

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2023

First Degree Programme under CBCSS

Chemistry

Elective Course

CH 1661.3 : POLYMER CHEMISTRY

(2020 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** question carries **1** mark. Answer in one word to maximum of two sentences

1. What are plastics?
2. Mention the name of catalyst used in co-ordination polymerization.
3. What are silicones?
4. Write two applications of polycarbonates.
5. What are the monomers of SAN rubber?
6. Mention the names of any two polymer industries in India.
7. What is glass transition temperature?
8. Define weight average molecular weight of a polymer.

P.T.O.

9. Explain the synthesis of nylon-6.
10. Give one example for biodegradable polymer

(10 × 1 = 10 Marks)

### SECTION – B

Short answer type (Not to exceed **one** paragraph)

Answer **any eight** questions. Each question carries **2** marks.

11. What are elastomers? Give one example.
12. What is addition polymerization? Give example.
13. What are block and graft polymers?
14. What polyurethanes? Mention its to uses.
15. Outline the synthesis of HDPE and mention its applications.
16. Discuss the synthetic method of preparation of SBR.
17. Mention one example for polyester and give its method of preparation.
18. What are the factors affecting GTT of a polymer?
19. Explain the term Carother's relation. What is its significance?
20. What are the advantages of vulcanization of rubber?
21. Explain the process extrusion.
22. What is meant by PDI? Mention its significance.

(8 × 2 = 16 Marks)

### SECTION – C

Short essay (Not to exceed **120** words)

Answer any **six** questions. **Each** question carries **4** marks.

23. Differentiate thermoplastics and thermosetting plastics.
24. Write note on natural Polymers.
25. Discuss the optical and electrical properties of polymers.

26. What are structural differences between polyisoprene and neoprene?
27. Discuss the TGA of polymers with a neat diagram.
28. Write short note on cellulose and its derivatives.
29. Discuss the degradation of polymers by oxidative and chemical methods.
30. Describe any one method of determination of molecular weight of a polymer.
31. Explain the synthesis and uses of Bakelite.

(6 × 4 = 24 Marks)

#### SECTION – D

#### Long Essay

Answer any **two** questions. **Each** question carries **15** marks.

32. Discuss the following
  - (a) Free radical mechanism of addition polymerization. 8
  - (b) General characteristics of polymers. 7
33. Write an essay on synthesis and uses of any four synthetic resins.
34. (a) Write short note on vinyl polymers. 7
  - (b) Discuss the synthesis and applications of ABS and Teflon. 8
35. Write an essay on the various steps in the polymer processing.

(2 × 15 = 30 Marks)