

Roll No. _____

M. Sc-CHEMISTRY
SCHOOL OF CHEMICAL AND LIFE SCIENCES
SEMESTER III EXAMINATION 2019
PAPER TITLE: CATALYSIS AND GREEN CHEMISTRY
PAPER CODE: MCHDCE-305

(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.

Q1. Attempt ALL questions

1 x 1.5 = 15

- i. The principles of green chemistry include the eliminating the _____ treatments.
a) Costly b) Harmful
c) Hard d) Easy
- ii. One of the principles of green chemistry says that to produce _____ goods.
a) Harmful b) Commercial
c) Safer d) Most used
- iii. After the use of chemicals, we must _____ them properly.
a) Use b) Reuse
c) Dispose d) Store
- iv. Green chemistry applies across the _____ of a chemical product like design, manufacture and use.
a) Life cycle b) Properties
c) Uses d) Efficiency
- v. We must use feedstock derived from annually renewable resources or from _____.
a) Chemicals b) Organic compounds
c) Abundant waste d) Plants
- vi. Green chemistry improves _____ of chemical manufacturers.
a) Competitiveness b) Easiness of production
c) Services d) Chemicals
- vii. It reduces the use of _____.
a) liquid fuels b) Energy
c) Gaseous fuels d) Solid fuels
- viii. It reduces the _____ and protects the environment.
a) Pollution b) Temperature
c) Air d) Water
- ix. According to the green chemistry, the chemical involved in the production must be _____.
a) Non toxic b) Toxic
c) Highly toxic d) Produces the toxic by products
- x. The green synthesis methods should have _____.
a) Low efficiency b) High harmful products
c) Low energy requirements d) Low atom efficiency

Q2. Attempt ANY THREE of the following:

3 x 5 = 15

- A. What is green Chemistry? What are the twelve principles of green chemistry?
- B. "Green Chemistry is sustainable chemistry"- Explain the statement.
- C. Write a comparative statement on green chemistry and synthetic chemistry.
- D. What is atom Economy? Explain it with examples.

Q3. Attempt ANY TWO of the following:

2 x 7.5 = 15

- A. What are super critical fluids? Explain use of CO₂ as organic solvent.
- B. What are ionic liquids? Explain role of ionic liquids in organic synthesis.
- C. What are Liquid polymers? Explain their role in organic synthesis.

Q4. Attempt ANY TWO of the following:

2 x 7.5 = 15

- A. Explain the advantage of ultrasonic organic synthesis.
- B. Explain the role of microwave assisted synthesis in green chemistry.
- C. Why Photons are considered as clean reagent?

Q5. Attempt ANY TWO of the following:

2 x 7.5 = 15

- A. Pillared Clays
- B. Micelle Templated Silica as catalyst
- C. Heteropolyacid-based solid acid catalyst

