

7. (a) Discuss the kinetics of the condensation polymerization. 5
- (b) Write the expression for molecular weight distribution in linear polycondensation reaction. 5
8. (a) Write the relation between the T_m and T_g in crystalline polymer. 5
- (b) Write the difference between the crystalline polymer and Glassy Polymer. 5
9. (a) Define and give the mathematical expression for the following : 6
- (i) Inherent viscosity
- (ii) Specific viscosity
- (iii) Limiting viscosity.
- (b) What is meaning of average molecular weight of polymers ? 4

(Set-1)

M.Sc. - 2nd(IC)
Polymer Chemistry

Full Marks : 70

Time : 3 hours

Q. No. 1 is compulsory and answer any five from the rest

The figures in the right-hand margin indicate marks

1. Answer the following questions : 2 × 10
- (a) Define the terms ceiling temperature and Floor temperature.
- (b) Why does the T_g of a polymer increase in presence of a filler ?
- (c) Polyisobutylene does not show stereo-regularity where as polypropylene does.
- (d) Write the mechanism of Benzoyl peroxide decomposition of free radical.

(Turn Over)

(2)

- (e) Chain stiffness depends on chemical structure, why?
- (f) What is functionality of monomer?
- (g) Paraffin wax has structure similar to HDPE but lacks in strength, why?
- (h) What mechanism involve the retarding action of nitrobenzene?
- (i) What structural parameters influence the melting point of a polymer?
- (j) What is the meaning of average molecular weight of polymers?
2. (a) Distinguish between syndiotactic, isotactic and atactic polymer. 5
- (b) Write the mechanism of Ziegler-Natta polymerisation. How is the growing chain terminated? 5
3. (a) Write short notes on Ring opening polymerization with reference to cyclic amides. 5

(3)

- (b) Write the application of copolymerisation. 5
4. (a) What is mean by a copolymer? Discuss the different types of copolymer with examples. 5
- (b) Discuss the kinetics of copolymerization and derive an expression for the rate of copolymerization. 5
5. (a) Anionic polymerisation proceeds through carbanion mechanism, explain. 5
- (b) Write the comparison between radical and ionic polymerisation. 5
6. (a) Derive the relationship between the kinetic chain length and degree of polymerisation in case of vinyl polymer. 5
- (b) Write short notes on : 5
- (i) Auto acceleration
- (ii) Inhibitor and Retarder.