

PG4S-556-B-22

M.Sc. IV Semester (CBCS) Degree Examination

CHEMISTRY/ORGANIC CHEMISTRY

Organic Chemistry - IV /Special Topics in Organic Chemistry

(Common to Chemistry and Organic Chemistry)

Paper - SCT-4.2/HCT-4.2

Time : 3 Hours

Maximum Marks : 80

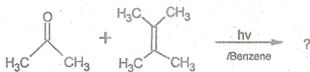
Instructions to Candidates.

- 1) Answer All questions.
- 2) All questions carry Equal marks.

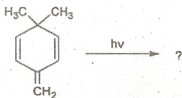
Answer any **Eight** of the followings.

(8×2 = 16)

1. a) Define the terms singlet and triplet states.
- b) Sketch the mechanism of Barton reaction.
- c) Predict the product with mechanism:



- d) Define the terms superficial and antarafacial ring closures used in pericyclic reactions.
 - e) What is chelotropic reaction? Give an example.
 - f) Give the synthetic applications of Gilman reagent.
 - g) Write any two reactions of organo mercury reagents.
 - h) Give the advantages of using ionic liquids in organic synthesis.
 - i) Write the advantages and limitations of microwave assisted synthesis.
 - j) Write Woodward-Hoffmann rules of pericyclic reactions.
2. a) Predict the product with possible mechanism.



- b) Write notes on.
- Oxidative coupling and
 - Optical pumping.
- c) With illustrative examples, discuss the mechanism of Norrish type I and Norrish type II reaction.

(OR)

- c) With the help of Jablonski diagram, explain the following terms:
- Internal conversion
 - Fluorescence
 - Phosphorescence
 - Inter System Crossing.

(5+5+6=16)

3. a) With suitable examples, explain ortho and para Claisen rearrangement.
- b) Draw the molecular orbital diagram of 1,3-butadiene and label HOMO and LUMO under both thermal and photochemical condition along with its symmetry.
- c) Compound (2E,4Z,6E)-octatriene always forms *cis*-5,6-dimethyl-1,3-cyclohexadiene under thermal condition and *trans*-5,6-dimethyl-1,3-cyclohexadiene under photochemical condition. Explain.

(OR)

- c) Write a note on cycloaddition reactions.

(5+5+6=16)

4. a) Formulate a method for the synthesis of ferrocene and discuss its applications.
- b) Write a note on organo cadmium and organo tin reagents.
- c) Explain the applications of octocarbonyl dicobalt and tetracarbonyl nickel.

(OR)

- c) Give an account on synthetic applications of Grignard reagent.

(5+5+6=16)

5. a) Account on uses of polymer supports in organic synthesis.
- b) Comment on Super critical fluid extractions.
- c) Discuss microwave assisted oxidation of alcohols and sulphides.

(OR)

- c) Write a note on synthesis of Ibuprofen by BHC and BOOTS approach. (5+5+6=16)