

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – NOVEMBER 2013

CH 5402 - POLYMER CHEMISTRY

Date : 15/11/2013
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

Part-A

Answer all questions. Each question carries two marks.

1. What are thermosetting polymers?
2. Define cohesive energy.
3. What are homopolymers and copolymers?
4. Why anionic polymerization is also called living polymerization?
5. Mention any two initiator molecules used in free radical polymerization.
6. Arrange the following polymers in the increasing order of their thermal stability and give reasons: polyisobutylene, polyethylene, polypropylene.
7. Define critical micelle concentration.
8. What is gutta percha resin?
9. Mechanical degradation of rubber is very quick in the presence of oxygen or air. Substantiate.
10. What do you mean by compounding?

Part-B

Answer eight questions. Each question carries five marks.

11. How is the number average molecular weight of a polymer determined?
12. Highlight the characteristics of anionic polymerization.
13. Explain the mechanism of Ziegler-Natta polymerization.
14. Explain syndiotactic, isotactic, and atactic polymers in detail.
15. Write short notes on step growth polymerization.

16. Explain interfacial condensation polymerization with an example.
17. Write an account on the thermal degradation of polymers.
18. Explain photodegradation of polymers with an example.
19. Write a note on die casting.
20. Explain the process of injection moulding.
21. Describe the preparation and salient features of PVC.
22. Explain the synthesis of the following polymers: (a) PMMA, (b) polyacrylonitrile.

Part-C

Answer four questions. Each question carries ten marks.

23. (a) Write a note on primary and secondary bond forces in polymers.
(b) What are plastics and fibers? Give an example each. (7 + 3)
24. Write a detailed account on the mechanism of free radical polymerization.
25. Give an account of bulk and solution polymerization techniques.
26. (a) Give a detailed account of polycondensation polymerization reactions.
(b) What are photostabilizers? Cite any two examples. (7 + 3)
27. (a) How novolac resins are prepared by acid and alkali catalyzed reactions?
(b) Explain why PTFE is a linear polymer. Mention its advantages. (6 + 4)
28. a) Explain fire retardant and colorants in polymer additives.
b) Give an account on the importance of polystyrene and neoprene.
