Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023

Subject Code:3160511 Date:12-07-2023

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)**	Define: (i)Weight average molecular weight (ii)Viscosity average molecular weight (iii) Z average molecular weight.	**03**
	(b)	Explain effect of molecular weight on polymer.	**04**
	(c)	List different techniques of polymerization and explain any one. .in	**07**
Q.2	**(a)**	What unit operations are being used in polymer Industries?	**03**
	(b)	Explain the concepts of tacticity and crystallinity in polymer.	**04**
	(c)	State Mark-Houwink Sakurda equation with its significance.	**07**
		OR	
	(c)	Discuss classification of polymer in detail.	**07**
Q.3	**(a)**	What is degree of polymerization and functionality?	**03**
	(b)	Compare emulsion and suspension polymerization.	**04**
	(c)	Write a short note on Co-Polymerization.	**07**
		OR	
Q.3	**(a)**	Define: (i)Monomer (ii)Polymerization (iii)Number average molecular weight.	**03**
	(b)	Differentiate Chain and random polymerization.	**04**
	(c)	Explain addition polymerization with its classifications.	**07**
Q.4	**(a)**	Explain different types of monomer.	**03**
	(b)	Describe rearrangements and stereo Polymerization.	**04**
	(c)	Describe thermal degradation and mention the factors affecting the thermal stability of polymers?	**07**
		OR	
Q.4	**(a)**	Explain polymer dispersity and molecular weight distribution.	**03**
	(b)	Explain Pultrusion in polymer industry.	**04**
	(c)	Explain Compression molding with neat diagram.	**07**
Q.5	**(a)**	Explain block and graft polymers.	**03**
	(b)	Discuss the theory of polymer solutions	**04**
	(c)	Explain Co-ordination polymerization and condensation Polymerization.	**07**
		OR	
Q.5	**(a)**	Explain processing of polymer by extrusion in brief.	**03**
	(b)	Explain thermoforming and rubber processing in two-roll mill.	**04**
	(c)	Explain chain and random degradation of polymers with examples.	**07**