

**A-885**

Total Pages : 4

Roll No. ....

**CHE-552**

**M.Sc. CHEMISTRY (MSCCH)**

**(Synthetic Organic Chemistry)**

2nd Year Examination, 2024 (June)

Time : 2:00 Hrs.

Max. Marks : 70

**Note :-** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

**Section-A**

**Long Answer Type Questions**      2×19=38

**Note :-** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

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( 1 )

P.T.O.

1. Give the Mechanism of the following reactions :
  - (a) Birch Reduction
  - (b) Stork Enamine synthesis
  - (c) Clemmensen reduction
  - (d) Knoevenagel condensation
2. What is the protecting group ? Discuss the mechanism of protection and deprotection of alcohols as trimethyl ethers.
3. (a) What is Functional Group interconversion (FGI) ?  
Discuss the FGI with the suitable example.
  - (b) Discuss the regioselectivity of the organic reactions.
4. Write short note on the following :
  - (a) Asymmetric diels- alder reaction
  - (b) Meerwein-Ponndorf-Verley reduction
  - (c) Cram's rule
  - (d) Ozonolysis of alkenes.
5. What do you understand by prochirality ? Write an explanatory note on chiral reagents and chiral catalysts.

## Section–B

### Short Answer Type Questions 4×8=32

**Note** :- Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Write explanatory notes on followings :
  - (i) Oppenauer Oxidation
  - (ii) Reduction with  $\text{NaBH}_4$
2. Discuss use of two group C–X disconnections in 1, 1 and 1, 2 Difunctionalised compounds in organic synthesis.
3. Give a deliberate approach on the Regioselectivity role in synthesis of Target molecule in organic synthesis.
4. Discuss the mechanism of the following reactions :
  - (a) Suzuki Coupling
  - (b) Robinson annulation
5. Write notes on following terms of Disconnection approach of organic synthesis :
  - (a) Target Molecule
  - (b) Synthetic Equivalent
  - (c) Retron

6. Write detailed notes on followings :
- (a) Diastereomers
  - (b) Diastereotopic ligands
7. Explain the followings :
- (a) Oxidative cleavage of alkenes and diols
  - (b) Hydrogenation of nitriles and oxime.
8. What happens when alkene is treated with-
- (a) Alkaline  $\text{KMnO}_4$
  - (b)  $\text{OsO}_4$  in presence of  $\text{H}_2\text{O}_2$ .
  - (c)  $\text{H}_2/\text{Pt}$

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