

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013****Subject code: 733003****Date: 28-11-2013****Subject Name: Introduction to Polymer Science and Technology****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Write brief description of crystalline and amorphous polymer with example. **07**
(b) “The glass transition temperature has its relevance in thermoforming, coating industry.” Justify the statement. **07**
- Q.2** (a) Explain classification of polymer with appropriate example. **07**
(b) Explain kinetics of condensation polymerization reaction. **07**
OR
(b) Define following terms **07**
Graft copolymer, Block copolymer, Mark Houwink Equation
- Q.3** (a) Explain termination step for free radical polymerization with appropriate example. **07**
(b) Explain anionic and cationic polymerization with appropriate examples. **07**
OR
- Q.3** (a) Describe the effects of degradation on reaction kinetics of polymerization. **07**
(b) Enlist various measuring techniques of molecular weight of polymer. **07**
- Q.4** (a) Discuss the effects of stereo regularity on polymer with suitable examples. **07**
(b) Explain the solubility of polymer with appropriate examples. **07**
OR
- Q.4** (a) Calculate the length of stretch chain of PE with DOP is 4500. And also calculate actual length of stretched and un stretched polymer chain. **07**
(b) Enlist various additives used for polymer processing and explain their role with appropriate examples. **07**
- Q:5** (a) Explain thermal degradation of polymer. **07**
(b) Discuss solution polymerization with suitable industrial example. **07**
OR
- Q:5** (a) Explain the term “CMC”. Justify the statement “concentration of CMC effects the emulsion polymerization”. **07**
(b) Explain injection moulding process with diagram. **07**