



**PART C**  
**Answer any 2 questions**

**Weights: 5**

19. Using molecular orbital theory as a guideline, illustrate the bonding present in dibenzene chromium. (An, CO 1)
20. What are Tollman catalytic loops? Sketch the loop and explain the mechanism of alkene hydrogenation using Wilkinson's catalyst. Discuss the applications of Wilkinson's catalyst. (U)
21. Explain following reactions of Organometallic compounds with suitable examples. ( )  
(a) Oxidative addition  
(b) Binuclear reductive elimination.
22. Discuss in detail about Photosystem I and Photosystem II with the aid of Z-scheme. (A, CO 3)

**(5 x 2 = 10)**

**OBE: Questions to Course Outcome Mapping**

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Describe the key concepts of inorganic and organometallic chemistry including those related to synthesis, reaction chemistry, and structure and bonding.	U	3, 5, 9, 10, 12, 18, 19	13
CO 2	Explain stability of organometallic compounds and clusters, and their application as industrial catalysts.	A	4, 8, 14, 17	6
CO 3	Recognize and explain the interaction of different metal ions with biological ligands	U	2, 6, 7, 11, 15, 21	12
CO 4	Demonstrate a systematic understanding of the key aspects of nuclear chemistry and their analytical applications.	U	1, 13, 16	5

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;