



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – NOVEMBER 2014

CH 5402 / CH 5400 - POLYMER CHEMISTRY

Date : 10/11/2014
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

Part-A

Answer all questions. Each question carries two marks:

10x2=20

1. Define functionality of a monomer.
2. Write the formula for number average molecular mass.
3. Mention two initiators used in free radical polymerization.
4. What is a living polymer?
5. Mention the types of polymer degradations.
6. Comment on the mastication of rubber in the presence of air.
7. What is compounding?
8. Give the uses of polystyrene.
9. What are conducting polymers? Cite an example.
10. What are plasticizers? Give an example.

Part-B

Answer any eight questions. Each question carries five marks:

8x5=40

11. Classify and explain the polymers based on their thermal behaviour.
12. Explain the structures of isotactic-, syndiotactic-, and atactic polymers with examples.
13. Write the mechanism of radical polymerization.
14. Explain the cationic polymerization.
15. Give an account on suspension polymerization.
16. Explain gas phase polymerization with suitable diagram.
17. Discuss the polymer degradation involving substituent groups.
18. Write the synthesis of Buna-S and Buna-N.
19. How are the following monomers synthesized? (a) Tetrafluoroethylene, (b) vinyl chloride, and (c) styrene.
20. Explain the synthesis, properties, and uses of polyester.
21. What are polymer additives? Mention the advantages of fillers.
22. Describe the process of die-casting.

Part-C

Answer any four questions. Each question carries ten marks:

4x10=40

23. Discuss the secondary bond forces in polymers.
24. Derive the formulae for number and weight average molecular weight of polymers.
25. Explain the mechanism of Ziegler-Natta polymerization.
26. Explain the following: (a) bulk polymerization and (b) solution polymerization.
27. Give the preparation and properties of polystyrene and phenol formaldehyde resins.
28. Describe the processing techniques: (a) calendaring and (b) blow moulding.
