

- d) How do you carry out chemical interesterification of fats and oils? What are the disadvantages of chemical interesterifications? 2

B. Sc. (CHEMISTRY) EXAMINATION, 2022

(3rd Year, 6th Semester, CBCS Syllabus)

CHEMISTRY (DSE)

PAPER – DSE/CHEM/TH/02

Time : Two hours

Full Marks : 40

(20 marks for each unit)

(Use a separate Answer script for each Unit)

UNIT: 6021-O

1. a) How can you define “Green Chemistry”? 2
- b) What do you mean by the term “Atom Economy” and how it is related to Green Chemistry? Mention its difference from “Yield”. (1+1.5)+1.5
- c) Benzoic acid reacts with a solution of diazomethane in diethyl ether to produce methyl benzoate in nearly 99.9% yield. Comment on the greenness of this reaction. 3
- d) Mention one example of water-soluble radical initiator along with its application in an organic transformation in aqueous medium with mechanistic details. 1+3
- e) During sonochemical oxidation of cinnamyl alcohol with MnO_2 at 30°C in different hydrocarbon solvents,

[Turn over

[2]

it was observed that after a definite time the extent of formation of cinnamaldehyde varies in the following order:

pentane < hexane < octane

Suggest an explanation for the aforesaid observation.

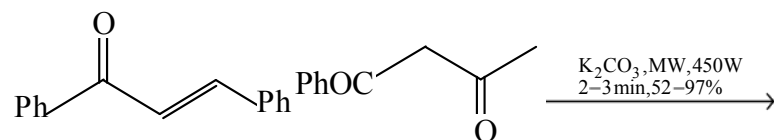
3

- f) Elaborate the role of a “Task specific ionic liquid” during acetalization of an aldehyde with primary alcohol. 4

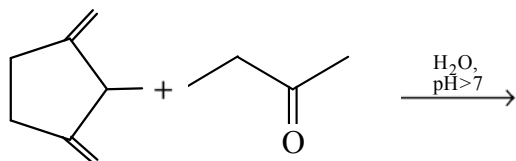
UNIT: 6022-O

Answer all the questions.

2. a) Write the product and the mechanism of the following reaction, and also mention the basic name reactions involved in different steps. 2

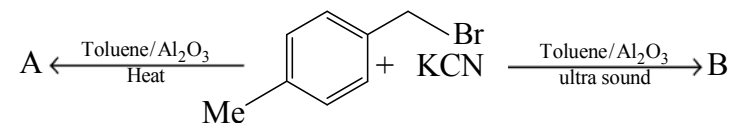


- b) Write the product, mechanism and also the basic name reactions involved in different steps of the following reaction. 2



[3]

- c) Elaborate - how phenol is prepared industrially and then converted to catechol. Give only reagent and conditions of the steps involved. 3
- d) Write two uses of iminodiacetic acid (IDA) including one for diagnosis of a disease. 1
- e) Give an outline of the steps involved in biological transformation of D-glucose to two equivalents of D-glyceraldehyde-3-phosphate by a mutant-variant of *E.coli*. 2
3. a) Write down the products **A** and **B** in the following reactions? Explain why different products are formed under conventional and ultrasonic heating processes? 3



- b) Why do you think microwave assisted organic transformation is a potential tool of “Green Chemistry”? 2
- c) What do you mean by “Cradel to Cradel Carpeting”? What are the main components of commonly used carpet and of “ECO WORKS”? 1+2

[Turn over