

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – APRIL 2010

CH 5402 / 5400 - POLYMER CHEMISTRY

Date & Time: 27/04/2010 / 9:00 - 12:00 Dept. No.

Max. : 100 Marks

PART-A

Answer **ALL** questions.

(10 x 2 = 20)

01. Write structures showing syndiotactic and atactic arrangements in polypropylene.
02. Kelvar is more rigid than nylons. Why?
03. Distinguish between chain-growth polymerization and step-growth polymerization with any four points.
04. Name two initiators used in free radical and co-ordination polymerization.
05. What is Pearl polymerization? Give any two advantages of this method.
06. Write the order of thermal stability of the following polymers and give reasons for your choice: Polyethylene, polystyrene, poly α -methylstyrene.
07. LDPE is a branched polymer. Why?
08. T_g of nylon 6,6 is about twice that of polyester of comparable chain. Why?
09. What is compounding.
10. What are fillers? Give an example.

PART-B

Answer any **EIGHT** questions.

(8 x 5 = 40)

11. Draw structures of the following copolymers considering **A** and **B** as monomers:
(a) Random copolymer (b) Alternating copolymer (c) Two block copolymer
(d) Three block copolymer (e) Graft copolymer
12. Give an account of: (a) Co-polymers (b) Fibres
13. Write short notes on step growth polymers.
14. Describe the kinetics of cationic polymerization.
15. Explain the term “interfacial polymerization”. Give an example of a polymer made by this process.
16. What are photo stabilizers? Explain the mechanism of preventing photo degradation with any two examples.
17. How are the following polymers synthesized? (a) Polyacrylonitrile (b) Buna-N
18. Write short notes on (a) fibre forming polymers (b) elastomeric polymers
19. What are inorganic polymers? Write the structures of any three inorganic polymers.

20. Define the following with one example for each:
(a) Antifoaming agents (b) Release agents
21. Explain the process of die casting.
22. Discuss the importance of injection moulding.

PART-C

Answer any **FOUR** questions.

(4 x 10 = 40)

23. Discuss the importance of inter-molecular forces in polymers with suitable example for each case.
24. Write a detailed account on mechanism of cationic polymerization and explain.
25. What is CMC? Discuss emulsion polymerization with a neat diagram and mention the advantages.
26. What are polycondensation reactions? How are polyurethane, epoxy- polymers, polyester, poly methyl methacrylates synthesized?
27. What are the conditions for conducting polymers? Explain the factors affecting conducting polymers.
28. Write short notes on the following :
(a) Compression moulding (b) Extrusion moulding.

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