CHE-551

REACTION MECHANISMS, PERICYCLIC REACTIONS, PHOTOCHEMISTRY AND STEREOCHEMISTRY

M.Sc. Chemistry (MSCCH-12/13/16/17)

Second Year, Examination-2020

Time Allowed : 2 Hours Maximum Marks : 80

Note: This paper is of Eighty (80) marks divided into Two (02) sections A and B. Attempt the question 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 twenty (20) marks each. Learners are required to answer any two (02) questions only. (2×20=40)

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- (a) Discuss mechanism of hydrolysis of neopentyl chloride and solvolysis of 3-chloro 1-butene involving carbocations.
 - (b) Discuss stability order of β -phenylethyl carbonium ion, Allylic, Tertiary and secondary carbonium ions.
- 2. (a) Draw and compare π molecular orbitals of Allylic carbanion and Allylic radical.
 - (d) Discuss reaction conditions allowed and forbidden for electrocyclic reactions of $4n \bar{e} and 4n + 2 \bar{e}$ systems.
- (a) Explain various electronic transitions in carbonyl chromophore.
 - (b) Write note on Intersystem crossing and Triplet energy transfer when mixture of Benzophenone and Butadiene is irradiated at wavelength of 385 nm.
- 4. Write detailed note on :
 - (a) Di π methane rearrangement
 - (b) Claisen rearrangement
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- 5. (a) Discuss butane gauche interactions for cis and trans 1, 2 –, 1, 3 –, and 1, 4 – Dimethyl cyclohexane isomers.
 - (b) Complete the following reactions and identify (A) to (E)



Section-B

(Short answer type questions)

- Note: Section-B Contains Eight (08) short answer type questions of Ten (10) marks each. Learners are required to answer any four (04) questions only. (4×10=40)
- 1. Explain mechanism of Norrish II cleavage reactions with examples.

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- 2. What happens when Benzophenone is irradiated in presence of isobutylene.
- 3. (a) Discuss stereochemistry of pyrolytic reaction.
 - (b) Write short note on conformation of chlorohydrin.
- 4. Write note on cycloaddition reaction of cycloalkenones.
- 5. (a) Discuss in detail satyzeff's rule in Elimination reaction.
 - (b) Write short note on cope rearrangement.
- 6. Write note on photochemistry of conjugated dienes.
- 7. Analyze the [1, 3] suprafacial shift of a group with inversion of configuration.
- 8. Discuss photochemistry of Diazo compounds.

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