JAIN COLLEGE, JAYANAGAR
II PUC CHEMISTRY MOCK PAPER – 2

Max Marks : 70

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 isotonic solutions?
2. Components of a non-ideal binary solution cannot be completely separated by fractional distillation. Why?
3. Mention the concentration of H^+ ions in the solution used in SHE.
4. What is collision frequency?
5. What type of ore is concentrated by gravity separation?
6. Which noble gas does not occur in nature?
7. What is crystal field splitting?
8. What are enantiomers?
9. Give reason: Acetic acid is soluble in water.
10. Name a vitamin that is stored in liver and adipose tissues.

PART-B

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

11. Define Radius ratio. What is the value of radius ratio for octahedral geometry?
12. State Kohlrausch's Law of Independent migration of ions.
13. Write any two differences between order and molecularity of a reaction.
14. Write any two differences between Lanthanides and Actinides.
15. How do you convert propene into propan-2-ol?
16. A carboxylic acid is treated with alcohol in presence of conc. H_2SO_4. Name the reaction. Give its general equation.

17. What are tranquilizers? Give an example.
18. What are artificial sweeteners? Give an example.

PART-C

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

19. Explain with equations Van Arkel method of refining of Zr.
20. Describe with equations the manufacture of nitric acid by Ostwald's process.
21. Draw the flow chart for the manufacture of sulphuric acid by contact process. Name the catalyst used in the process.
22. Name the gas liberated when conc. HCl is heated with MnO_2. Give the equation for the reaction. Name the reagent used to obtain bleaching powder from chlorine.
23. What is the gas liberated when (i) $KMnO_4$crystals is heated to 513K and (ii) acidified$KMnO_4$is treated with oxalate ions at 333K.Write the equations.
24. Write ionic equations for the reaction of dichromate ions with (i)hydroxyl ions (ii) Fe^{2+} ions in acidic medium. In which one of the above two reactions, the oxidation number of Cr remains unchanged.
25. Using VBT account for the geometry and magnetic property of $[CoF_6]^{3-}$ (Atomic number of Co=27)
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) Calculate the packing efficiency in ahcp arrangement.
    (b)Mention one consequence of metal excess defect. **(4+1)**
28. (a) The vapour pressure of pure benzene is 0.85bar. When 0.5g of a non-volatile solute was dissolved in 39g of benzene, the vapour pressure of the solution is 0.845bar. Calculate the molar mass of the solute.
    (b) State Raoult's law of a solution of two volatile liquids. **(3+2)**
29. (a) Calculate the EMF of the cell in which the following reaction takes place.
    $Ni(s) + 2Ag^+ (0.002M) \longrightarrow Ni^{+2}(0.160M) + 2Ag(s)$ $E^0_{cell} = 1.05V$..
    (b) Write symbolic representation of the SHE and give its standard potential value. **(3+2)**
30. (a) The rate constant for a 1^{st} order reaction is 0.0693min-1. Calculate the percentage of the reactant remaining at the end of 60 minutes.
    (b) Show that half life period for a zero order reaction is directly proportional to initial concentration. **(3+2)**

31. (a) Give any three differences between physical adsorption and chemical adsorption.

(b) What is (i) Tyndall effect (ii) Peptisation **(3+2)**

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

32.(a) How do you convert an aryl halide to diphenyl? Write the equation and name the reaction.

(b) Write S_N2 mechanism for the conversion of methyl chloride to methyl alcohol. **(3+2)**

33.(a) Explain the mechanism of acid catalysed dehydration of ethanol into ethene.

(b) How is phenol manufactured from cumene? **(3+2)**

34.(a) Write the chemical equation for the following conversions.

(i) ethanoic acid to ethanoic anhydride

(ii) ethanoic acid to acetamide

(iii) benzoic acid to m-nitrobenzoic acid

(b) Explain Clemmenson's reduction with an example **(3+2)**

35.(a) Give equations to synthesize methanamine by Gabriel phthalimide synthesis

(b) Explain the trend in base strengths of 1°, 2°,3°, methyl amines in gaseous phase. **(3+2)**

36.(a) Mention two differences in the structure of starch and cellulose. Write the Haworth's structure of the monomer in cellulose.

(b) Give an example each for (i) acidic α amino acid (ii) fibrous protein. **(3+2)**

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

(b) With respect to natural rubber, (i) name its monomer (ii) name the element used for vulcanization. **(3+2)**

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