

(2)

- (a) Explain reducible and irreducible representation. 6
- (b) Find out point group for the following compounds : 8
- (i) P-dichlorobenzene
- (ii) ClF_3
- (iii) NH_3
- (c) Write a note on conjugacy relation and classes. 6

Unit-II

2. (a) Explain the formation of σ bonds in any octahedral complex using MOT. 6
- (b) Write chemical reactions of sodium nitroprusside. 6
- (c) Describe molecular configuration of CO molecule as suggested by Coulson. 8

OR

- (a) Discuss the structure of mononuclear dioxygen complex. 6
- (b) $\text{Fe}(\text{CO})_5$ is known while $[\text{Fe}(\text{CO})_6]^{3+}$ is not known. Why? 6
- (c) Write the effects of π bonding on the value of Δ_0 . 8

(3)

Unit-III

3. (a) How does chelation affects stability of complexes ? 6
- (b) Describe the experimental determination of stability constant by spectrophotometric method. 8
- (c) Explain the types of Isopolytungstate. 6

OR

- (a) Write a note on properties and uses of aluminosilicates. 6
- (b) Write a note on synthesis and properties of silicones fluids and silicones rubber. 8
- (c) Give classification of heteropoly molybdate. 6

Unit-IV

4. (a) What are phosphazines ? Discuss nature of bond in triphosphazines. 6
- (b) What are carboranes ? Write their preparation properties and structure. 8
- (c) Write a note on Borazines. 6

OR

(4)

- (a) Write Wade's rule to explain the structure of closo, nido and arachno boranes. 6
- (b) Write a note on heterocatenation. 6
- (c) What are metal carbonyl clusters? Describe with suitable examples. 8
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