QP CODE: 25022517

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Reg No : .....

Name : .....

M.Sc DEGREE (CSS) SPECIAL REAPPEARANCE EXAMINATION, APRIL 2025

Third Semester

M.Sc POLYMER CHEMISTRY

CORE - CH050302 - CONCEPTS OF POLYMER CHEMISTRY

2019 ADMISSION ONWARDS

62B94980

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Write short note on the nomenclature of polymers based on source.
2. Define a) thermosetting resins b) Elastomers c) Polymer blends
3. Give an example each for halogenation and cyclization of natural rubber.
4. What do you meant by polymer phase-transfer catalyst?
5. What are the common supercritical fluids used in polymerization reactions?
6. Write kinetic equations to show the relation between the rate of reaction and concentration of initiator, radicals and monomers for radical chain polymerization.
7. Write the structure of Zeigler Natta catalyst used in coordination polymerization of olefins. Write the mechanism.
8. What do you mean by tacticity in polymers?
9. How cellulose and amylose shows the significance of stereoisomerism on polymer properties?
10. Draw the geometrical isomers of PBD.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Discuss briefly the chemical bonding in polymers.
12. Describe four reaction conditions under which polymer reactivity differs from that of a low-molecular-weight homolog.
13. Discuss briefly on reactions of cellulose.

14. Explain the mechanism of group transfer polymerization using an example.

15. For estimating reactivity ratios, most of the methods require very low conversions in the copolymerization reactions. Why? Justify the answer with suitable examples

16. Distinguish between suspension polymerisation and emulsion polymerisation.

17. Write a note on carbonyl and ring opening polymerization.

18. Explain optically active monomers with suitable example.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. What are graft copolymers? Give examples. Discuss different methods for the synthesis of graft copolymers.

20. Discuss the mechanism and kinetics of stepreaction (condensation) polymerisation.

21. What is radical chain polymerisation? Explain its kinetics and mechanism.

22. Describe stereoregularity in isotactic, syndiotactic, and atactic polypropenes.

(2×5=10 weightage)