

FACULTY OF SCIENCE
M.Sc. III Semester Examinations, January 2018

Subject: Chemistry (Organic Chemistry)

Paper: IV
Green Chemistry and Organic Materials

Time: 3 Hours

Max.Marks: 80

Note: Answer all questions from Part - A and Part – B.
Each question carries 8 marks in Part-A and 12 marks in Part-B

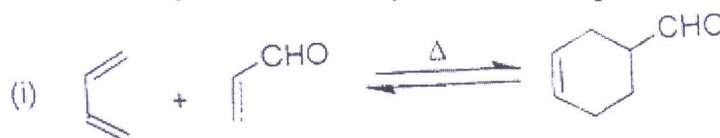
Part-A (4x8=32 marks)
(Short answer type)

- 1 a) Define atom economy and explain with two examples.
 b) Discuss briefly about design of biodegradable products.
- 2 a) What are green solvents? Give any two reactions carried out using green solvents.
 b) Discuss any two benefits and limitations of MAOS.
- 3 a) Define nano material, how they are different from bulk material?
 b) What are different types of carbon nano tubes? Explain.
- 4 a) Discuss about molecular recognition.
 b) What is pre- organisation? Explain.

PART-B (4X12=48 Marks)
(Essay Type Questions)

- 5 a) Discuss about prevention of unnecessary derivatization taking suitable examples.
 b) Write short notes on
 - i. Prevention of hazardous products
 - ii. Use of catalysis

- (OR)
- c) Calculate percentage atom economy in the following reactions.



- d) Write short notes on
 - i. Prevention of waste
 - ii. Designing safer chemicals

- 6 a) What are the microwave - assisted solvent free reactions? Explain with the following reactions.
- Saponification of esters
 - Deacetylation
 - Synthesis of nitriles from aldehydes
- b) Write short notes on
- Phase transfer catalysis in organic synthesis
 - Biocatalysts in organic synthesis.
- (OR)**
- c) Discuss the use of ultrasonic energy in organic synthesis?
- d) Give advantages of aqueous phase reactions with Heck reaction, Diels-Alder reaction and Hydroxylation.
- 7 a) What are different approaches for making nano material? Give one method for each approach.
- b) Explain the mechanism of spiropyran optical switch which gives different colours under different conditions.
- (OR)**
- c) Write a short notes on the following
- Molecular wire
 - Molecular rectifier.
- d) What are the natural Benzheterazoles ? Give their synthetic modifications as opto-electronic molecules.
- 8 a) What are supramolecular interactions? Explain in detail using suitable examples.
- b) Explain how cyclodextrins act as enantioselective receptors?
- (OR)**
- c) Explain in detail the shape and supramolecular behavior of carcerands and hemi carcerands.
- d) Explain the importance of enantioselective molecular recognition using chiral receptors from crown ethers and Kemp's triacid.
