

A-0564

Total Pages : 3

Roll No.

MCH-601

M.Sc. CHEMISTRY (MSCCH)

(Reaction Mechanism and Pericyclic Reaction)

3rd Semester Examination, Session December 2024

Time : 2:00 Hrs.

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. 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 2×9½=19

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.

1. Draw and explain correlation diagram of electrocyclic reaction.
2. Discuss neighbouring group participation of pi and sigma bonds in stabilizing the carbocations by taking suitable example.
3. What are reaction intermediates, discuss in detail any three reaction intermediates.
4. What are pericyclic cycloaddition reaction ? Give FMO method to explain [2+2] cycloaddition by thermal and photochemical method.
5. Explain :
 - (a) Neighbouring group assistance in the free radical reactions
 - (b) Regioselectivity of elimination reactions

Section-B

Short Answer Type Questions 4×4=16

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.

1. Give [1, 3] rearrangement of sigmatropic reaction by suprafacial and antarafacial process.

2. Discuss factors affecting elimination reactions.
3. Write notes on the following :
 - (a) Carbenes
 - (b) Nitrines.
4. Why cis-3, 4-dimethylcyclobutene on heating gives (2Z,4E)-2,4-hexadiene while on photochemical the product is (2E, 4E)-2, 4-hexadiene.
5. Discuss photochemical cycloaddition reaction of cyclic α , β -unsaturated ketone with example.
6. How will you account for the opposite stereochemistry in the photochemical cyclisation of 1, 3-butadiene to a cyclobutene then the thermal reaction..
7. Explain why [1, 5] sigmatropic shift of hydrogen is thermally allowed process.
8. What are electrocyclic reactions ? Explain with example.
