Roll No……..….. **Total No. of Printed Pages: 1**
Total No. of Questions: [11]

M.Sc. (Chemistry) (Semester – 3rd)
GREEN CHEMISTRY
Subject Code: MCHMD1313
Paper ID: [20220221]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(4 marks each)**

Q1. a. What is cavitation in ultrasound chemistry?
b. Explain the microwave assisted condensation of Active Methylene Compounds?
Q2. a. Write the method of formation of crown ethers?
b. How are phase transfer catalyst facilitating Wittig Reaction?
Q3. a. Discuss methods of preparation of ionic liquids?
b. What are Polymer Supported Peptide Coupling Agent? Write examples?
Q4. a. Explain Knoevenagel Reaction in aqueous medium? Discuss with examples?
b. What is Michael addition? Discuss with examples?

Section – B **(8 marks each)**

Q5. a. How are Simon-Smith Reaction conducted under ultrasound irradiation? Explain with examples?
b. What are Microwave Assisted solvent Free Reactions? Discuss with special emphasis to synthesis of anhydrides?
Q6. a. How can Heck Reaction be explored in ionic liquids?
b. What are methylene insertion reaction in ionic liquids? Explain with example?
Q7. a. How are phase transfer reagents helpful in elimination reactions? Explain with examples?
b. How are 3-alkyl coumarins prepared using phase transfer catalyst?
c. Explain N-alkylation of Aziridines using Phase transfer reagent?
Q8. a. Discuss the Diels-Alder Reaction in aqueous phase
b. What is dihydroxylation? Explain dihydroxylation in aqueous medium?

Section – C **(10 marks each)**

Q9. a. Discuss the various Oxidation reactions under microwave irradiation?
b. Explain the Bouveault reaction under ultrasound condition?
c. Explain the formation of selective *O*-Alkylation or *N*-alkylation in ionic liquids?
Q10. a. How can Addition Reactions be facilitated using ultrasound? Discuss?
b. Discuss the Pinacol Coupling under aqueous conditions?
c. Explain the Oxidation reactions using crown ether?
Q11. a. What is Benzoin condensation?
b. What is mechanism of Phase transfer reaction?
c. What are Polymer Supported Photosensitizer.