MANIPAL ACADEMY of HIGHER EDUCATION
(Deemed to be University under Section 3 of the UGC Act, 1956)

Reg. No.										

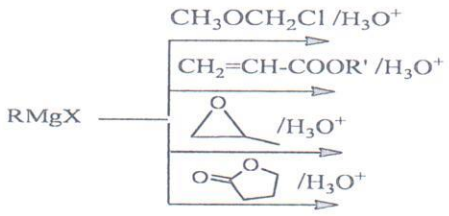
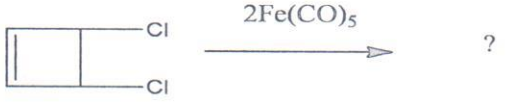
DEPARTMENT OF SCIENCES, IV SEMESTER M.Sc (CHEMISTRY)
END SEMESTER EXAMINATIONS, APRIL 2018

Subject: ORGANIC CHEMISTRY II [CHM 4204]
(REVISED CREDIT SYSTEM-2017)

Time: 3 Hours Date:18-04-2018 MAX. MARKS: 50

Note: (i) Answer ALL questions

(ii) Write chemical reactions and structures wherever necessary

1A.	Explain the role of main group organometallics as a nucleophile, reductor and base with illustrative examples.
1B.	i) Describe the structural varieties and bonding in metal-alkyne complexes ii) Give two applications of metal-carbonyls in metallurgy.
1C.	i) Discuss industrial importance and laboratory applications of organometallic compounds. ii) Predict the products in the following reaction.  [3+3+4]
2A.	Give two synthetic methods for the following metal complexes. i) Metal-alkene complexes ii) Metal-cyclobutadiene complexes iii) Metal-cyclooctatetraene complexes
2B.	i) What is fluxionality? Explain the fluxionality in cyclic alkenes ii) Give two synthetic applications of organosilicon compounds
2C.	i) Describe the chemical properties, two synthetic applications and structure of organoaluminium compounds. ii) Predict the products in the following reactions. a.  b. $CH_2=CH_2 + R_3SiH \xrightarrow[\text{Pressure}]{Co_2(CO)_8}$? [3+3+4]

3A.	Explain the preparative methods, properties and applications of organotin compounds.
3B.	Describe the chemical properties, modes of co-ordination and important chemical reactions of metal arene complexes.
3C.	i) Write the mechanism of 3,3-sigmatropic rearrangement reaction using FMO theory. ii) Sketch the π-molecular orbitals of 2-chloro-1,3-butadiene. [3+3+4]
4A.	Describe the mechanism of electrocyclization of (2E, 4Z)-hexadiene under photochemical conditions using FMO theory. Show that the stereochemistry of the product is different under thermal condition.
4B.	Substantiate the following statement using Woodward Hoffman correlation diagram; "Diels Alder reaction occurs under thermal conditions".
4C.	i) Explain suprafacial and antarfacial addition during cycloaddition reactions. ii) How is Dess-Martin reagent prepared? Write its synthetic applications. [3+3+4]
5A.	Give an account of palladium catalyzed cross coupling reactions highlighting their synthetic importance.
5B.	How is Dioxirane reagent prepared? Describe its application in epoxidation and C-H insertion reactions.
5C.	i) What is Baylis-Hillman reaction? Write its mechanism. ii) Write Ugi reaction using an example. Comment on its reaction pathway. [3+3+4]