U.G. 6th Semester Examination - 2022

CHEMISTRY

Course Code : BCEMDSHC5 [DSE-5]

Course Title : Green Chemistry

Full Marks : 30 Time : 2 Hours

The figures in the right-hand margin indicate marks.

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

1. Answer any **ten** questions: 1×10=10

a) Give two examples of green solvents.

b) Which chemical was responsible for the Flixborough accident?

c) Write one demerit of perchloroethylene (solvent for dry cleaning of garments).

d) Define carbon efficiency.

e) _____ is an excellent 'green' solvent as well as a greenhouse gas.

f) Write the structure of 3-dehydroshikimic acid.

g) Give an example of green benzoin condensation.

h) Mention two merits of supercritical water in organic synthesis.

i) Give the structure of L-Lactide.

j) Define co-crystal.

k) Write an example of photocatalyst.

l) Write one medical application of iminodiacetic acid (IDA).

m) Provide the range of ultrasound frequencies used for chemical reactions.

n) What are two main constituents of Magnetron?

o) Give an example of 'green marine pesticides'.

2. Answer any **five** questions: 2×5=10

a) What is fluorous biphasic solvent? State two characteristics of it.

b) Write the chemical structure of the surfactant for liq. CO_2 and mention CO_2-phobic and CO_2-philic end.

c) Explain 'In-water and 'On-water' reaction.

d) Give an example of MW assisted decarboxylation reaction.

e) What is cradle to cradle approach?

f) "Green Chemistry is sustainable chemistry" – Explain the statement.

g) Give the greener route to replace the conventional synthesis of the Carbaryl insecticide (Once produced in Union Carbide India Ltd, Bhopal, India).

h) What are antifoulants? Why the marine antifoulant tributyl tinoxide (TBTO) has been replaced by Sea Nine 211?

3. Answer any **two** questions: 5×2=10

a) i) Do the following synthesis/conversions using greener route:

A) adipic acid

B) Corn to polylactic acid 3

ii) What is biocatalyst? Given one advantage of biocatalyst used in chemical reactions. 2

b) i) Give the principle of inherent safer design (ISD). How does it work for designing the green processes in industries? 3

ii) Write short note on solventless

reactions. 2

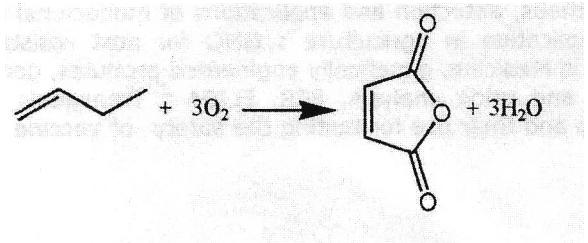
c) i) Give one example in each of the following cases: 3

A) Ultrasonic reaction

B) Aqueous phase reaction

C) Microwave-assisted reaction

ii) Give the % atom economy of the following reaction: 2



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