D 101197 **(Pages : 2)** **Name.....**

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2024

(CBCSS)

Chemistry

CHE 4E 06—NATURAL PRODUCTS AND POLYMER 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 essential oils ? How are they important ?
2. What are the steps of fatty acid biosynthesis ?
3. What is the difference between flavone and flavonoid ?
4. What are the applications of supramolecular chemistry ?
5. What is the Mayo - walling equation of the steady state ?
6. Distinguish between gelation and cross linking
7. What is the significance of glass transition temperature ?
8. What is Flory - Huggins equation ?
9. What are the applications of liquid crystalline polymers ?
10. What are conducting polymers ? Discuss their applications

(8 × 1 = 8 weightage)

Section B

Answer any **six** *questions.*
Each question carries a weightage of 2.

11. Explain the isolation of Cinnamon oil. Discuss its important constituents.
12. Describe the synthesis of prostaglandin.

Turn over

13. Discuss the general nature and structure of Flavonol.

14. What is a heme pigment ? What is its importance ?

15. Compare the advantages and disadvantages of linear and cyclic polymerizations.

16. With suitable examples, briefly explain the use of metallocene and metal oxide catalysts in polymerization.

17. Discuss a method of preparation of fluorine containing polymer. What is its use ?

18. Discuss the use of polymers in optical lithography and wave guide devices.

(6 × 2 = 12 weightage)

Section C

Answer any **two** *questions.*
Each question carries a weightage of 5.

19. a) Explain a method of isolation and purification of Alkaloids.

    b) Briefly explain the details of structural elucidation of Testosterone.

20. a) Explain the structural elucidation of atropine.

    b) Explain the synthesis, properties and applications of Phthalocyanine dye.

21. a) Briefly explain the kinetics and mechanism of free radical addition polymerization.

    b) What is the advantage of measuring number average molecular weight of a polymer ? Explain the light scattering method of determining molecular weight of a polymer

22. a) Explain the synthesis and structure of polystyrene. What are its uses ?

    b) Explain the polymers with non-linear optical properties ? Where are these polymers find applications ?

(2 × 5 = 10 weightage)