Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 132804 **Date: 18-12-2014**

Subject Name: Polymer Chemistry

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	What is polymerization. Describe chain polymerization mechanism in detail with example.	**07**
	(b)	Explain Emulsion polymerization? Explain with example.	**07**
Q.2			
	(a)	Discuss free radical polymerization with two no. of examples	**07**
	(b)	Explain number average and weight average molecular weight in detail and derive related equations.	**07**
		OR	
	(b)	What is Tacticity of polymers? Explain geometry of polymers in detail.	**07**
Q.3			
	(a)	What is polystyrene? Give structure, preparation, properties, copolymers and uses of it.	**07**
	(b)	Explain x-ray diffraction technique to determine the polymer molecular weight.	**07**
		OR	
Q.3	**(a)**	Describe thermosetting polymers. Write preparation, properties and uses of Phenol formaldehyde crosslink polymer in detail.	**07**
	(b)	Explain I.R. spectroscopy technique for testing of polymers.	**07**
Q.4			
	(a)	Discuss addition & Substitution reaction with examples.	**07**
	(b)	What distinguish between polyamides and polyamines? Explain polyamides and related polymers.	**07**
		OR	
Q. 4	**(a)**	Describe acidolysis and hydrolysis reactions with examples.	**07**
	(b)	Discuss Injection molding to prepare types of articles.	**07**
Q.5	**(a)**	What is scattering ? Discuss Light scratting technique with equations.	**07**
	(b)	Explain DTA & DSC techniques to identify the polymer in detail.	**07**
		OR	
Q.5	**(a)**	What type of precaution we will take to minimize pollution of plastics all over the world?	**07**
	(b)	Write structure of natural rubber. Who invented Vulcanization process? Explain vulcanization process in detail.	**07**

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