

Name of Paper:  $\rightarrow$  Coordination and Organometallics  
Compound (GE-2)

Semester: - IV

Faculty Name: By Tamanna

Maximum Marks: 16  
(scaled down to 8 marks)

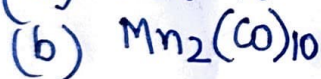
Attempt All Questions

Que 1 What do you mean by term hapticity? Give two examples where the same ligand can show Varying hapticity. (2 Marks)

Que 2 Explain Coulson treatment of Carbonyl ligand (Molecular orbital Theory) (4 Marks)

Que 3 What is synergic effect? How does it account for the formation of carbonyls with transition metals in low oxidation states? (2 Marks)

Que 4 Write down the preparation and structures of following (by MOT approach)



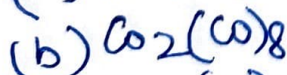
(3 Marks)

Que 5 The CO stretching frequency in IR spectra are as follow:

|                       |                                  |                            |                             |                                 |
|-----------------------|----------------------------------|----------------------------|-----------------------------|---------------------------------|
|                       | $[\text{Mn}(\text{CO})_6]^+$     | $[\text{Cr}(\text{CO})_6]$ | $[\text{V}(\text{CO})_6]^-$ | $[\text{Ti}(\text{CO})_6]^{2-}$ |
| $\nu(\text{cm}^{-1})$ | 2090 <del>cm</del> <sup>-1</sup> | 2000 $\text{cm}^{-1}$      | 1860 $\text{cm}^{-1}$       | 1750 $\text{cm}^{-1}$           |

The value for  $\text{CO(g)}$  is  $2143 \text{ cm}^{-1}$ . Explain. (2 Marks)

Que 6 Using VBT draw the structure of



(3 Marks)