



**Part B**  
**Answer ALL questions**  
**Each answer should not exceed 400 words or two pages**

**5 x 6 = 30**

- 11.a. Detail a note on classification of ligands. CO1 K3  
(or)
- 11.b. Explain optical isomerism with an example. CO1 K3
- 12.a. Discuss the postulates, evidence, and limitations of Werner's theory. CO2 K4  
(or)
- 12.b. Differentiate Valence bond theory and Crystal Field theory. CO2 K3
- 13.a. List out the general characteristics of d-block elements. CO3 K3  
(or)
- 13.b. Write a short note on the chemistry of potassium permanganate. CO3 K4
- 14.a. Explain lanthanide contraction. CO4 K3  
(or)
- 14.b. Summarize the extraction of uranium. CO4 K4
- 15.a. Discuss briefly on carbonic anhydrase. CO5 K3  
(or)
- 15.b. Explain the following (i) toxicity of metal ions (ii) Chelating agents in medicine CO5 K4

**Part C**  
**Answer ALL questions**  
**Each answer should not exceed 800 words or four pages**

**5 x 12 = 60**

- 16.a. Classify isomerism with examples. CO1 K4  
(or)
- 16.b. What is geometrical isomerism, and sketch the geometrical isomerism in four and six coordination compounds. CO1 K5
- 17.a. Illustrate valence bond theory for square planar and octahedral complexes and list out the limitations of VB theory. CO2 K4  
(or)
- 17.b. Discuss crystal field stabilisation energy and crystal field splitting in tetrahedral complexes. CO2 K5
- 18.a. Give a brief report on the physical and chemical properties of titanium, titanium dioxide, and titanium tetrachloride. CO3 K4  
(or)
- 18.b. Discuss the symmetry operations of NH<sub>3</sub> and H<sub>2</sub>O. CO3 K4
- 19.a. Elaborate on the general characteristics of lanthanides and actinides. CO4 K4  
(or)
- 19.b.(i) Write a note on the separation of lanthanides using the ion-exchange method. CO4 K3  
(ii) Explain the extraction procedure of thorium. CO4 K4
- 20.a.(i) Discuss the role of alkali metals in biological systems. CO5 K4  
(ii) Write a short note on carboxypeptidase. CO5 K5  
(or)
- 20.b. Discuss the role of iron and its application in bio-systems. CO5 K5

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