Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Regular / Remedial Examination December 2010

Subject code: 132301
Subject Name: Introduction to Plastic Material Science

Date: 14 /12 /2010 **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)	Classify the polymers based on their physical microstructure. Give examples.	07
	(b)	How do you classify the polymers based on their chemistry of formation? State with examples.	07
Q.2	(a)	Write down the types of molecular weight of polymers and arrange them according to ascending or descending order.	07
	(b)	Write down the types of transition in polymers. Explain glass transition temperature for both amorphous and crystalline polymer with the help of specific volume vs. temperature curve.	07
		OR	
	(b)	Define degree of polymerization of polymers, and calculate the molecular weight of polymers which is formed by condensation polymerization of ethylene glycol and terephtalic acid with a conversion rate of 98%.	07
Q.3	(a)	What do you mean by isomerism in polymers? Write down with examples about the stereoisomerism and geometrical isomerism of polymers.	07
	(b)	Polyvinyl alcohol (PVOH) is soluble in water. But how do you interpret in-soluble behavior of a fiber made of PVOH in water?	07
		OR	
Q.3	(a)	What do you mean by tacticity of polymers? Give examples.	07
	(b)	What is copolymer? Write down different types of copolymer. What do you mean by terpolymer? Give examples.	07
Q.4	(a)	Explain the different techniques of polymerization with examples.	07
	(b)	Write down the differences between graft and block copolymer. Give examples.	07
		OR	
Q.4	(a)	Write down the difference between suspension and emulsion polymerization.	07
	(b)	What is glass transition temperature? How is the glass transition temperature of a polymer effected by hydrogen bonding in the polymers?	07
Q.5	(a)	Define crystallinity. How is crystallinity of a polymer determined?	07
	(b)	Write down the effect of crystallinity on the mechanical, chemical and thermal properties of polymer.	07
		OR	
Q.5	(a)	Write down the characteristics of crystalline and amorphous polymers.	07
	(b)	Write down the differences between the thermoplastics and thermoset polymers.	07

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