



Notes : 1. All questions are compulsory and carry marks as indicated.

1. a) What are polymers? Give classification of polymers? 8
- b) What is step polymerization? Derive an expression for degree of polymerization for polycondensation reaction. 8

OR

- c) Explain free radical polymerisation with suitable example. 4
- d) Write a note on Electro polymerisation. 4
- e) Discuss the mechanism of anionic polymerization. 4
- f) Explain ring opening polymerisation with suitable example. 4
2. a) Discuss following polymerisation technique with suitable example. 8
 - i) Bulk polymerisation.
 - ii) Emulsion polymerisation.
- b) What are Ziegler and Natta Catalyst? Discuss the mechanism involved in Z-N polymerization. 8

OR

- c) Explain the Phenomenon of interfacial polycondensation. 4
- d) Discuss co-ordination polymerization with suitable example. 4
- e) Describe the techniques of suspension polymerization. 4
- f) Write a note on stereospecific polymerization. 4
3. a) Explain principle, working and applications of XRD in polymer characterization.. 8
- b) How thermogravimetric analysis (TGA) can be used for characterization of polymers? 8

OR

- c) Give preparation and properties of graft copolymer. 4
- d) Explain random polymerization. 4
- e) Explain IR-Spectral method for analysis of polymer with example. 4
- f) How DSC method used to characterise the polymer? 4

4. a) What do you mean by biomedical polymer? Give a brief account of biomedical polymer with reference to 8
 i) Artificial heart
 ii) Polymer for contact lens
- b) Give synthesis, properties and applications of sulphur containing polymer. 8

OR

- c) Write preparation & properties of silicones. 4
- d) Give synthesis & application of co-ordination polymers. 4
- e) Describe biomedical polymer of kidney. 4
- f) Describe the dental polymers. 4
5. a) Differentiate between thermoplastic and thermosetting polymers. 2
- b) What is addition polymerization? 2
- c) What is chain polymerization, and how does it differ from step-growth polymerization? 2
- d) Name the catalyst and co-catalyst used in Ziegler-Natta polymerization and state their functions. 2
- e) What is Differential Thermal Analysis (DTA) technique? 2
- f) What is the significance of the block size and sequence in block copolymers? 2
- g) What is the role of surfactants in emulsion polymerization. 2
- h) What is the significance of coordination polymers in the field of materials science? 2
