



QP CODE: 26019606



Reg No : .....

Name : .....

**M.Sc DEGREE (CSS) EXAMINATION, MARCH 2026**

**Fourth Semester**

M Sc Industrial Chemistry

**Core Courses - CH060402 - INDUSTRIAL POLYMERS & MANUFACTURING**

2020 Admission Onwards

B9DB47A5

Time: 3 Hours

Weightage: 30

**Part A (Short Answer Questions)**

*Answer any **eight** questions.*

*Weight 1 each.*

1. What are the advantages of bulk polymerization?
2. Name two methods to evaluate viscoelasticity of polymers.
3. What do you mean by the combinatorial entropy of mixing of polymers?
4. Define glass transition temperature of a polymer.
5. What is carbon black? How can it be produced?
6. Give the properties of mineral rubber.
7. Specify the properties of LDPE.
8. Explain briefly the process of rotational casting.
9. What is the effect of temperature on the impact strength of a polymer.
10. Give the important applications of FTIR in the characterization of polymers.

(8×1=8 weightage)

**Part B (Short Essay/Problems)**

*Answer any **six** questions.*

*Weight 2 each.*

11. Give the name and formulae of any 6 vinyl monomers exhibiting chain polymerisation.
12. Graphically represent and evaluate the various shear-rate-dependent rheological phenomena shown by polymers.
13. Briefly describe the phase separation in miscible polymer solutions.
14. Based on tacticity describe the different types of polymer chains.
15. Mention the names of pigments having the following colours used in polymer processing: (i) white (ii) blue (iii) green (iv) yellow (v) red (vi) brown (vii) black (viii) metallic.





16. Discuss the important properties and applications of phenolic resins.
17. Describe the effects of temperature and rate of testing on the stress-strain properties of polymers.
18. Explain the factors affecting stress cracking and crazing of polymeric materials.

(6×2=12 weightage)

**Part C (Essay Type Questions)**

*Answer any **two** questions.*

*Weight **5** each.*

19. Write notes on (a) the Flory-Huggins interaction parameter (b) Flory-Krigbaum theory (c) the theta temperature.
20. Explain the significance of fire retardants, and discuss their properties and applications in polymer industry.
21. Discuss compression moulding and injection moulding.
22. Differential scanning calorimeter is a powerful tool used to characterize of polymeric materials. Substantiate the statement, and explain how is it helpful to determine the crystallization, melting and glass transition properties of polymeric materials.

(2×5=10 weightage)

