



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 6th Semester Examination, 2022



CEMADSE04T-CHEMISTRY (DSE3/4)

GREEN CHEMISTRY

Time Allotted: 2 Hours

Full Marks: 40

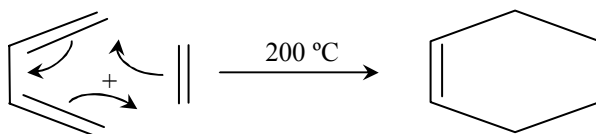
*The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.*

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
$$\text{MeCH}_2\text{CH}_2\text{OH} + \text{H}_2\text{SO}_4 = \text{MeCH} = \text{CH}_2 + \text{H}_2\text{O}$$

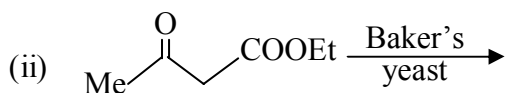
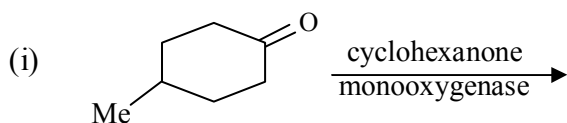
(c) Write short notes on the following: 3×3
(i) Homogeneous and Heterogeneous catalyst
(ii) Solventless Process
(iii) Supercritical CO₂ as Green Solvent
(d) What is the meaning of ISD? Explain with examples. 2+2
(e) How does Ionic Liquid facilitate transition metal catalyzed reaction? 2
(f) What is Sonochemistry?

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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