D 131965 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2025

(CBCSS)

Chemistry

CHE 3E 03—GREEN AND NANO CHEMISTRY

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A

Answer any **eight** *questions.*

Each question carries a weightage of 1.

1. What are the tools of Green Chemistry ?
2. What are the advantages of microwave exposure ?
3. Why microwave reactions are called 'neat reactions' ?
4. What is meant by functional group transformation ?
5. Discuss the use of dimethyl carbonate as a green strategic methylating agent ?
6. What are quantum dots ? Discuss their uses.
7. What is meant by hydrodynamic cavitation ?
8. What is the principle of scanning thermal microscope ?
9. What are fullerenes ?
10. What is the importance of doping in nanomaterial study ?

(8 × 1 = 8 weightage)

Turn over

Section B

Answer any **six** *questions.*

Each question carries a weightage of 2.

11. With suitable examples, discuss the use of alternative reagents for effective green chemistry synthesis.

12. Discuss the use of MAOS in condensation reaction. Give an example.

13. What are phase transfer catalysts ? Discuss their applications.

14. Discuss the use of super critical CO_2 in synthesis.

15. Briefly explain reverse micelle synthesis.

16. Briefly explain the applications of Transmission electron microscopy.

17. Discuss the superconductivity in C60.

18. Describe the mechanism of formation of nanotubes.

(6 × 2 = 12 weightage)

Section C

Answer any **two** *questions.*

Each question carries a weightage of 5.

19. What is a solid support organic reaction ? How is it can be made 'Green' ? Support your findings with example.

20. Explain the synthesis of nanomaterials using microorganisms and sonochemical methods.

21. What is the principle of atomic force microscopy ? Discuss the use of AFM on the characterization of nano materials.

22. Explain the methods of synthesis, structure and characterization of carbon nanotubes.

(2 × 5 = 10 weightage)