II PUC Mock Paper-II JAN – 2020
Subject: Chemistry (34)

Time: 3 Hours 15 min **Max Marks: 70**

INSTRUCTIONS:
i) The question paper has four parts A, B, C and D. All the parts are compulsory.
ii) Write balanced chemical equations and draw labeled diagrams wherever asked.
iii) Use log tables and simple calculators if necessary.
(Use of scientific calculators is not allowed)

PART-A

I. Answer ALL the questions (Each question carries one mark) **10x1=10**

(Answer each question in one word or in one sentence)

1. What are ideal solutions?
2. Give an example for liquid solution in which solute is a gas.
3. What is the chemical composition of rust?
4. What is collision frequency?
5. Name the dispersed phase in emulsion.
6. Write the principle involved in zone refining.
7. What is the structure of XeF_4?
8. What is the reagent used in the conversion of alkyl halide to alkene?
9. Which type of aldehyde does not undergo cannizaro's reaction?
10. Name the storage polysaccharide present in animals.

PART-B

II. Answer any FIVE of the following. (Each question carries two marks): **5x2=10**

11. X-ray diffraction studies show that copper crystallises in a FCC unit cell with edge length of 3.608 x 10^{-8}cm, copper has density of 8.92gcm^{-3}. Calculate the atomic mass of copper. Given N_A= 6.023 x 10^{23}.
12. Write the reaction taking place at anode and cathode during corrosion of iron.
13. What is zero order reaction? Give an example.
14. What is the formula of the products formed when a lanthanoid(Ln) reacts with
    (i) halogen (X) (ii) nitrogen
15. Name the product formed by the oxidation of
    (i) primary alcohols (ii) secondary alcohols.
16. Explain esterification reaction with an example.
17. What are detergents? Why are they preferred over soaps?
18. What is a broad spectrum antibiotic? Give an example.

PART-C

III. Answer any FIVE of the following. Each question carries three marks: 5x3=15

19. Give the reactions taking place in different zones of the blast furnace during extraction of iron.
20. Mention the anomalous behavior of nitrogen.
21. Draw the flow chart for the manufacture of sulphuric acid by contact process. Name the catalyst used in the process.
22. Complete the following equations. (i) $2F_2 + 2H_2O \rightarrow$

    (ii) $H_2S + Cl_2 \rightarrow$

    (iii) $8NH_3(excess) + 3Cl_2 \rightarrow$
23. What are interstitial compounds? Write any two of their characteristics.
24. (i) Calculate the magnetic moment of Mn^{+2} (Z=25)

    (ii) Second ionization enthalpy of copper is very high. **(2+1)**
25. Using VBT account for the geometry and magnetic property of $[Ni(Cl)_4]^{2-}$ (Atomic number of Ni = 28).
26. For $[Co(en)_3]Cl_3$

    (i) Give the IUPAC name.

    (ii) Give the co-ordination number of central metal ion.

    (iii)What type of stereoisomerism does it exhibit?

PART-D

IV. Answer any THREE of the following. (Each question carries five marks): 3x5=15

27. (a) What are ferromagnetic substances? Give an example.

    (b) What is Frenkel defect? What is its effect on density of solid?

    (c) Give any one difference between crystalline and amorphous solids. **(2+2+1)**
28. (a) a solution containing 18g of nonvolatile solute is dissolved in 200g of water freezes 272K. Calculate the molar mass of the solute. Given K_f=1.86Kkgmol^{-1}.

    (b) What is reverse osmosis? Mention any one of its use. **(3+2)**
29. (a) Calculate the equilibrium constant for the reaction.

    $Cu(s) + 2Ag^+ \longrightarrow Cu^{+2} + 2Ag(s)$ $E^0_{cell} = 0.46V$. [1F = 96500C)

    (b) Mention any two factors on which electrolytic conduction depends. **(3+2)**
30. (a) Write the energy distribution curve showing temperature dependence of rate of a reaction.

    (b) Show that rate of a first order reaction is doubled when concentration of the reactant is doubled. **(3+2)**
31. (a) What is (i) multimolecular colloid (ii) macromolecular colloid (iii) associated colloid.

    (b) What is heterogenous catalysis? Give an example. **(3+2)**

V. Answer any FOUR of the following. (Each question carries five marks) 4x5=20

32. (a) Mention the major product formed in the following

    (i) C_6H_5Br + Mg (dry ether)→

    (ii) 2-bromopentane + alcoholic KOH→

    (iii) CH_3Cl + NaI(dry acetone)→

(b) What is Wurtz reaction? Give an example. **(3+2)**

33. (a) Explain with equations (i) Reimer-Tiemann reaction. (ii) Williamson's reaction.

(b) What happens when phenol is shaken with excess of bromine water? **(3+2)**

34. (a) Explain with equation, the condensation reaction of acetaldehyde with hydrazine.

(b) Complete the following reaction and name the reaction:

$C_6H_5COCl + H_2$ (Pd-$BaSO_4$)→

(c) Aldehydes are more reactive than ketones. Give reason. **(2+2+1)**

35. (a) Arrange the following in the increasing order of their basic strengths in aqueous medium.

$(CH_3)_3N$, CH_3NH_2, $(CH_3)_2NH$.Give one reason for the trend observed.

(b) Name the major product in the following

(i) when methyl amine is treated with nitrous acid.

(ii)Benzene diazonium chloride is treated with KI

(c) Write the IUPAC name of $CH_3CH_2NH_2$ **(2+2+1)**

36. (a) Write the reaction to show that glucose contain 5-OH groups.

(b) What are essential amino acids? Give an example.

(c) What is denaturation of protein? **(2+2+1)**

37. (a) How are polymers classified based on source?

(b) Explain the preparation of Buna-N with equation.

(c) Name the dicarboxylic acid used as one of the monomer in the manufacture of terylene. **(2+2+1)**

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