This question paper contains 2 printed pages. Roll No. .. .....

# 5632

# M.Sc. (Previous) Examination - 2024

## CHEMISTRY

## Fifth Paper-CH-405

## [Green and Sustainable Chemistry]

**Time Allowed: Three Hours** **Maximum Marks: 50**

*Attempt five questions in all selecting one question from each unit. All questions carry equal marks.*

***Note** : In each question paper 10 questions will be set. Candidates have to answer 5 questions selecting at least one question from each unit.*

*No supplementary answer-book will be given to any candidate. Hence the candidates should write the answers precisely in the main answer-book only.*

*All the parts of one question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.*

### UNIT-I

1. Write an elaborate note on inception, evolution and need of green chemistry and its uses in daily life. **[10]**

2. What are the main principles which are kept in mind while designing a green synthesis? **[10]**

### UNIT-II

3. Write note on the following - **[5+5=10]**

   (i) Use of green reagents in organic synthesis with example of Dimethyl carbonate.

   (ii) Polymer supported per acids and chromic acids.

4. What are green catalysts? Explain the role of Catalysts in sustainable development taking atleast one example for both homogeneous and heterogeneous catalysis. **[10]**

### UNIT-III

5. Write a note on following microwave induced reactions - **[4+3+3=10]**

   (i) Fries rearrangement

   (ii) Alkylation of active methylene compounds

   (iii) Synthesis of β-lactam

6. Write an elaborate note on the following - [6+4=10]

(i) Ultrasound assisted green synthesis

(ii) Electrochemical synthesis

## UNIT-IV

7 (i) What are ionic liquids? Explain their properties and types, also write the use of these liquids in Diel's-Alder reaction. [5]

(ii) Explain aqueous phase reaction taking suitable example. [5]

8. Write properties and applications of - [5+5=10]

(i) Fluorous Solvents

(ii) Supercritical $CO_2$

## UNIT-V

9. Explain microwave assisted nano catalysis in water with suitable example. [10]

10. Explain synthesis of nanoparticles using Bacteria and Yeast. [5+5=10]

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