[This question paper contains 2 printed pages.]

**Your Roll No.....**

**Sr. No. of Question Paper : 5306** **L**

Unique Paper Code : 2174001201

Name of the Paper : GE: Green Chemistry

Name of the Course : **B.Sc. (H)**

Semester : II/IV/VI/VIII

Duration : 2 Hours Maximum Marks : 60

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **four** questions out of **six**.
3. **All** questions carry equal marks i.e. **15** marks.
4. Attempt all parts of the questions together.

1. (a) Fill in the blanks: (5)

i) Atom economy of the rearrangement reaction is always _____ %.

ii) Chlorofluorocarbons cause depletion of _____.

iii) Bhopal gas tragedy was caused by the _____.

iv) _____ is the Father of Green Chemistry.

v) _____ is an environmentally safe marine antifoulant.

(b) Write the full form of the following abbreviations: (5)

i) CFCs

ii) RTILs

iii) E-Factor

iv) ISD

v) PLA

(c) Define green chemistry. How is it different from environmental chemistry? (5)

2. (a) Discuss the 12 principles of green chemistry. Explain the 1st principle with examples. (5)

(b) What are different categories of Green Chemistry Challenge awards? Discuss any recent award won in any category. (5)

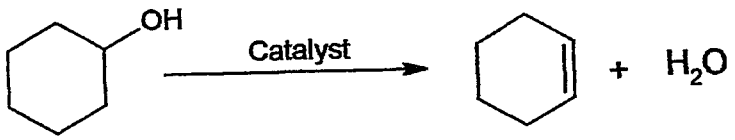
(c) Explain the principle of inherently safer design (ISD) in green chemistry and discuss its sub-divisions. (5)

*P.T.O.*

3. (a) Which gas was responsible for the Bhopal Gas Tragedy? Give the conventional and alternative method for the synthesis of carbaryl. (5)

(b) What do you mean by ionic liquids? Discuss their characteristics and advantages in green chemistry. (5)

(c) Define Atom economy. Calculate it for the following reaction: (5)




4) (a) Match the following: (1x5=5)

| A | B |
|---|---|
| i) Ionic liquids | (a) Addition Reaction |
| ii) 100% Atom Economy | (b) Elimination Reaction |
| iii) Photocatalysis | (c) O3 depletion |
| iv) CFCs | (d) Designer solvents |
| v) Flixborough accident | (e) Cyclohexane |
| | (f) Solar energy |

(b) What are the stochiometric & catalytic reagents? Which one is better and why? (5)

(c) What are the antifoulants? How Sea-Nine™ work by maintaining a green environment for marine organisms? (5)

5) Differentiate between the following: (with suitable examples) ***(any three)*** (3x5=15)

a) Biodegradable and non-biodegradable plastics
b) Green Chemistry and Conventional Chemistry
c) Biocatalysis and Asymmetric catalysis
d) Volatile organic solvents and green solvents

6) Write Short Notes on the following: ***(any three)*** (3x5=15)

a) Solventless reactions
b) Green energy and sustainability
c) Photocatalysis
d) Significance of Green Chemistry