Seat No.: _____ Enrolment No._____

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 Graft copolymer, Block copolymer, Mark Houwink Equation	**07**
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**