3]**

22.   Write the equations for the following:

a) When ammonia reacts with excess of chlorine.   **[1+1+1]**

b) When Bromine reacts with excess of fluorine.

c) When HCl reacts with sodium sulphite.

23.   Complete the reaction: **[1+1+1]**

a) $10\, I^- + 2MnO_4^- + 16H^+ \rightarrow$

b) $8MnO_4^- + 3S_2O_3^{2-} + H_2O \;\; \rightarrow$

c) $Cr_2O_7^2 + 3H_2S + 8H^+ \;\; \rightarrow$

24.   a) Why transition elements exhibit variable oxidation state?

b) What are interstitial compounds?   **[2+1]**

25.   On the basis of VBT, explain hybridisaton, geometrical shape and

magnetic property of $\left[Ni(CN)_4 \right]^{2-}$.   **[3]**

26.   Explain stability of d-orbitals in presence of tetrahedral field.   **[3]**

PART- D$_4$

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

27.   a) Calculate the packing efficiency in a unit cell of a simple cube.

b) Define Co-ordination number? What is the Co-ordination number in each type of ions in rock -salt

type crystal structure?

c) What is anisotropy?   **[2+2+1]**

28.   a) Ethylene glycol [Molar mass = 62g mol^{-1}] is a common automobile antifreeze. Calculate the

freezing point of a solution containing 12.4 g of this substance in 100g of water.

Given [K$_f$ for water = 1.86 K Kg mol^{-1}]

b) When 30ml of ethyl alcohol & 30 ml of water are mixed, the volume of resulting solution is more

than 60ml. What type of deviation from Raoult's law is shown by this resulting solution.

Give reason.   **[3+2]**

29.   a) Conductivity changes with change in concentration of solution for a weak and a strong electrolyte.

b) Discuss the working of H_2-O_2 fuel Cell   **[3+2]**

30.   a) Derive an integrated rate equation for the rate constant of a Zero-order reaction   **[3]**

b) A first order reaction takes 40 min for 30% decomposition. Calculate t $_{½}$.   **[2]**

31.   a) Adsorption of a gas on the surface of solid is generally accompanied by decrease in entropy but

still it is spontaneous in nature. Explain.   **[2+2+1]**

b) What is heterogeneous catalysis? Give an example.

c) What is peptization?
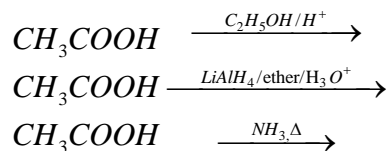
Part - D₅

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

32.   a) What are Freons? What is the name of the gas liberated by atmospheric oxidation of chloroform?

b) Haloarenes are less reactive towards nucleophilic substitution reactions than Haloalkanes. Give

reasons.

c) which of the following is more reactive towards S$_N$2 reaction?

$CH_3Br, (CH_3)_2 CHBr, (CH_3)_3 CBr$ **[2+2+1]**
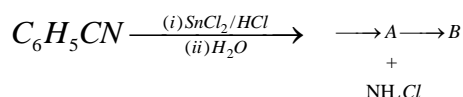
33.   a) Write chemical equations for the following:

i) Tertiary butyl alcohol treated with Cu at 573K.

ii) But- 2- enol is treated with pyridiniumchlorochromate.

b) Give the equation for the conversion of phenol to salicylaldehyde.

c) Among $(CH_3)_2 CHOH$ and $(CH_3)_3 COH,$ which will react more easily with conc. HCl in presence

of anhydrous ZnCl$_2.$ **[2+2+1]**

34.   a) Complete the following reaction:

$CH_3COOH \xrightarrow{C_2H_5OH/H^+}$

$CH_3COOH \xrightarrow{LiAlH_4/ether/H_3O^+}$

$CH_3COOH \xrightarrow{NH_3,\Delta}$

b) Identify A & B in the following reactions.   **[3+2]**

$C_6H_5CN \xrightarrow[(ii)H_2O]{(i)SnCl_2/HCl} \longrightarrow A \longrightarrow B$
$\underset{\underset{NH_4Cl}{+}}{}$

35.   a) What is Hinsbergs reagent? How is it used to distinguish between secondary amine and tertiary

amine?

b) Give the chemical equations for the conversion of aniline to paranitroaniline   **[3+2]**

36.   a) Write the Haworth structure for lactose

b) What is meant by denaturation of protein? Which level of structure remains intact during

denaturation of globular protein ?

c) Name any one deficiency disorder of vitamin C.

37.   a) What is condensation polymerization? Give an example.

b) Name the type of attractive forces present in:

i) Elastomers   ii) Fibrous polymers.   **[2+2+1]**

c) Give the partial structure of polyacrylonitrile .

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