

## School of Basic Sciences

Master of Science in Chemistry  
Mid Term Examination - Mar 2024

Duration : 90 Minutes  
Max Marks : 50

### Sem IV - MSCH6001 - Photochemistry and Pericyclic Reactions

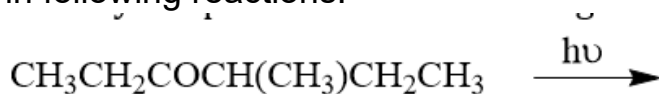
General Instructions

Answer to the specific question asked

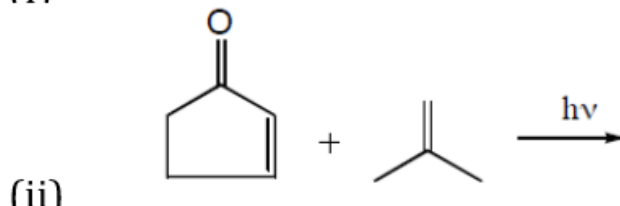
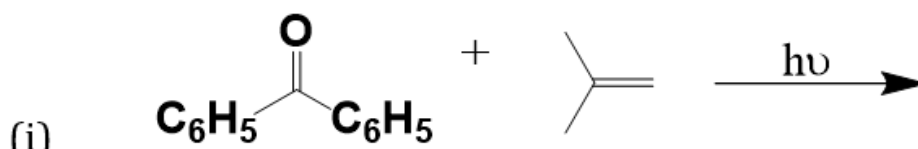
Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Explain the terms IC and ISC. K2 (2)
- 2) Define the Photo-Fries Rearrangement K1 (3)
- 3) Show the role of photosensitizer. Why benzophenone is a good sensitizer K2 (4)
- 4) Illustrate Lambert Beer's law and Frank Condon principle and quantum yield. K2 (6)
- 5) Illustrate the Norrish type 1 in cyclopentanones. Identify the products in following reactions: K3 (6)



- 6) Identify the products in following reactions: K3 (9)



- 7) Analyze the term: (i) Phosphorescence & Fluorescence (ii) Singlet and triplet state (iii) Primary and secondary process (v) Energy cascade K4 (8)

- 8) Irradiation of 4,4-diphenyl cyclohexanone give a mixture of products. Analyze its mechanism. Explain the mechanism for the formations of oxetanes. K4 (12)

**OR**

Identify the mechanism of photoreduction and beta cleavage reaction with one example in carbonyl compounds. Give the mechanism of photochemical irradiation of dienones to give a sequence of products. K4 (12)