



JAIN COLLEGE

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Date: December 2017

SUBJECT: CHEMISTRY

II PUC
MOCK - II

Timings Allowed: 3 Hrs.

Total Marks: 70

- Instructions:
- The question paper has four Parts.
 - Parts A, B, C and D are common to all candidates.
 - Part A carries 10 marks. Each question carries one mark. Part B carries 20 marks. Each question carries two marks. Part C carries 40 marks. Each question carries five marks. In Part D-D₁ carries 10 marks and D₂ carries five marks.
 - Write balanced chemical equations and draw diagrams wherever necessary.

PART A

I. Answer the following.

10X 1= 10

- State Raoult's law for volatile solute in solution.
- What is the effect of increase in temperature on the solubility of gas in a liquid?
- How molar conductivity varies with dilution?
- Give an example of zero order reaction.
- Give an example for homogeneous catalysis.
- Which noble gas is most abundant in atmospheric dry air?
- Nitrogen is less reactive at room temperature. Why?
- What is a racemic mixture-?
- Which oxidizing agent is used in Étard's reaction?
- Name the protein present in hair.

PART B

II. Answer any five of the following.

5 x 2= 10

- What is Schottky defect give an example of crystal showing this defect?
- Write two applications of Kohlrausch law
- 75% of first order reaction is complete in 30min. calculate the rate constant of the reaction.
- What is lanthanide contraction? What is the cause for it
- How do you prepare diethyl ether by dehydration of ethanol?
- How are carboxylic acids prepared from nitriles?
- What are antiseptics? Give example.
- Explain saponification of oils or fats with equation.

PART C

III. Answer any five of the following

5x 3= 15

- How is pure alumina obtained from Bauxite by leaching process?
- Write the reactions that take place during the manufacture of nitric acid by Ostwald's process.
- a) Explain the action of Conc. HCl on KMnO₄ crystals.
b) Write the structure of perchloric acid.
- Complete the following equations.
 - $2\text{Fe}_3 + \text{SO}_2 + 2\text{H}_2\text{O} \rightarrow$
 - $\text{PbS} + 4\text{O}_3 \rightarrow \text{PbSO}_4 + \underline{\hspace{2cm}}$
 - $8\text{NH}_3(\text{excess}) + 3\text{Cl}_2 \rightarrow$

23. How potassium dichromate is prepared from the chromite ore?
24. What are interstitial compounds? Write any two characteristics of interstitial compounds.
25. With the help of valence bond theory account for the geometry & magnetic property of $[\text{Co}(\text{NH}_3)_6]^{3+}$
26. i) Calculate the magnetic moment of Mn^{2+}
 ii) Give reasons. a) Cu^{2+} ions are coloured but Zn^{2+} ions are colourless.
 b) cerium exhibits +4 oxidation state.

PART D

IV. Answer any THREE of the following.

3 x 5 = 15

- 27 a). Calculate the packing efficiency in body centered cubic crystals
 b). Silver forms a ccp lattice. The edge length of its unit cell is 408.6pm. Calculate the density of silver.
 $N_A = 6.022 \times 10^{23}$, Atomic mass of Ag = 108g/mol.
28. a). The boiling point of benzene is 353.23K .when 1.80 g of a nonvolatile, non Electrolytic solute was dissolved in 90 g of benzene, the boiling point was Raised to 354.11 K calculate the molar mass of the solute [K_b for benzene = $2.53 \text{K} \cdot \text{kg} \cdot \text{mol}^{-1}$
 b). Write two differences between ideal and non ideal solutions of two liquids
29. a) Standard EMF of the cell; $\text{Cu}|\text{Cu}^{2+}(1\text{M})||\text{Ag}^+(1\text{M})|\text{Ag}$ is 0.46 V at 25°C . Find the value of Standard free energy change for the reaction that occurs in the cell.
 b) Draw the neat labelled diagram of SHE and write its symbolic representation.
30. a) Derive the integrated rate equation for a zero order reaction.
 b) Give any two differences between order and molecularity of reaction.
31. a) Write any two differences between lyophilic sols and lyophobic sols.
 b) What are the differences between physisorption and chemisorption?
 c) Give an example for homogeneous catalysis.

V. Answer any FOUR of the following.

4X5= 20

- 32 a) Explain S_N^2 mechanism with an example.
 b) Name the product formed when chloromethane reacts with (i) aqueous KOH & (ii) Alcoholic AgCN
 iii) Give an example of polyhalogen compound.
33. a) Explain esterification reaction between acetic acid & ethyl alcohol as example.
 b) Boiling point of alcohol is greater than the boiling point of hydrocarbons of comparable molar masses. why?
 c) What is the effect of $-\text{NO}_2$ group on the acidic strength of phenol? Give reason
- 34.a). How is Benzoyl chloride converted into benzaldehyde? Name the reaction
 b). Write the chemical equation for the reaction between dilute NaOH and acetaldehyde.
35. a) How do you convert benzene diazonium chloride into chlorobenzene? Name the reaction.
 b) Explain Hoffmann Bromide reaction with an example.
36. a) Write the Haworth structure of maltose.
 b) What are hormones? Give one biological function of insulin.
 c) What are nucleosides?
37. a) Name the monomers of nylon- 6.
 b) How is Neoprene prepared? Give equation.
 c) What is thermoplastic polymer? Give example.
