

6. Identify the reaction order from each of the following rate constants :
- (a) $K = 2.3 \times 10^{-5} \text{ L mol}^{-1} \text{ s}^{-1}$
(b) $K = 3 \times 10^{-4} \text{ s}^{-1}$
7. What is the role of cryolite in the metallurgy of aluminium ?
8. Why Zn^{2+} is diamagnetic whereas Mn^{2+} is paramagnetic ?
9. Complete the following :
- (a) $\text{XeF}_4 + \text{O}_2\text{F}_2 \rightarrow$
(b) $\text{XeF}_2 + \text{H}_2\text{O} \rightarrow$
10. Give the hybridization of sulphur in the following :
- (a) SO_2
(b) SO_3
(c) SF_4
(d) SF_6

SECTION - B

6 × 4 = 24

Note : Answer any six questions :

11. (a) What are amino acids ? Give two examples.
(b) Write any two differences between Globular and fibrous proteins.
12. Explain the following with one example for each :
- (a) Wurtz reaction
(b) Fittig reaction
13. Explain Werner's theory of co-ordination compounds with suitable examples.
14. How does PCl_5 react with the following :
- (a) Water
(b) $\text{C}_2\text{H}_5\text{OH}$
(c) CH_3COOH
(d) Ag
15. Define the following with suitable examples :
- (a) Anti-ferromagnetism
(b) Frenkel defect
16. State Henry's law. Calculate the mass of a non-volatile solute (molar mass 40 g mol^{-1}) which should be dissolved in 114 g of octane to reduce its vapour pressure to 80%.

17. What is catalysis ? How is catalysis classified ? Give one example for each of catalysis.
18. Write any **two** ores of the following metals :
- (a) Aluminium
 - (b) Zinc
 - (c) Iron
 - (d) Copper

SECTION – C

2 × 8 = 16

Note : Answer any **two** questions :

19. (i) Explain the following with suitable examples :
- (a) Conversion of alkylhalide to ether.
 - (b) Conversion of phenol to salicylic acid.
- (ii) (a) How do you prepare carboxylic acid and alcohols from Grignard's reagent ? Give example.
- (b) What is carbylamine reaction ? Give example.
20. (i) State Faraday's first and second laws of electrolysis. A solution of CuSO_4 is electrolysed for 10 minutes with a current of 1.5 amperes. What is the mass of copper deposited at the cathode ?
- (ii) What is molecularity of a reaction ? How is it different from the order of a reaction ? Name one bimolecular and one trimolecular gaseous reactions.
21. (i) How does chlorine react with
- (a) acidified FeSO_4 ?
 - (b) dry slaked lime ?
- (ii) Describe the manufacture of H_2SO_4 by contact process.