

Roll No. _____

B.Sc-M. Sc-INTEGRATED PROGRAMME
SCHOOL OF CHEMICAL AND LIFE SCIENCES
SEMESTER III EXAMINATION 2019
PAPER TITLE: GREEN CHEMISTRY
PAPER CODE: BCH-DSE05TH

(Write your roll no. at the top immediately after receipt of this question paper.)

Time: 3h

Max Marks: 75

Attempt all the questions. All parts of a question must be attempted in continuation.
Start answer of a fresh question on a new page. Cite examples and draw diagrams wherever necessary.

Q1a. Attempt ALL of the following (ANY FIVE).

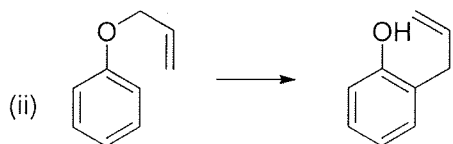
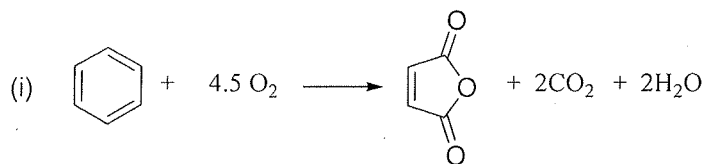
5 x 2 = 10

- A. The principles of green chemistry include the eliminating the _____ treatments.
a) Costly b) Harmful
c) Hard d) Easy
- B. One of the principles of green chemistry says that to produce _____ goods.
a) Harmful b) Commercial
c) Safer d) Most used
- C. After the use of chemicals, we must _____ them properly.
a) Use b) Reuse
c) Dispose d) Store
- D. Green chemistry applies across the _____ of a chemical product like design, manufacture and use.
a) Life cycle b) Properties
c) Uses d) Efficiency
- E. We must use feedstock derived from annually renewable resources or from _____.
a) Chemicals b) Organic compounds
c) Abundant waste d) Plants

Q1b. Attempt ALL of the following

1 + 4 = 5

- F. Define the term *Atom Economy* and how it is applied in Green Chemistry.
G. Calculate and contrast the Atom Economies of the following four reactions:



3 x 5 = 5

Q2. Attempt ANY THREE of the following:

- i. How can an appropriate solvent be selected for green synthesis?
- ii. How can we minimize the green energy requirement for a green synthesis?
- iii. Why the Use of protecting group is inhibited in Green Chemistry?
- iv. Why the synthesis of non-biodegradable compound like DDT is not preferred in Green Chemistry?

Q3. Attempt ANY THREE of the following:

3 x 5 = 15

- i. What are supercritical fluids? Explain their application in green chemistry.
- ii. Explain the application of Microwave in Green Synthesis.
- iii. Explain Sonochemistry.
- iv. What are biocatalysts? Explain with example.

Q4. Give the Green synthesis of ANY FIVE of the following

5 x 3 = 15

- i. Adipic acid
- ii. Hoffmann elimination reaction
- iii. Strecker Synthesis
- iv. Diels-Alder reaction
- v. Simmon-Smith reaction
- vi. Polylactic acid

Q5. Attempt ANY THREE of the following:

3 x 5 = 15

- i. Green Chemistry is sustainable chemistry"- Explain the statement.
- ii. What is combinatorial green chemistry?
- iii. Explain $C_{2}S_{3}$ synthesis.
- iv. What is "cradle to carpet" approach?

