Roll No. ------------------

**CHE-552**

**Synthetic Organic Chemistry**

M.Sc. Chemistry (MSCCH)

2nd Year Examination 2024 (Dec.)

**TIME: 2 Hours 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**

**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. (2×19=38)**

1. What is protecting group? Discuss briefly the role of protecting group in organic synthesis.
2. Write any four important organosilicon reagents. Given the synthesis of trimethylsilylazide and trimethyl iodide.
3. What do you understand by prochirality ? Write an explanatory note on chiral reagents and chiral catalysts.
4. Define the term chemoselectivity, regioselectivity and steroselectivity. Discuss the use of

these concept in designing the synthesis of target molecules by taking appropriate examples.

1. Write detailed notes on followings :

a)Enatiotopic faces

b) Diastereotopic ligands

c) Diastereomers

**SECTION – B**

 **Short – answer – type questions**

**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.* (4×8=32)**

1. Give the Mechanism of the following reactions :
2. Wolff-Kishner reduction
3. Meerwain-ponndorf- verley reduction
4. Knovenagel condensation

2. Discuss protection and de protection of following functional groups in organic synthesis :

 a) Amine group

 b) Carbonyl group

 3. Write notes on followings :

 a) Synthesis of secondary amines.

 b) Cyclisation reactions.

 4. Define following terms.

 a) Target molecule

 b) Disconnection approach

 c) Transform

 d) Synthon

 5. Complete the following reactions and give suitable reagents wherever required.

 a)

 

b)

 

c)

 

d)

 

6) Write explanatory notes on followings :

a) Oppenauer Oxidation

b) Sharpless epoxidation

7) Discuss use of two group C-X disconnections in 1,1 and1,2 Difunctionalised compounds in

 organic synthesis.

8) What happens when alkene is treated with-

a) Alkaline KMnO4

b) OsO4 in presence of H2O2.

c) H2 / Pt