

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.Sc/IMSC/PRE-PHD
BRANCH:CHEMISTRY

SEMESTER : I/VII
SESSION : MO/2025

SUBJECT: CH404R1 ORGANOMETALLIC CHEMISTRY

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Explain the structure and bonding in Ferrocene or any metal sandwich complex?	[5] 1	1,2
Q.1(b)	Why are square planar complexes of d8 transition metals invariable exceptions to the 18 electron rule? Also, state 18 electron rule and its limitations?	[5] 1	1,2
Q.2(a)	Differentiate between Fischer and Schrock Carbenes on account of synthesis, bonding and applications?	[5] 2	2,3
Q.2(b)	Discuss synthesis and commercial uses of Grubb's and Tebbe's reagents?	[5] 2	2,3
Q.3(a)	Explain the mechanism of Oxidative addition and reductive elimination reactions?	[5] 3	3,4
Q.3(b)	Explain the mechanism of insertion reactions and elimination reactions using small molecules?	[5] 3	3,4
Q.4(a)	Explain the catalytic cycle of Wilkinson's catalyst? What is its significance?	[5] 4	4,5
Q.4(b)	What is Wacker's process? Differentiate between Homogenous and Hetrogenous catalysis?	[5] 4	4,5
Q.5(a)	Give an account of polymerization of alkenes and commercial applications	[5] 5	5
Q.5(b)	Name any five organometallic complexes, their structure, reaction and commercial applications?	[5] 5	5

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