

# C106

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## MCH-601

### Reaction Mechanism and Pericyclic Reactions

M.Sc. Chemistry (MSCCH)

3rd Semester, Examination 2022 (June)

**Time : 2 Hours]**

**Max. Marks : 40**

**Note :** This paper is of Forty (40) 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 Ten (10) marks each. Learners are required to answer any Two (02) questions only.

(2×10=20)

1. Discuss the mechanism and stereochemistry of  $E_2$  reaction with suitable example. Draw an energy profile diagram for  $E_2$  reaction. 10

2. What are electrocyclic reactions? With the help of correlation diagram analyse the :

Cis-3,4-dimethylcyclobutene  $\rightleftharpoons$  2, 4-hexadiene system, giving stereochemistry under thermal and photochemical conditions. 10

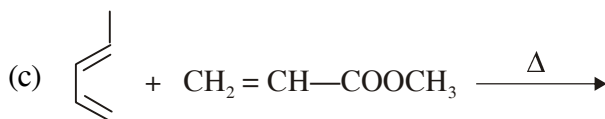
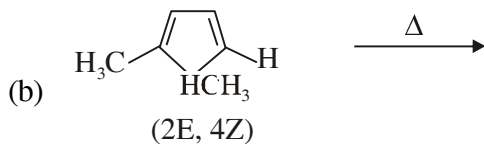
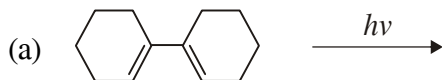
3. What are Carbenes ? Write notes on :

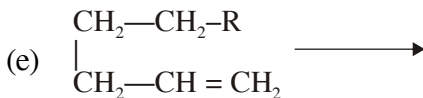
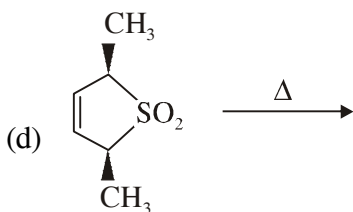
- (a) Formation of carbenes.  
(b) Stability of carbenes with their structures.  
(c) Five reactions of carbenes. 10

4. Write short note on :

- (a) Pinacol – pinacolone rearrangement.  
(b) Baeyer – villiger oxidation. 10

5. Predict the product of the given reaction :





## SECTION-B

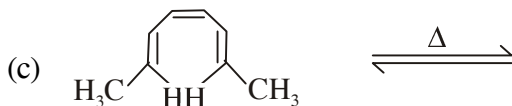
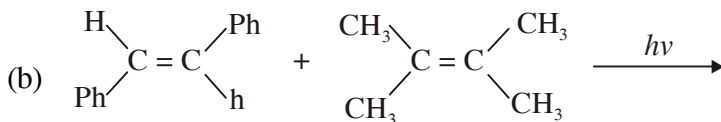
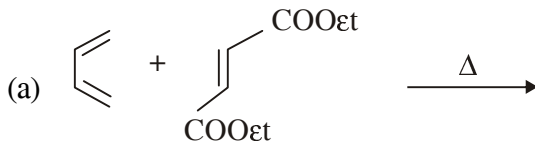
### (Short Answer Type Questions)

**Note :** Section 'B' contains Eight (08) short answer type questions of Five (05) marks each. Learners are required to answer any Four (04) questions only. (4×5=20)

1. What are benzyne? How o, m and p-benzyne can be prepared? 5
2. What are Pyrolytic elimination reaction? Explain with giving two suitable examples. 5
3. Discuss the mechanism of Beckmann rearrangement of benzophenone oxime. Explain stereospecificity of this rearrangement with an example. 5
4. Discuss the mechanism of the Wolff rearrangement with suitable example. 5
5. Explain why Singlet dichlorocarbene is more stable than the triplet carbene. 5

6. Draw correlation diagram for [4 + 12] cycloaddition reaction using FMO method. 5

7. Complete the following reactions with their stereochemistry :



8. Write the product of the following reactions :

