



WEST BENGAL STATE UNIVERSITY  
B.Sc. Honours 6th Semester Examination, 2021



CEMADSE04T-CHEMISTRY (DSE3/4)  
GREEN CHEMISTRY

Time Allotted: 2 Hours

Full Marks: 40

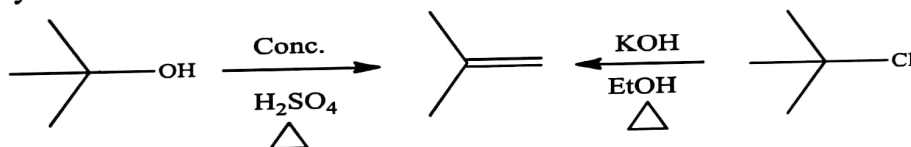
*The figures in the margin indicate full marks.  
Candidates are required to give their answers in their own words as far as practicable.  
All symbols are of usual significance.*

Answer any *three* questions taking one from each Group

GROUP-A

(Unit 1 & 2)

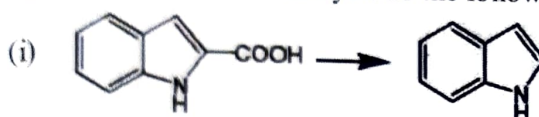
1. (a) What is the working definition of Green Chemistry? Write two suitable alternative names of Green chemistry. 2+2
- (b) How does atom economy of a reaction differ from its yield? Which of the following methods for the preparation of isobutene has greater atom economy? Calculate and explain your choice. 2+4



- (c) What is ionic liquid (IL)? Mention one method of preparation of ionic liquid. Why is it regarded as a green solvent? 2+2+2
- (d) What is supercritical fluid? Why is carbon dioxide commonly used as a supercritical fluid? State one of the main drawbacks of  $sc\ CO_2$ . 1+2+1
- (e) What is biocatalyst? Give one example. 2
2. (a) What is Renewable feedstock or Resources? Explain with suitable example(s). 3
- (b) Microwave energy is too weak to break a chemical bond, still microwave-assisted reactions occur faster than conventional reactions. Explain why. 3
- (c) Write short notes on the following: 3×3
- PEG (Polyethylene glycol)
  - Ultrasonic energy
  - Mechanochemical reaction.
- (d) What is carbaryl? Mention its use. Outline one green and one non green method for the preparation of carbaryl. 1+1+3
- (e) What is On-water reaction? Explain with suitable example(s). 2

## GROUP-B

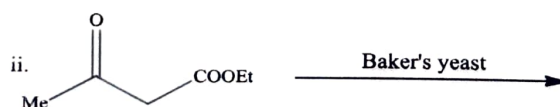
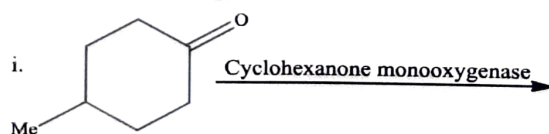
## (Unit 3)

3. (a) What is Elutriation? Between polyvinyl chloride and polyethylene, which one do you think to be safer and cost-friendly for the manufacturing of carpets? Explain your answer. 1+2
- (b) Write notes on the following topics: 2½ × 2
- (i) Green synthesis of catechol
- (ii) Safe Marine antifoulants.
- (c) What are the advantages of enzymatic interesterification over chemical interesterification? 2
4. (a) Using Greener route how can you do the following conversion (any *two*). 2½ × 2
- (i) 
- (ii) Glucose to Adipic acid      (iii) Corn to Poly(lactic acid)
- (b) What are the advantages of CO<sub>2</sub> cleaning? 3
- (c) What is a greener process to generate hydrogenated oil? 2

## GROUP-C

## (Unit 4)

5. (a) Explain the concept of 'Solventless Reaction' in 'Green Chemistry' with at least two suitable examples. 4
- (b) What are co-crystals? How do co-crystals facilitate a reaction? 2+2
6. (a) Mention the advantages of enzyme catalysis. 2
- (b) Define the term 'Bio mimetic' with suitable example(s). 3
- (c) Identify the products in the following reactions: 1½ × 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.

—x—