



- Instructions:** (i) The question paper has four parts: A, B, C and D. All parts are compulsory  
(ii) Write balanced chemical equations and draw labeled diagrams wherever required  
(iii) Use log tables and simple calculator if necessary.

### PART A

- I. Answer all the following. Each question carries 1 mark. 10×1=10**

1. What are isotonic solutions?
2. How many coulombs of electricity is required to oxidize one mole of Al to Al<sup>+3</sup>?
3. Define Molarity.
4. If half life period of a reaction is independent of the initial concentration of the reactant. What is the order of the reaction?
5. Name the dispersed phase present in cloud.
6. Give the composition of copper matte.
7. Give a reason for the chemical inertness of noble gases.
8. p - dichlorobenzene has higher melting point than those of ortho and meta isomers. Give reason.
9. Name the product formed when acetaldehyde reacts with hydroxyl amine.
10. What is glycosidic linkage?

### PART-B

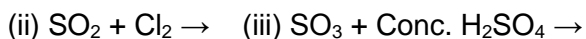
- II. Answer any FIVE of the following. Each question carries 2 marks. 5×2=10**

11. What type of defect can arise when a solid is heated? Which physical property is affected by it?
12. Between La(OH)<sub>3</sub> and Lu(OH)<sub>3</sub>, which one is more basic and why?
13. Write any two differences between Molecularity and Order of a reaction.
14. How many grams of chlorine is formed by the electrolysis of molten sodium chloride with a current of 1A for 15 minutes?
15. Explain Williamson's ether synthesis with an example.
16. What is the effect of electron withdrawing and electron donating groups on the acidity of carboxylic acids.
17. Give an example for (i) an antacid (ii) an artificial sweetener
18. What are antioxidants? Give an example.

### PART-C

- III. Answer any FIVE of the following. Each question carries 3 marks. 5×3=15**

19. Describe the extraction of copper from sulphide ore containing iron impurity.
20. (a) How is phosphine prepared in the laboratory?  
(b) How does ammonia react with cupric ion? (2 + 1)
21. Complete the following equation. (i)  $2\text{KClO}_3 \xrightarrow{\text{heat in presence of MnO}_2}$



22. Name the product formed when excess of fluorine reacts with chlorine. Give the structures of hypochlorous acid and chloric acid.

23. (i) 3d series elements exhibits variable oxidation states. Why?

ii) Calculate the magnetic moment of  $\text{Mn}^{+2}$  ( $Z = 25$ ). (2+1)

24. (i) What are alloys? Give one of its characteristics

(ii) Between  $\text{Ti}^{+2}$  and  $\text{V}^{+2}$ , which ion contains more number of unpaired electrons? (2+1)

25. Give the postulates of Werner's theory of coordination compounds.

26. (i) Explain ionization isomerism with an example.

(ii) What are homoleptic complexes? Give an example. (2+1)

#### PART D

IV. Answer any THREE of the following. Each question carries 5 marks. 3x5=15

27. (a) Calculate the number of particles in a FCC lattice.

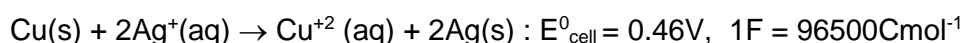
(b) What is Schottky defect? How does it affect the density of solid?

(c) What is an interstitial defect? (2+2+1)

28. (a) Calculate the mass of a non volatile solute [ molar mass is  $40\text{g mol}^{-1}$ ] which should be dissolved in 114g octane to reduce its vapour pressure to 80%

(b) Give any two differences between a non ideal solution with a positive deviation and a negative deviation from Raoult's law. [3 + 2]

29. (a) Calculate the equilibrium constant for the reaction



(b) Write the reaction occurring at cathode and anode in  $\text{H}_2\text{-O}_2$  fuel cell. [3 + 2]

30. (a) A first order reaction takes 40minutes for 30% decomposition. Calculate half-life period.

(b) Show that half life period of a zero order reaction is directly proportional to the initial concentration of the reactant. [3 + 2]

31. (a) What are Emulsions? Give an example for O/W emulsion.

(b) What is shape selective catalysis? Give an example.

(c) State Hardy-Schulze rule. [2 +

2 + 1]

V. Answer any FOUR of the following. Each question carries 5 marks. 4x5=20

32. (a) Primary alkyl halide  $\text{C}_4\text{H}_9\text{Br}$ (A) reacted with alcoholic KOH to give compound (B).

The compound B is reacted with HBr to give C, which is an isomer of A. Give the structural formula of A and write the equations for all the reactions.

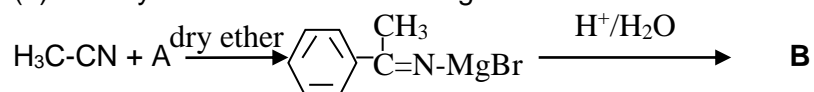
(b) Name the major product obtained when tertiary-butyl bromide is heated alcoholic KOH. Give the equation. [3 + 2]

33. (a) How do you convert propanone to tertiary-butyl alcohol. Write the chemical equation.

(b) How is phenol converted to picric acid? Give the equation. [3 + 2]

34. (a) Give the preparation of ethanoic acid from suitable Grignard reagent.

(b) Identify A and B in the following reaction.



(c) Acetophenone does not undergo addition reaction with sodium bisulphate. Why? [2 + 2 + 1]

35. (a) How is chloromethane converted to N,N-dimethylmethanamine?

(b) Explain carbyl amine reaction with an example. [3 + 2]

36. (a) What are reducing sugars? Is sucrose a reducing sugar? Give reason.

(b) Write the Haworth's structure of sucrose [3 + 2]

37. (a) What are thermosetting plastics? Name the monomer of nylon-6,6 and give its partial structure

(b) Explain with equation, preparation of neoprene. [3 + 2]

\*\*\*\*\*

\*\*\*\*\*