

Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, March 2021

First Degree Programme Under CBCSS

Chemistry

Elective Course

CH 1661.3 — POLYMER CHEMISTRY

(2018 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. Give any two examples for condensation polymer.
2. What is the monomer of natural rubber?
3. Write Carothers equation and explain the terms in it.
4. What is the monomer of Teflon?
5. What are the different types of polymerisations?
6. Give any two applications of cellulose ethers.
7. What is solution polymerization?

3. What is the glass transition temperature of a polymer?
9. Give any two examples for initiators used in cationic polymerisation.
10. What is the major application of PVB?

(10 × 1 = 10 Marks)

SECTION – B

(**Short answer** type. Answer **any eight** questions from the following. **Each** question carries **2** marks).

11. What is polydispersity index of a polymer?
12. What are the applications of polycarbonates?
13. How HDPE is prepared?
14. What are homopolymers? Give an example.
15. How epoxy resins are prepared? Give an example.
16. What are the different grades of PVC?
17. Explain number average molecular weight of a polymer.
18. What are the applications of polyurethanes?
19. What are the advantages of vulcanized rubber?
20. What is meant by curing process of a polymer?
21. What are polyesters? Give an example.
22. Write a short regenerated cellulose.
23. What are the applications of phenol-formaldehyde resins?
24. What are elastomers?
25. Differentiate between anionic and cationic polymerizations?
26. Explain the term functionality of a monomer.

(8 × 2 = 16 Marks)

SECTION – C

(**Short essay** type. Answer **any six** questions from the following. **Each** question carries **4** marks).

27. Explain the various factors affecting glass transition temperature of a polymer.
28. Differentiate between addition and condensation polymerization.
29. Explain the mechanism of addition polymerization.
30. Write a note on co-ordination polymerization.
31. Explain emulsion polymerization.
32. Explain the oxidative and chemical degradation of polymers.
33. Explain thermal and oxidative degradation of polymers.
34. Write a note on natural polymers.
35. What are copolymers? How they are classified?
36. Write a short note on compression molding.
37. Distinguish between thermoplastic and thermosetting polymers.
38. Write a short note on the synthesis and applications of polyurethanes.

(6 × 4 = 24 Marks)

SECTION – D

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

39. Write a note on the following polymer processing methods.
 - (a) Injection molding
 - (b) Extrusion
 - (c) Thermoforming.

40. Give a detailed account on Cellulosics.
41. Discuss the synthesis, chemical and physical properties and applications of the following polymers
- (a) Urea-formaldehyde resins
 - (b) Melamine-formaldehyde resins
 - (c) Silicones.
42. Discuss any one method each of determination of number average and weight average molecular weight.
43. Discuss the synthesis, properties and applications of the following polymers.
- (a) SBR
 - (b) ABS
 - (c) SAN
44. Explain :
- (a) Suspension polymerization
 - (b) Addition polymerization.

(2 × 15 = 30 Marks)