

B.Sc. - III CBCS Pattern Semester-V  
**USCCHT12 - Chemistry Paper-IV (Green Chemistry)**

Time : Three Hours



**GUG/W/23/13092**

Max. Marks : 50

1. a) Explain twelve principles of green chemistry. 5
- b) Explain the need of green chemistry? Discuss goals of green chemistry? 5

**OR**

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|-----------|--|----|
| c)        | Write a note on atom economy.  | 2½ |
| d)        | Write a note on solvents used in green chemistry.                    | 2½ |
| e)        | Write a note on ionic liquids used in green synthesis.               | 2½ |
| f)        | Discuss minimization of hazardous toxic products in green synthesis. | 2½ |
| <b>2.</b> |  |    |
| a)        | Explain microwave assisted reactions in organic solvent.             | 5  |
|           | i) Fries rearrangement   |    |
|           | ii) Diels-Alder Reaction   |    |
| b)        | Give green synthesis method of following compound-                   | 5  |
|           | i) Catechol  |    |
|           | ii) Ibuprofen  |    |

**OR**

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|-----------|--|----------|
| c)        | Explain hydrolysis of methyl benzoate to Benzamide using microwave assisted reaction in water. | 2½       |
| d)        | Explain green synthesis of BHT.  | 2½       |
| e)        | Explain microwave assisted esterification reaction in organic solvent.                         | 2½       |
| f)        | Explain any one microwave assisted solid state reaction.                                       | 2½       |
| <b>3.</b> | a) Explain the following ultrasound assisted reactions-  | <b>5</b> |
|           | i) Coupling Reaction                      ii) Strecker synthesis                               |          |
| b)        | Explain the role of Tellurium in organic synthesis.  | <b>5</b> |

**OR**

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|-----------|--|----------|
| c)        | Explain solid state polymerization of amorphous polymers using diphenyl carbonate. | 2½       |
| d)        | Explain following ultrasound assisted reaction saponification.                     | 2½       |
| e)        | Free radical Bromination?  | 2½       |
| f)        | Explain the role of Biocatalysis in organic synthesis.                             | 2½       |
| <b>4.</b> | a) Explain in detail-  | <b>5</b> |
|           | i) Biomimetic Reagents   |          |
|           | ii) Multifunctional Reagents   |          |
|           | b) Write a note on Energy requirement for reactions with respect to-               | <b>5</b> |
|           | i) Use of microwave  |          |
|           | ii) Ultrasonic energy  |          |

**OR**

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|-----------|--|-------------|
| c)        | Write a note on combinatorial green chemistry.                     | 2½          |
| d)        | Explain the role of green chemistry in sustainable development.    | 2½          |
| e)        | Write a note on selection of starting material in green chemistry. | 2½          |
| f)        | Write a note on protecting groups in green synthesis.              | 2½          |
| <b>5.</b> | <b>Solve any ten.</b>  | <b>1x10</b> |
| a)        | Give any one example of immobilized solvent.                       |             |
| b)        | Define green solvents.   |             |
| c)        | What is solventless process?                                       |             |
| d)        | structure of paracetamol.  |             |
| e)        | Give chemical reaction of decarboxylation.                         |             |
| f)        | Give reaction for synthesis of nitrites from aldehyde.             |             |
| g)        | Give chemical reaction for Cannizzaro reaction.                    |             |
| h)        | Give chemical reaction for Reformatsky Reaction.                   |             |
| i)        | What is Clayan.  |             |
| j)        | Define stoichiometric reagents.                                    |             |
| k)        | What are blocking groups in green chemistry.                       |             |
| l)        | Examples of catalytic reagents in green synthesis.                 |             |

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