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1. a) What is Polymerization? Explain the mechanism of cationic polymerization. 8
- b) What is step polymerization? Derive an expression for degree of polymerization for polycondensation reaction. 8

**OR**

- c) Describe Electrochemical polymerization. 4
- d) Discuss Ring opening polymerization with suitable example. 4
- e) Differentiate between addition polymers and condensation polymers. 4
- f) Explain the types of polymerization. 4
2. a) Discuss the techniques of polymerization in 8
- i) Bulk polymerization.
- ii) Emulsion polymerization.
- b) What is the composition of Ziegler-Natta catalyst? Discuss mechanism involved in Z-N polymerization. 8

**OR**

- c) Write a short note on solution polymerization. 4
- d) Explain co-ordination polymerization. 4
- e) Describe stereospecific polymerization. 4
- f) Explain the phenomenon of interfacial polycondensation. 4
3. a) How TGA can be used for the characterization of polymer? 8
- b) What is co-polymerization? Discuss methods of co-polymerization. 8

**OR**

- c) Describe DSC method for the characterization of polymer. 4
- d) Explain Graft and Block copolymer. 4

- e) How IR method is used for the characterization of polymer. 4
- f) Discuss random copolymerization. 4
- 4. a) Discuss Biomedical polymers for artificial heart and Kidney. 8
- b) Explain Synthesis and applications of phosphorus containing polymers. 8

**OR**

- c) Write a note on dental polymers. 4
- d) State applications of co-ordination polymers. 4
- e) Give synthesis of Inorganic polymer i.e. silicon polymer. 4
- f) Describe biomedical polymers for skin. 4
- 5. Answer the following in short. 2x8 =16
- a) Discuss ionic polymerization.
- b) Discuss classification of polymer on the basis structure.
- c) Write a note on Suspension polymerization.
- d) How does Ziegler Natta catalyst leads to stereospecific polymers?
- e) Explain DTA method for polymers.
- f) Write a note on biomedical polymer – contact lens.
- g) Explain X-ray diffraction method for the characterization of polymer.
- h) Give application of Sulphur containing polymer.

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