

**PART-A****I. Answer all of the following.****10x1=10**

1. What are azeotropic mixtures?
2. Give an example of solute whose Vant-Hoff factor value is greater than one.
3. What happens to molar conductivity when 1 mole of KCl is dissolved in one litre is diluted to 3 litres.
4. If half-life period of the reaction is directly proportional to the initial concentration of the reaction, what is the order of the reaction?
5. What is Brownian movement?
6. Which type of ore is concentrated by froth flotation process?
7. Give the composition of misch metal.
8. Write the structure of DDT.
9. Draw the structure of 3-methyl butanal.
10. What is peptide bond?

PART-B**II. Answer any FIVE of the following.****5x2=10**

11. Calculate the number of particles in unit cell of face centered cubic lattice.
12. State Faraday's first law of electrolysis. Give mathematical form.
13. If $2A \rightarrow P$ is second order reaction, how is the rate of reaction affected, if rate of reaction is doubled and then reduced to half.
14. What is lanthanoid contraction? Mention one of its consequences.
15. What is Lucas reagent? Between primary, secondary and tertiary which will react faster.
16. What happens when sodium acetate is heated with soda lime, give equation?
17. Explain saponification of oils and fats with equation.
18. What are artificial sweeteners? Give example.

PART-C**III. Answer any Five of the following****5x3=15**

19. How is gold extracted from cyanide process? Write equation. **3M**
20. Explain manufacture of nitric acid by Ostwald process. **3M**
21. Give three reasons for anomalous behavior of oxygen. **3M**
22. Complete the following equations. **3M**
 - (i) $XeF_6 + 3H_2O \rightarrow \text{-----} + \text{-----}$
 - (ii) Write the composition of bleaching powder. **(2+1)**
23. Write the reaction for the preparation of $KMnO_4$ from pyrolusite ore. **3M**
24. Why do transition elements form complex compounds? Name the element of third transition series which exhibit highest oxidation state.
25. Explain hybridisation, structure and magnetic property of $[Co(NH_3)_6]^{3+}$ using valence bond theory. (Atomic number of Co=27) **3M**
26. (a) What is the IUPAC name of $[Cr(NH_3)_3(H_2O)_3]Cl_3$
(b) What is linkage isomerism? Give an example. **(1+2)**

PART-D₄**IV. Answer any Three of the following.****3x5=15**

27. (a) Mention any two differences between Schottky and Frenkel defect.
(b) Give any two applications of semiconductor.
(c) What are F – centre? **(2+2+1)**

28. (a) 5.8g of nonvolatile solute was dissolved in 100g of CS₂. The vapour pressure of solution is found to be 190mm of Hg. Calculate the molar mass of solute given the vapour pressure of pure CS₂ is 195mm of Hg. (Molar mass of CS₂ = 76gmol⁻¹)
 (b) What is reverse osmosis? Mention any one of its application. (3+2)
29. (a) Explain construction and working of standard hydrogen electrode.
 (b) State Faraday's second law of electrolysis. Write its mathematical form. (3+2)
30. (a) Rate constant of a reaction at 500k and 700k are 0.02sec⁻¹ and 0.07sec⁻¹ respectively. Calculate energy of activation. ($R = 1.0973 \times 10^7 \text{ m}^{-1}$)
 (b) What is zero order reaction? Give an example. (3+2)
31. (a) Based on the type of particles in dispersed phase how are these colloids classified
 (i) Sulphur sol (ii) Soap in water (iii) Starch sol
 (b) Explain the preparation of colloids by electrical disintegration (Bredig's arc method). (3+2)

PART-D₅

V. Answer any Four of the following

4x5=20

32. (a) Write equations for the steps in S_N1 reaction for the conversion of tertiary butyl bromide to tertiary alcohol.
 (b) What are diastereoisomers? Give an example. (3+2)
33. (a) Mention the major product formed in the following
 (i) $C_2H_5OH \xrightarrow[443K]{Conc.H_2SO_4}$
 (ii) $CH_3CH_2OH \xrightarrow[413K]{Conc.H_2SO_4}$
 (b) How does diethyl ether react with
 (i) Cold concentrated HI and (ii) hot concentrated HI at 373K. (3+2)
34. (a) Explain the mechanism of addition of HCN to aldehyde in presence of a base.
 (b) What is haloform reaction? Give example. (3+2)
35. (a) What is diazotization?
 (b) Give the preparation of p-aminoazobenzene from benzene diazonium chloride
- (c) Give IUPAC name of $CH_3-CH_2-CH_2-\overset{\overset{CH_3}{|}}{N}-C_2H_5$ (2+2+1)
36. (a) Explain denaturation of proteins.
 (b) Name the base present in DNA but not RNA.
 (c) Name the vitamin which causes anemia. (2+2+1)
37. (a) Name the monomers used in the preparation of polythene and natural rubber.
 (b) What are co-polymers? Give an example.
 (c) Give an example of thermosetting polymers. (2+2+1)
