

M.Sc. - II (Chemistry) (NEP Pattern) Semester-IV
STPG04CHE03 - Elective Paper-XVI : Polymer Chemistry-II

P. Pages : 2

Time : Three Hours



GUG/S/25/16328

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 Ziegler-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) Explain Mechanism of Polymerization. 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) Explain DTA method. 4
- d) How IR method used in characterization of polystyrene. 4
- e) Explain methods of copolymerization. 4

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| | 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

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| | c) | Explain Dental polymers. | 4 |
| | d) | Write the application of sulphur containing polymers. | 4 |
| | e) | Give synthesis and application of phosphorus containing polymers. | 4 |
| | f) | Explain role of polymer in contact lens. | 4 |
| 5. | | Attempt any eight . | |
| | 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 Random polymer. | 2 |
| | f) | Explain graft copolymers. | 2 |
| | g) | Explain briefly polymer for skin. | 2 |
| | h) | Give any two application of Silicon containing polymers. | 2 |
| | i) | Draw the structure anionic polymer. | 2 |
| | j) | Explain emulsion polymerization. | 2 |
