D6BCH2205 **Reg. No.....**

Name: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2025

(Regular/Improvement/Supplementary)

CHEMISTRY

GCHE6E02T: POLYMER CHEMISTRY

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 marks)

1. Differentiate between thermoplastics and thermosetting plastics. Give one example of each.
2. A rubber ball behaves like a glass ball below -70^{o}C. Briefly Explain.
3. Discuss the term tacticity with respect to polymers.
4. Explain the term 'living polymerization'.
5. What is HDPE? How it is synthesized?
6. Explain vulcanization. Mention its applications.
7. What is meant by pearl polymerization?
8. Explain how polymer sheets are made.
9. What is Lexan? Write its monomers. Give one use.
10. Explain blow molding.
11. Briefly discuss interfacial polycondensation. Name a polymer that can be prepared by this method.
12. Explain the phenomenon 'autoacceleration' in bulk polymerization.

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 marks)

13. What is meant by PDI. Discuss the significance of PDI and molecular weight distribution curves with regard to polymers.
14. Describe the various termination mechanisms in free radical polymerization.
15. Write a note on conducting polymers. Explain the significance of dopping in conducting polymers.
16. Give a brief account of the synthesis, properties and uses of any two synthetic rubbers.
17. Discuss emulsion polymerization in detail.
18. Explain injection molding and thermoforming with suitable diagrams.
19. Discuss plastic recycling methods and its advantages.

SECTION C: Answer any *one* question. The question carries *ten* marks.

20. Discuss the mechanism, salient features and advantages of Ziegler-Natta polymerization.
21. Give an account of thermal, photochemical and oxidative degradation of polymers.

(1 × 10 = 10 Marks)