JAIN COLLEGE

463/465, 18th Main Road, SS Royal, 80 Feet Road, Rajarajeshwari Nagar,
Bangalore - 560 098

Date: *SUBJECT: CHEMISTRY*

II PUC
Mock paper I

Timings Allowed: 3 Hrs15Minutes   *Total Marks: 70*

PART A

I.   *Answer the following.*   **1 X 10 = 10**
1. What is the electrode potential of SHE at 298K?
2. What is the colour of Ti^{4+}?
3. Who prepared the first noble gas compound?
4. What happens the molality of the solution when temperature is increased?
5. What are fuel cells?
6. The unit of rate constant of the reaction is $molL^{-1}s^{-1}$. What is its order?
7. What is composition of "copper matte"?
8. Which is the element used in the vulcanization of rubber?
9. Identify A in the following reaction.

     R-X + NaI $\xrightarrow{A}$ RI + NaX
10. Solvent molecules migrate from solvent to solution through semi-permeable membrane. Why?

PART B

II.   *Answer any FIVE of the following.*   **2 X 5 = 10**
11. Differentiate between lyophobic and lyophilic sols.
12. Calculate the number of particles in fcc.
13. The $t_{1/2}$ of first order reaction is 9.28s. Calculate its velocity constant.
14. How does phenol reacts with bromine water?
15. How is anisole prepared from phenol?
16. Explain the reaction of acetic acid with $SOCl_2$.
17. What are food preservatives? Give example.
18. Aldehydes are generally more reactive than ketones towards nucleophilic addition reactions. Give reason.

PART C

III. *Answer any FIVE of the following.*   **3x 5= 20**
19. Explain Mond's process of refining nickel with reactions.
20. Describe the manufacture of H_2SO_4 by Contact process.
21. Complete the following reactions
     (a) $6NaOH + 3Cl_2 \rightarrow$
          Hot/conc
     (b) $Cl_2 + 3F_2 \rightarrow$
               (Excess)
     (c) $XeF_6 + 3H_2O \rightarrow$
22. How do you manufacture $KMnO_4$?
23. Give the anomalous properties of O_2.
24. What are interstitial compounds? Give their characteristics.

25. (a) Define solvate isomerism.
   (b) What is the IUPAC name of $[Co(NH_3)_6]Cl_3$.
   (c) Give the co-ordination number of $[Co(en)_3]^{3+}$.
26. With the help of valence bond theory explain the geometry, hybridisation and magnetic property of $[Ni(CN_4)]^{2-}$.

PART D
IV.   ANSWER ANY 3 OF THE FOLLOWING.   *5 X 3 = 15*
27. (a) Calculate the packing efficiency in close packing cubic unit cell.   (3+1+1)
   (b) How semiconductors are classified?
   (c) What is doping?
28. (a) Vapour pressure of liquids A and B at 298K is 300mm of Hg and 450mm of Hg respectively. If the total vapour pressure of mixture A and B is 405mm of Hg. Calculate the mole fraction of A in the mixture.   (3+2)
   (b) State Raoult's law for solution of volatile liquid.
29. (a) Calculate the equilibrium constant of the reaction at 298K   (3+2)
        $Mg(s) + 2Ag^+_{(aq)} \rightarrow Mg^{2+}_{(aq)}$; E^0_{Cell} = +3.16V
   (b) Write anodic and cathodic reaction of lead storage battery.
30. (a) Derive integrated rate equation for the rate constant of zero order reaction.
   (b) Define order of the reaction. What is the unit of rate constant of I order reaction? (3+2)
31. (a) Explain physisorption. Give its characteristics.   (4+1)
   (b) Define electrophoresis.

PART E
V.   ANSWER ANY 4 OF THE FOLLOWING;   *5 x 4 = 20*
32. (a) How does 2-bromopentane reacts with alcoholic solution of KOH?
   (b) How does chlorobenzene reacts with Sulphuric acid? Explain with reaction   (2+3)
33. (a) How is tertiary alcohol prepared from Grignard reagent?
   (b) How do you prepare phenol from cumene?   (2+3)
34. (a) Explain Haloform reaction with example.
   (b) Explain aldol condensation reaction with example.   (2+3)
35. (a) How does primary amine reacts with benzene sulphonyl chloride? Give reaction.
   (b) How aniline reacts with bromine water?
   (c) How does primary amine reacts with nitrous acid?   (2+2+1)
36. (a) Write the Harworth structure of lactose.
   (b) What is denaturation of proteins?
   (c) Name the disorder caused due to the deficiency of vitamin B_{12}.   (2+2+1)
37. (a) Define addition polymer.
   (b) How do you prepare polyester?
   (c)Write the partial structure of glyptal and urea-formaldehyde resin.   (2+2+1)

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