

P-932

Total Pages : 4

Roll No.

CHE-551

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

M.Sc. Chemistry (MSCCH)

2nd Year Examination, 2023 (June)

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 answer 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 the carbene? Give the method of formation of carbene. Discuss the factors which affect the stability of carbene.
2. Give the mechanism of the any three reactions of the following :
 - (a) Hofmann rearrangement.
 - (b) Losser rearrangement.
 - (c) Curtius rearrangement.
 - (d) Schmidt rearrangement.
3. Show by the FMO method that the conrotatory ring closure of a 1,3-diene is thermally allowed whereas that of 1,3,5-triene is photochemically allowed?
4. Discuss the the photochemical cleavage of carbonyl compound with the help of the Norrish type-I and Norrish type-II.
5.
 - (a) Discuss the twist-boat and boat conformation of the cyclohexane.
 - (b) Discuss the stereochemistry cis-trans Decaline.

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. Discuss the mechanism of the Baeyer-villiger oxidation.
2. Discuss any two of the following :
 - (a) Hofmann rule.
 - (b) Saytzeff rule.
 - (c) Cis elimination in E₂ reaction.
3. What is π - π^* transition? Draw the HOMO and LUMO molecular orbital diagram of the 1,3 butadiene and ethylene.
4. What is the Jablonski diagram? Explain the fluorescence and phosphorescence.
5. Discuss the conformations of 1,2 methyl cyclohexane and 1,3 -methyl cyclohexane.
6. Give the mechanism of the any two reaction of the following :
 - (a) Pinacol-pinacolane rearrangement
 - (b) Paterno-buchi reaction

- (c) Ene reaction
- (d) Photo-smiles rearrangement

7. What is reactive intermediate ? Explain the stability of the Carbocation and carbanion.

8. Write short note on :

- (a) [2 + 2] cycloaddition reaction.
 - (b) Beckmann rearrangement.
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