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

**CHE-551**

**Reaction Mechanism, Pericyclic Reaction, Photochemistry Stereochemistry**

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. a )Discuss the stability of carbanions . Formulate the mechanism of an addition reaction of a carbanion.

b) Outline the mechanism of an addition reaction of a carbanion.

2. Explain Norrish type-I and type-II reactions with suitable examples.

 3. Explain the following :

 a) Curtain-Hammett principle

 b) Jablonski diagram.

 c) (m+ n) cycloadditions)

 4. Discuss the mechanism of the followings:

 a) Pinacole-Pinacolone Rearrangement

 b) Wolff rearrangement

 c) Lossen rearrangement

**5.** a) Discuss the boat conformation of cyclohexane. Why is the boat conformation of cyclohexane less stable then the chair chair conformation ?

b) Discuss the photochemical reactions of diazo compounds.

**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. How are dipole moment studies and NMR useful in conformational analysis ? Explain with an example in each case.
2. Write short note on :

 a) Phosphorescence.

 b) Florescence.

 3. Explain E1 and E2 mechanism with suitable examples.

 4. Discuss the Woodward and Hoffmann’s explanation for conservation of molecular orbital symmetry.

 5. Write notes on the followings.

 a) Singlet and triplet Carbene

 b) Photochemical reaction of alkylnitriles.

 6. Outline the method of formation of carbonium ion from

 a) An alkyl halide

 b) An alcohol

 c) An alkene

7. What are Chelotropic reactions and how is it related to Diel-Adler’s additions.

 8. Complete the following reactions :

 a) C6H6  + H2C=C=CH2 

 b)

 

 c)

 

 d)

 