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

Reg. No.										

DEPARTMENT OF SCIENCES, II SEMESTER M.Sc (CHEMISTRY)

END SEMESTER EXAMINATIONS, APRIL 2019

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

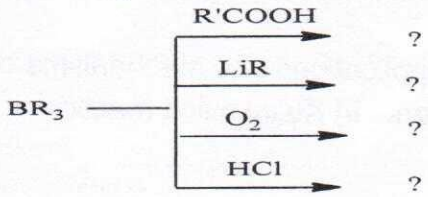
Time: 3 Hours Date: 25-04-2019 MAX. MARKS: 50

Note: (i) Answer **ALL** questions
(ii) Write reactions, structures or mechanisms wherever necessary

1A. Describe two synthetic methods, structure and bonding of Fischer carbenes. How are they different from Schrock carbenes?

1B. **i)** Explain the common routes of decomposition of transition metal alkyls.
ii) Justify the statement: Reactivity of metal-arenes depends upon the functional groups on arene moieties.

1C. **i)** What happens when methyl cyanide is treated with methyl lithium followed by treatment with H_3O^+? Explain the mechanism of the reaction.
ii) Predict the products in the following reactions.



3+3+4

2A. Give two synthetic methods for the following metal complexes.
i) Metal-butadiene complexes
ii) Metal-cyclopentadiene complexes
iii) Metal-arene complexes

2B. Describe any two methods of preparation of Grignard reagent and four of its applications in organic synthesis.

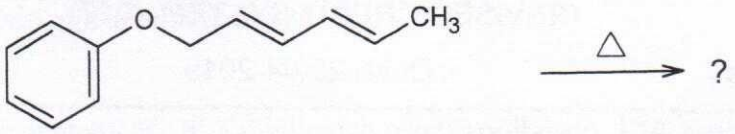
2C. **i)** Describe the following methods of preparation of organometallics with example.
a. Transmetallation **b**. Oxidative addition.
ii) Discuss industrial importance and laboratory applications of organometallic compounds. **3+3+4**

3A. Discuss the structure and bonding, aromaticity and electrophilic substitution reactions of ferrocene.

3B. **i)** How is Tebbe's reagent prepared? Give two of its synthetic applications.
ii) Give chemical properties of organoaluminium compounds.

3C. Describe the synthetic importance and mechanism of Ugi reaction. Explain the scope of substrate structures in the generation of molecular libraries. **3+3+4**

4A. Predict the product and explain the reaction mechanism using FMO theory.



4B. Rationalize why two different products are formed from disrotatory ring closure of (2*E*, 4*Z*, 6*Z*)-octatriene while only one product in case of (2*E*, 4*Z*, 6*E*)-octatriene.

4C. Write Woodward Hoffman orbital correlation diagram for a thermally feasible cycloaddition reaction. **3+3+4**

5A. Write various reagents used for epoxidation reactions. Give the features of Sharpless asymmetric epoxidation reaction.

5B. How is dioxirane reagents prepared? Comment on their reactivity. Explain their synthetic scope and mechanism of one of the reactions.

5C. Write the synthetic applications and mechanisms of the following reactions.
i) Brook rearrangement **ii)** Kulinkovich reaction **3+3+4**

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