

M.Sc. - II (Chemistry) (CBCS Pattern) Semester-IV
PSCHT16.4 - Elective Paper-XVI : Polymer Chemistry

P. Pages : 2

Time : Three Hours



GUG/W/24/11463

Max. Marks : 80

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- Notes : 1. All questions are compulsory having equal marks.
2. Write chemical reaction and draw diagram wherever necessary.

1. a) What are polymers? Discuss Ring opening polymerization and electropolymerization. 8
- b) Explain- 8
- i) Addition polymerization
- ii) Ionic polymerization

OR

- c) Give mechanism of ethylene oxide by sodium methoxide ring opening polymer. 4
- d) Give the classification of polymers. 4
- e) Discuss free radical polymerization. 4
- f) Explain step polymerization with suitable examples. 4
2. a) What are Ziegler and Natta catalyst? Discuss the mechanism involved in Zeigler-Natta polymerization. 8
- b) Explain the following technique of polymerization. 8
- i) Emulsion polymerization
- ii) Suspension polymerization

OR

- c) Explain Bulk polymerization. 4
- d) Explain the phenomenon of interfacial polycondensation. 4
- e) Discuss Stereospecific polymerization. 4
- f) Give the mechanism of active centre formation in Zeigler-Natta Catalyst. 4

3. a) Explain TGA and DSC method for characterization of polymers. 8
- b) How NMR spectroscopy is used to characterize the polymer chain. 8

OR

- c) Differentiate DSC and TGA. 4
- d) How IR method used in characterization of polystyrene. 4
- e) Explain methods of copolymerization. 4
- f) Write preparation and properties of graft copolymer. 4
4. a) What is Biomedical polymer? Give application of these polymer in artificial heart and kidney. 8
- b) Give the synthesis and application of co-ordination polymers. 8

OR

- c) Explain Dental polymers. 4
- d) Write the application of Sulphur containing polymers. 4
- e) Give synthesis and application of phosphorous containing polymers. 4
- f) Explain polymer for contact lens. 4
5. a) What is free radical polymerization. 2
- b) Explain the term ionic polymerization. 2
- c) Discuss stereospecific polymerization. 2
- d) Name catalyst and co-catalyst used in Ziegler Natta polymerization. 2
- e) Write short note on DTA method. 2
- f) Explain graft copolymers. 2
- g) Explain briefly polymer for skin. 2
- h) Give any two application of Silicon containing polymers. 2
