S-451

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

MCH-601

Reaction Mechanism and Pericyclic Reaction

M.Sc. Chemistry (MSCCH)

3rd Semester Examination, 2022 (Dec.)

Time : 2 Hours] **[Max. Marks : 35**

Note : This paper is of Thirty Five (35) 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 Nine and Half (9½) marks each. Learners are required to answer any Two (02) questions only. (2×9½=19)

1. What is carbene intermediate? Define the methods of formation, properties and structure of carbene intermediate?

2. Discuss any three of the following with their mechanism

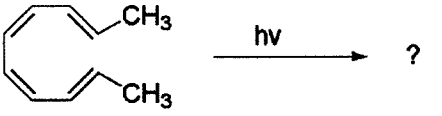
(a) Wanger-Meerwein rearrangement reaction.

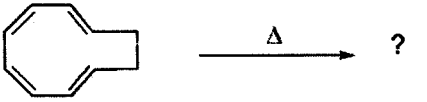
(b) Baeyer villager oxidation.

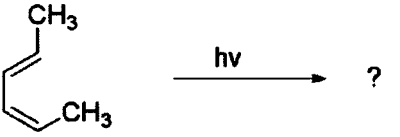
(c) Hofmann rearrangement.

(d) Backmann rearrangement.

3. Predict whether contatory or disrotatory motion will take place under the conditions mention against each compound. Write the structure of the product with stereochemistry in each case.

(a) 

(b) 

(c) 

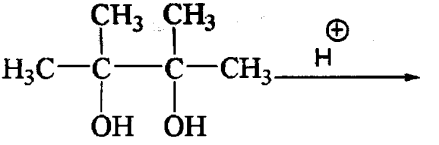
4. Discuss the correlation diagram for [4s+2s] cycloaddition reaction.

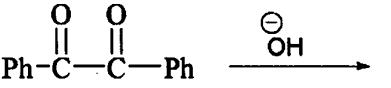
5. Explain by PMO method that [1,3] suprafacial shift of a hydrogen is photo chemically allowed while [1,3] antafacial shift is thermally allowed.

SECTION–B
(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Four (04) marks each. Learners are required to answer any Four (04) questions only. (4×4=16)

1. Write the product of following reaction with the Mechanism :

(a) 

(b) 

2. Write the notes on :

(a) Diel's Alder reaction with the stereochemistry.

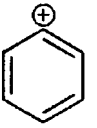
(b) Benzyne substitution.

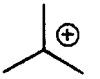
3. Explain the Saytzeff rule for β-elimination reaction.

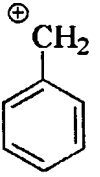
4. Explain why triplet carbene is more stable than the singlet carbene.

5. Distinguish between substitution and elimination reaction.

6. Arranged following carbocation in order of their increasing stability with explaination :

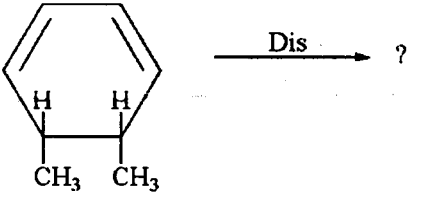
(a) 

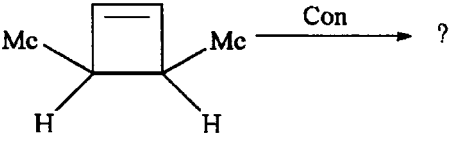
(b) 

(c) 

(d) 

7. Write the product of following reactions :

(a) 

(b) 

8. Draw the π MO diagram of 1,3,5-hexatriene.