S-1124

Total Pages : 4 Roll No. .....

CHE-551

Reaction Mechanism, Pericyclic Reaction, Photochemistry Stereochemistry

M.Sc. Chemistry (MSCCH)

2nd Year Examination, 2022 (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.

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 are carbenes? How are they generated? Discuss their type, structure and stability of carbenes?

2. Discuss the mechanism of any *three* the followings :

(a) Wagner-Meerwein rearrangements.

(b) Pinacol-Pinacolone rearrangement.

(c) Fries-Rearrangement.

(d) Beckmann rearrangement.

(e) Lossen rearrangement.

3. (a) What are $n - \pi^*$ and $\pi - \pi^*$ transitions is carbonyl compounds? Explain the differences between them.

(b) With the help of Jablonski diagram describe, deactivation of excited states?

4. Discuss the conformations of cyclohexane, 4-methyl cyclohexane, and cyclohexanone.

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

(b) Discuss the stereospecificity of E2 reactions with a suitable examples.

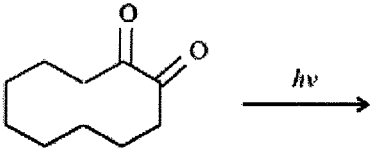
SECTION–B

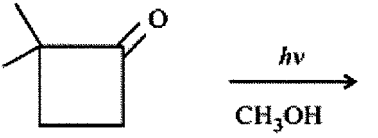
(Short Answer Type Questions)

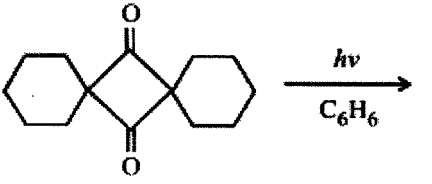
Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

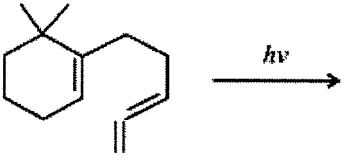
1. Complete the photochemical reactions :

(a) 

(b) 

(c) 

(d) 

(e) 

2. Discuss the photochemical reaction of α, β-Unsaturated carbonyl compounds.

3. Explain the followings :

(a) Photochemistry of azo compounds.

(b) [3,3] sigmatropic rearrangement.

4. Write short notes on the following :

(a) Hofmann rule.

(b) Kinetic isotope effect.

5. Define cyclo addition reaction. What are [m + n] cycloadditions? Explain with two examples.

6. 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?

7. State Curtin-Hammett principle and explain with suitable examples.

8. Write explanatory notes on :

(a) Superoxide.

(b) Vinyl polymerization.
