

U.G. 5th Semester Examination - 2021

CHEMISTRY**[HONOURS]****Discipline Specific Elective (DSE)****Course Code : CHEM-H-DSE-T-2C**

Full Marks : 40

Time : 2½ Hours

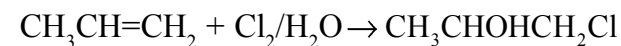
*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **five** questions from the following:

2×5=10

- What is the role of susceptors in the microwave assisted reactions?
- Explain the term “Cradle to cradle” and “Cradle to gate”.
- Between H₂O and D₂O which has higher cohesive energy density and why?
- "Microwave radiation is a non- ionizing radiation" - Explain this statement.
- In ultrasound equipment which material converts electrical energy into rapid mechanical vibrations?

f) "Direct interaction between wave and reactants to induce a chemical reaction is not possible"- Explain this statement.

g) Calculate the atom economy of the following reaction:



h) What are the basic differences between atom economy and E-factor?

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

- Outline the greener synthesis of Ibuprofen and calculate the percentage of atom utilization. 3+2
- How can you explain the rate enhancement of unimolecular and multimolecular reactions in micellar medium compared to aqueous medium? 5
- What is cohesive energy density? 2
 - "Nature of dienophile shows a considerable solvent effect in Diels-Alder reaction" - Explain with example. 3
- What is called super critical fluid? Give an example of surfactant which can form micelle in supercritical carbondioxide. Describe its function. 1+2+2

3. Answer any **two** questions: 10×2=20
- a) i) What is working definition of Green Chemistry? Why is it necessary? 1+2
- ii) What are the basic goals of Green Chemistry? 3
- iii) Explain limitations/obstacles in the pursuit of the goals of Green Chemistry. 4
- b) i) Give example of microwave assisted oxidation and decarboxylation reaction. 2+2
- ii) Give brief account of Flixborough accident and Bhopal gas tragedy. 3+3
- c) i) What is ionic liquid? For what reasons, ionic liquid can replace the conventional solvents for chemical reaction? 2+3
- ii) Why specific conductivity of ionic liquid is low? 2
- iii) What is environmental quotient and life cycle assessment? 3
- d) i) What are the advantages of PEG over water, ionic liquid etc.? 3

- ii) Give two examples of heterocyclic ring synthesis using PEG as reaction medium. 2+2
- iii) What is fluorous biphasic solvent(FBS)? “FBS is ideal for reactions involving non-polar reactants and polar products”- Explain. 1+2
