



M.Sc. III Semester Degree Examination, April/May - 2024

CHEMISTRY

DSE2 : Green Chemistry

(NEP)

Time : 3 Hours

Maximum Marks : 70

Note : Answer **any five** of the following questions with Question No. **1 (Q.1)** is **Compulsory**.
Each question carries **equal** marks.

Answer **any five** of the following questions :

5x14=70

1. (a) What are ionic liquids ? Discuss the classification and applications of ionic liquids.
(b) How does the use of protection/de-protection group(s) reduce the atom economy of the reaction ? Explain using appropriate example.
(c) What are heterogeneous catalysts ? Mention the advantages and disadvantages. **5+5+4**

2. (a) What are the different types of biomass feedstocks used for energy generation and how do they differ in their composition and availability ?
(b) Differentiate between small and larger scale (CFB) biomass gasification.
(c) Give account on fuel cells. **5+5+4**

3. (a) Explain the four stages of life cycle assessment.
(b) Discuss any two microwave assisted addition reactions. Give the advantages and limitations of microwave synthesis.
(c) Give an account of carbon foot printing. **5+5+4**

4. (a) Explain the oxidation of cyclohexane with H_2O_2 under PTC conditions.
(b) Outline the mechanism of Hofmann elimination reaction.
(c) Describe the esterification reactions of carboxylic acids and alcohols. **5+5+4**



5. (a) Sketch and explain lipase enzyme catalysed hydrolytic processes.
(b) What is meant by Sonochemistry ? Discuss how transfer of energy occurs in ultrasound assisted reactions ?
(c) Write a note on electrochemical synthesis. **5+5+4**
6. (a) Sketch and explain the production of lactic acid.
(b) Discuss the energy efficacy by photochemical reactions. Give their advantages.
(c) Differentiate between renewable and non-renewable sources. **5+5+4**
7. (a) Write the synthetic utility of polymer supported peracids.
(b) Outline the synthesis of dihalo and vinylidene Carbenes.
(c) Discuss the enzymatic reactions of oxidoreductases and transferases. **5+5+4**
8. (a) Discuss the microwave assisted reactions in organic solvents.
(b) How are multicomponent reactions considered being green reactions ? Explain with suitable examples.
(c) Give the synthetic applications of Poly-N-Bromosuccinimide. **5+5+4**

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