LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – NOVEMBER 2007

CH 5400 - POLYMER CHEMISTRY

AD 10

Date : 29/10/2007 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

PART – A

Answer ALL questions ($10 \times 2 = 20$ marks)

01. What are inorganic polymers?
02. Prove that acetylene is a tetrafunctional monomer.
03. What are the factors influencing the rate of the polymerization reaction?
04. How does atmospheric oxygen act as inhibitor?
05. Write the monomer–catalyst complex formation of organometallic catalyst and diene monomers.
06. Give any one example for polycondensation reaction.
07. Draw the structures of linear, branched and cross–linked polymers.
08. Differentiate LDPE and HDPE.
09. Poyphenylene is thermally more stable than polycarbonate. Why?
10. What is compounding?

PART – B

Answer any EIGHT questions. ($8 \times 5 = 40$ marks)

11. Discuss the mechanism of free–radical polymerization.
12. Write a note on step growth polymerisatioin.
13. Explain gas phase polymerization.
14. Discuss the structures of isotactic, syndiotactic and atactic polymers.
15. Why does the glass transition temperature of polyamide is high? Explain.
16. How is polystyrene prepared? Explain its advantages and disadvantages.
17. What is 'kelvar' fibre? How is it prepared?
18. Discuss the polymer degradation involving substituent groups.
19. Write short notes on : (a) natural fibres (b) synthetic fibres
20. Explain the terms vulcanization and elastomers.
21. Discuss the process of calendaring.
22. Explain the process of compression moulding.

PART – C

Answer any FOUR questions. ($4 \times 10 = 40$ marks)

23. Discuss the mechanism of anionic polymerization.
24. Explain the monometallic mechanism of Zieglar–Natta catalyst and its uses.
25. (a) Emulsion polymerization is the most widely used industrial technique – Explain.
    (b) Differentiate homopolymers and copolymers with an example. (6 + 4)
26. Write short notes on : (a) conducting polymers (b) Stereo–regular polymers
27. Explain the acid–catalyzed and base–catalyzed mechanism of condensation of phenol and formaldehyde.
28. Discuss the methods used to prepare a plastic matrix with a high–strength fibre materials.

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