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CHE-551

Reaction Mechanisms, Pericyclic Reactions, Photochemistry and Stereochemistry

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

Second Year, Examination-2019

Time: 3 Hours **Max. Marks: 80**

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Note:- This paper is of Eighty (80) marks divided into two (02) Section A and B. Attempt the question contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Question)

Note:- Section - A contains five (05) long answer-type questions of fifteen (15) marks each. Learners are required to answer any three (03) questions only. (3×15=45)

1. (a) Discuss one addition reaction and displacement reaction with mechanism involving carbarions.

   (b) Arrange following free radicals in increasing order of stability. Explain why.

   Benzylic, Tertiary, Allylic, Secondary primary.

2. (a) Draw and compare π molecular orbitals of Allylic carbocation and Allylic radical.

   (b) Discuss stereochemistry of mode of reactions in electro cyclic reactions of 4 $n\bar{e}$ and $4n + 2\bar{e}$ systems.

3. (a) Draw Jablonski diagram and explain various thermal or non – radiative decay processes

   (b) Write note on photosensitization and triplet energy transfer when mixture of Benzophenone and Butadiene is irradiated at wavelength of 385 nm.

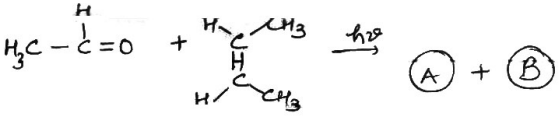
4. Write detailed note on

   (a) Barton Reaction

   (b) cope Rearrangement

5. (a) Write explainatory note on non geninally dicusatituted cyclohexanes.

(b) Complete the following reaction and identify A to E

(i) 

(ii) 

(iii) 

Section-B

(Short Answer Type Question)

Note:- Section-B contains eight (08) short answer type questions of seven (07) marks each. Learners are required to answer any five (05) questions only. (5×7=35)

1. Explain mechanism of Norrish I cleavage reactions with examples.

2. What happens when Benzophenone is irradiated in presence of I – propyl alcohol.

3. (a) Discuss stereochemistry of E_1 reaction

   (b) Write short note on conformation of Ethylene glycol.

4. Write note on cyclodimeriration in cycloalkenones.

5. (a) Discuss in detail Hofmann's rule in elimination reaction.

   (b) Write short note on fries rearrangement.

6. Write detailed note on cis – trans isomerization of alkenes.

7. Analyze the [1, 3] suprafacial shift of a group with retention of configuration.

8. Discuss photochemistry of Azo compounds.

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