SRI BHAGAWAN MAHAVEER JAIN COLLEGE Vishweshwarapuram, Bangalore. **MOCK Exam -2 Feb. 2016**	**Course:**	II PUC
	Subject:	**Chemistry**
	Max. Marks:	70
	Duration:	3:15 hrs

Instructions:

1. ***The question paper has five parts: A, B, C ,D_4 & D_5 All parts are compulsory.***
2. ***Write balanced chemical equations and draw labeled 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 questions. Each question carries 1 mark. 10 x 1 = 10

1. State Raoult's law of a solution containing non-volatile solute.
2. Name the concentration term, which is independent of temperature.
3. Predict the gaseous product of electrolysis of an aqueous NaCl solution at cathode.
4. Define activation energy.
5. What is kraft temperature?
6. An ore sample of galena (PbS) is contaminated with zinc blende (ZnS). Name the chemical which can be used to concentrate galena selectively by Froath floatation method.
7. Write the structure of $XeOF_4$.
8. Complete the following reaction: $C_2H_5Cl + AgNO_{2(alc)} \rightarrow$_____+_____.
9. Acetophenone does not form addition product with sodium bisulphite. Give reason.
10. What are nucleotides?

Part – B

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

11. Explain metal deficiency defects with a suitable example.
12. Write Debye-Huckel Onsager equation and explain the terms.
13. Show that half-life period of a first order reaction is independent of initial concentration of reacting species.
14. What is the formula of the products, when a lanthanoid reacts with: (i) Halogen, (ii) Nitrogen.
15. What happens when diethylether is heated with (i) limited amount of HI, (ii) Excess amount of HI.
16. Explain Cannizzaro reaction taking benzaldehyde as an example.
17. Explain cleansing action of soap.
18. What are broad spectrum antibiotics? Give an example.

Part – C

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

19. How is blister copper extracted from copper matte by Bessemerization? (3)
20. Describe the manufacture of nitric acid by Ostwald's process. (3)

21. (a)Write the equation for:

(i) charring action of concentrated H_2SO_4 on carbohydrates

(ii) thermal decomposition of potassium chlorate.

(b) Mention the allotropic form of sulphur which is more stable above 369k. (2+1)

22. (a)What is aqua regia?

(b) Write the structure of ClF_3.

(c) Give an example to show that chlorine is an oxidising agent. (1+1+1)

23. Write balanced chemical equations.

(a)When $K_2Cr_2O_7$ reacts with Sn^{2+}.

(b) Conversion of dichromate to chromate.

(c) When $KMnO_4$ reacts with oxalate ion in acidic medium. (1+1+1)

24. Give reason:-

(a) Transition elements and their compounds can act as good catalysts, (b) Most of the transition metals have high melting and boiling points. (2+1)

25. On the basis of VBT, explain hybridisation, geometrical shape and magnetic property of $[Co(NH_3)_6]^{3+}$ (3)

26. a) Mention any two postulates of Werner's theory.

b) What are heteroleptic complexes? (2+1)

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 body centered cubic strucutre.

b) Among ferromagnetic and paramagnetic substances, which one is preferred to make a permanent magnet. Explain why? (3+2)

28. a) Determine the osmotic pressure of a solution prepared by dissolving 25mg of K_2SO_4 in 2 litre of water at 25°C, assuming that it is completely dissociated. (Molar mass of K_2SO_4 = 174 g mol^{-1})

b) State any two characteristics of ideal solutions. (3+2)

29. a) Calculate the equilibrium constant for the reaction at 298K,

$Zn_{(S)} + Cu^{2+}_{(aq)} \rightleftarrows Zn^{2+}_{(aq)} + Cu_{(S)}$. Given $E^{\circ}_{Zn^{2+}/Zn} = -0.76V$ and $E^{\circ}_{Cu^{2+}/Cu} = +0.34V$.

b) Explain the reactions occuring during the corrosion of iron in the atmosphere. (3+2)

30. a) Derive an integrated rate equation for the velocity constant of a first order gaseous phase reaction.

b) Show that the time required for 99% completion of a first order reaction is twice the time required for the completion of 90%. (3+2)

31. a) Explain the following terms

i) Electrophoresis

ii) Zeta potential

iii) Dialysis.

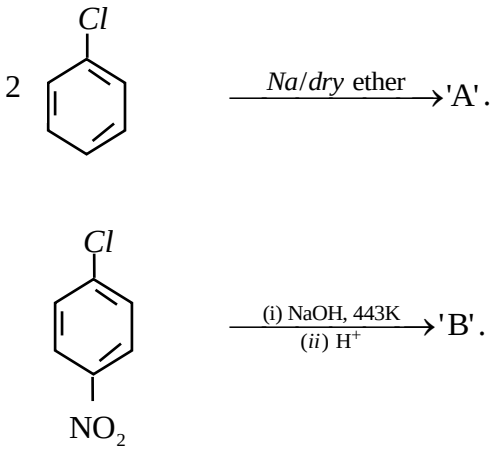
b) Explain the mechanism of heterogenous catalysis with reference to adsorption theory. (3+2)

Part –D_5

V. Answer any four of the following. Each question carries five marks. 4 x 5 = 20

32. a) i) 2-Bromopentane is treated with alcoholic KOH solution, write the IUPAC name of major product formed. Give equation and state the rule which governs it.

b) Identify the products 'A' and 'B'



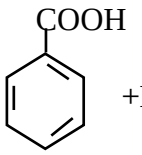
(3+2)

33. a) Write the mechanism of acid catalysed dehydration of ethanol to ethene.

b) Among phenol and o-nitrophenol, which is more acidic? Give reason. (3+2)

34. a) Identify x, y and z in the following reaction.

(i) $C_2H_5COOC_2H_5 + H_2O \xrightarrow[\text{(ii) HCl}]{\text{(i) NaOH}} x + NaCl.$

(ii)  $+NH_3 \xrightarrow{\Delta} y$

(iii) $CH_3\text{-}CH_2\text{-}COONa \xrightarrow[\text{heat}]{Z} CH_3\text{-}CH_3 + Na_2CO_3.$

b) Among acetaldehyde and propanone, which gives red precipitate with Fehling's reagent? Give the chemical equation for the above reaction. (3+2)

35. a) Give chemical equation involving the conversion of ethane nitrile into propylamine. Give the name of the reaction.

b) Identify the major product in the following reaction.

$(i)\ C_6H_5NH_2 + CH_3COCl \xrightarrow{Pyridine} \_\_\_\_\_.$

$(ii)\ ArN_2^+Cl^- + HBF_4 \xrightarrow{\Delta} \_\_\_\_\_.$ (3+2)

36. a) Write any two differences between amylose and amylopectin.

b) Give an example for the following:

(i) Fibrous protein

(ii) Basic amino acid

c) Name the deficiency disorder of Vitamin-D. (2+2+1)

37. a) Explain with equation, the preparation of neoprene.

b) What are LDP and HDP?

c) Name the intermolecular forces present in fibres. (2+2+1)

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