Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2022

Subject Code:3160511   **Date:08/06/2022**
Subject Name:Polymer Science and Technology
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Explain monomer and it's functionality.	03
	(b)	Describe conformation and configuration of polymer.	04
	(c)	Discuss classification of polymer in detail.	07
Q.2	**(a)**	Explain polymer dispersity and molecular weight distribution.	03
	(b)	Explain the Concept of Number average molecular weight, weight average molecular weight, viscosity average molecular weight and Z average molecular weight.	04
	(c)	Explain effect of molecular weight on polymer and their measurement techniques.	07
		OR	
	(c)	Discuss the theory of polymer solutions, solubility parameter and Mark-HouwinkSakurda equation.	07
Q.3	**(a)**	Explain addition polymerization.	03
	(b)	Describe rearrangements and stereo Polymerization.	04
	(c)	Discuss polymerization reactions in details.	07
		OR	
Q.3	**(a)**	Explain emulsion and suspension polymerization techniques.	03
	(b)	Compare bulk, solution, and emulsion and suspension polymerization.	04
	(c)	Discuss different polymerization techniques.	07
Q.4	**(a)**	Explain polymer degradation.	03
	(b)	Differentiate Chain and random polymerization.	04
	(c)	Explain the methods of degradation of polymers such as mechanical, thermal, photo, oxidative and bio degradation.	07
		OR	
Q.4	**(a)**	What is Bio degradation? Explain with example.	03
	(b)	Discuss emulsion and solution polymerization with examples.	04
	(c)	Explain polymerization techniques with any two case studies.	07
Q.5	**(a)**	What unit operations are being used in polymer Industries?	03
	(b)	Explain different molding techniques.	04
	(c)	Discuss any polymer processing unit with examples.	07
		OR	
Q.5	**(a)**	Explain thermoforming and rubber processing in two-roll mill.	03
	(b)	Explain application of injection and transfer molding.	04
	(c)	Explain Co-ordination polymerization and condensation Polymerization	07

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