LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **CHEMISTRY**

FIFTH SEMESTER – APRIL 2011

# CH 5402/5400 - POLYMER CHEMISTRY

Date : 12-04-2011 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**Part - A (Answer all questions) (10 x 2 = 20)**

1. How are polymers classified on the basis of their origin?
2. What are reinforced plastics? Give an example.
3. Distinguish between organic and inorganic polymers.
4. How is polystyrene prepared?
5. What is coordination polymerization? Give an example.
6. What are the causes of chain end degradation?
7. What is ion-pair precipitation?
8. Account for the thermal stability of PTFE.
9. What are addition and condensation polymerizations?
10. Mention the significance of organosols.

**Part - B (Answer any EIGHT only) (8 x 5 =40)**

1. Explain Natta’s bimetallic mechanism of polymerization.
2. Discuss the different types of polycondensation.
3. Explain copolymerization and homopolymerisation with examples.
4. What are zipping and unzipping? Give examples.
5. Explain interfacial condensation polymerization with an example.
6. Give the preparations and applications of LDPE and HDPE?
7. How are linear and cross-linked phenol-formaldehyde resins obtained?
8. Explain inter and intra molecular chain transfer.
9. How will you remove the defects in polypropylene polymer?
10. Describe polyaddition polymerization with an example.
11. Discuss the mechanism of anionic polymerization.
12. How are isotactic and syndiotactic polymers obtained?

**Part - C (Answer any FOUR only) (4 x 10 =40)**

1. a) Discuss the primary and secondary bond forces present in polymer (6)

b) Chain polymerization is also called vinyl polymerization – explain. (4)

1. Why is the molecular weight of a polymer expressed as an average? Describe the weight average molecular weight determination of a polymer.
2. a) Explain the various possible modes of addition in the propagation step of free radical polymerization. (6)

b) Why are inhibitors called short stops? Mention their uses. (4)

1. a) Explain i) Blow moulding ii) Injection moulding (6)

b) Write a note on compounding. (4)

1. a) Discuss the role of metering and feed zones in extrusion moulding. (5)

b) Writ a note on elastomeric materials and fibre forming polymers. (5)

1. Discuss the mechanisms of conduction exhibited by polyphenylene and polyacetylene polymers.

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