



WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 6th Semester Examination, 2022

CEMADSE04T-CHEMISTRY (DSE3/4)

GREEN CHEMISTRY

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

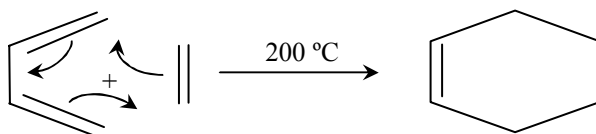
All symbols are of usual significance.

Answer any *three* questions taking *one* from each Group

GROUP-A

(Unit 1 & 2)

1. (a) What is the main objective of green chemistry? Why catalytic reagents are preferred over stoichiometric reagents? 2+2
- (b) Calculate Atom Economy of the following reaction. 2



- (c) What are the basic differences between microwave heating and conventional heating? 3
 - (d) Why the use of blocking reagents is not preferred in green chemistry? 2
 - (e) What is CED (Cohesive Energy Density)? How do the Hydrophobic effect and Hydrogen bonding help to explain the organic reactions in water? 2+4
 - (f) Define Fluorous Biphasic Solvent with example. What is asymmetric catalysis? 3+2
2. (a) Write any three Principles of Green Chemistry. 3
 - (b) Calculate Atom Economy of the following reaction: 2

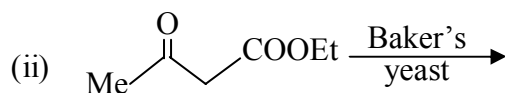
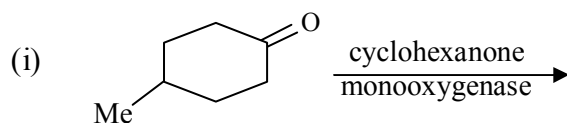
$$\text{MeCH}_2\text{CH}_2\text{OH} + \text{H}_2\text{SO}_4 = \text{MeCH} = \text{CH}_2 + \text{H}_2\text{O}$$
 - (c) Write short notes on the following: 3×3
 - (i) Homogeneous and Heterogeneous catalyst
 - (ii) Solventless Process
 - (iii) Supercritical CO₂ as Green Solvent
 - (d) What is the meaning of ISD? Explain with examples. 2+2
 - (e) How does Ionic Liquid facilitate transition metal catalyzed reaction? 2
 - (f) What is Sonochemistry?

GROUP-B**(Unit 3)**

3. (a) Write the names of two natural polymers. Write their chemical constitution. 2+2
 (b) Describe the synthesis of Iminodiacetic acid (IDA) developed by Monsanto agricultural company. 3
 (c) What are the advantages of CO₂ cleaning? 3
4. (a) Write short notes on: 3×2 = 6
 (i) Biofuels
 (ii) Green Synthesis of Catechol.
 (b) What are the differences between pigments and dye? 4

GROUP-C**(Unit 4)**

5. (a) Mention the advantage(s) of enzyme catalyst. 2
 (b) Define the term Bio mimetic with suitable example. 3
 (c) Identify the products in the following reactions. $1\frac{1}{2} \times 2 = 3$



6. (a) What are Multifunctional Reagents? Give Example of two organic reactions using Multifunctional Reagents. 2+2
 (b) What is the role of oxidation catalyst in Green Chemistry? 2
 (c) How Green Chemistry helps in sustainable development? 2

N.B. : Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.

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