

School of Basic and Applied Sciences

Chemistry
ETE - May 2023

Time : 3 Hours

Marks : 50

SEM IV - MSCH6001 - PHOTO CHEMISTRY AND PERICYCLIC REACTION

Your answer should be specific to the question asked

Draw neat labeled diagrams wherever necessary

1. Explain the role of photosensitizer in photochemistry. K2 CO1 (2)
2. Explain the Photo-Fries re-arrangement. K2 CO2 (2)
3. Identify the photochemistry of 1, 3-butadiene (cis-trans reaction). K3 CO3 (2)
4. Identify the str. of 2,4-heptadiene given by the thermal interconversion reaction of cis-3-ethyl-4-methyl cyclobutene. K3 CO4 (2)
5. Identify the mechanism of Di-polar cycloaddition. K4 CO5 (2)
6. Distinguish the following: K3 CO1 (5)
(i) Phosphorescence & Fluorescence (ii) Singlet and triplet state (iii) Primary and secondary process
7. Identify Norrish I and Norrish II reactions. Give the types of compounds to these reactions? Give one example for each compound. K4 CO2 (5)
8. Explain Claisen and Cope and Ene reactions with stereochemistry. K6 CO5 (6)
9. Many products are obtained by irradiation of 4,4-diphenyl cyclo-hexanone. Analyze its mechanism. Analyze the mechanism for the formation of oxetanes. K4 CO3 (8)
10. Analyze the electrocyclic transformation of (2E, 4Z, 6E)-2,4,6-octatriene gives cis-5,6-dimethyl-1,3-cyclohexadiene thermally but gives the trans-isomer on photochemically. Apply FMO and PMO method on this. K4 CO4 (8)
11. 1,3,5-trimethylbenzene in UV light gives 1,2,4-trimethylbenzene. Explain this mechanism. Explain the mechanism of dimerization of 1,3-butadiene in presence of acetophenone and benzil as sensitizer. K5 CO5 (8)