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.

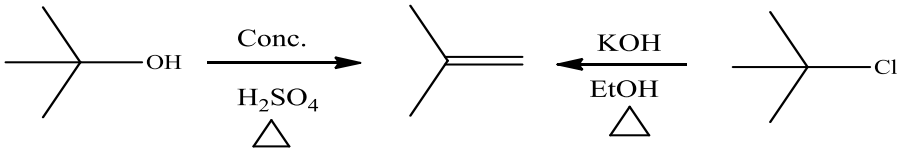
Answer any *three* questions taking one from each Group

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

   (i) PEG (Polyethylene glycol)

   (ii) Ultrasonic energy

   (iii) 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

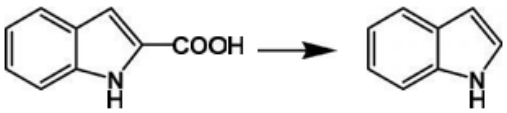
   (b) Write notes on the following topics: $2\frac{1}{2}\times2$

   (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***). $2\frac{1}{2}\times2$

   (i) 

   (ii) **Glucose to Adipic acid** (iii) **Corn to Polylactic acid**

   (b) What are the advantages of CO_2 cleaning? 3

   (c) What is a greener process to generate hydrogenated oil? 2

GROUP-C

(Unit 4)

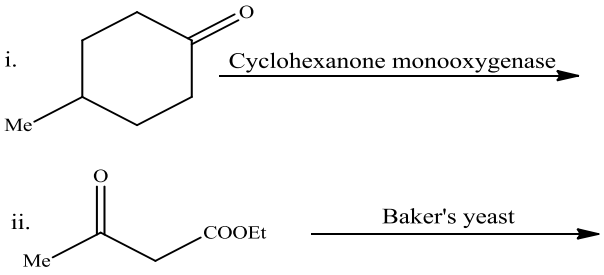
5. (a) Explain the concept of 'Solventless Reaction' in 'Green Chemistry' with at least two suitable examples. 4

   (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: $1\frac{1}{2}\times2$



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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