Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(OLD) • EXAMINATION – WINTER 2016

Subject Code:132301 **Date:04/01/2017**

Subject Name:Introduction to Plastic Material Science

Time:10:30 AM to 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)**	What is Glass transition temperature? Explain factors influencing the Glass transition temperature.	**07**
	(b)	Differentiate between polymers and low molecular weight compounds.	**07**
Q.2	**(a)**	Explain classification of Polymer in detail.	**07**
	(b)	Write down the effect of crystallinity on the mechanical, chemical and thermal properties of polymer.	**07**
		OR	
	(b)	What is copolymer? Write down different types of copolymer. What do you mean by terpolymer? Give examples.	**07**
Q.3	**(a)**	Explain Free radical polymerization in detail.	**07**
	(b)	Give difference between amorphous & crystalline polymers.	**07**
		OR	
Q.3	**(a)**	Explain Polydispersity & Molecular weight distribution in polymers.	**07**
	(b)	Give difference between Step polymerization & Chain polymerization.	**07**
Q.4	**(a)**	What do you mean by isomerism in polymers? Write down with examples about the stereoisomerism and geometrical isomerism of polymers.	**07**
	(b)	Explain Ziegler- Natta Polymerization in detail.	**07**
		OR	
Q.4	**(a)**	Explain about Number Average and weight Average concept of Polymer in detail.	**07**
	(b)	Define: Thermoset, Thermoplastic, inhibitor, chain transfer agent, contour length, Ionic Polymerization,Monomer.	**07**
Q.5	**(a)**	Write functionality of the following compounds. (i) $HOCH_2\ CH_2OH$ (ii) $C_6H_5CH_2OH$ (iii) $H_2NCH_2(CH_2)_4CH_2NH_2$ (iv) $HOOCCH_3CH(OH)COOH$ (v) $CH{\equiv}CH$ (vi) CH_3NCO vii) $CH_2{=}CH_2$	**07**
	(b)	Explain about Initiator with suitable examples.	**07**
		OR	
Q.5	**(a)**	Explain Bulk Polymerization with advantages of it over solution polymerization.	**07**
	(b)	Explain Emulsion Polymerization in detail.	**07**

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