

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-III EXAMINATION – WINTER 2025****Subject Code:3132301****Date:12-12-2025****Subject Name: Plastics 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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Define: Inhibitor, Chain Transfer Agent, and Monomer.	03
	(b) What is isomerism? Explain about Stereo Regular Polymers.	04
	(c) Define Polymers. Give detail Classification Of Polymers with suitable examples.	07
Q.2	(a) Write functionality of the following compounds. (i) HOCH ₂ CH ₂ OH (ii) C ₆ H ₅ CH ₂ OH (iii) H ₂ NCH ₂ (CH ₂) ₄ CH ₂ NH ₂ .	03
	(b) Explain Bulk Polymerization Technique along with advantages, disadvantages.	04
	(c) Give difference between Thermoplastic and Thermosetting Plastics.	07
	OR	
	(c) What are Chain & Step Growth Polymerization? Give difference between them.	07
Q.3	(a) Draw the structures of i)PMMA ii) PVC iii)PS.	03
	(b) Explain Free Radical Polymerization Mechanism.	04
	(c) What is Glass Transition Temperature? Discuss various factors affecting Tg.	07
	OR	
Q.3	(a) What are Biopolymers? Give examples.	03
	(b) Describe Polydispersity & Molecular weight distribution in polymers.	04
	(c) Explain Solution Polymerization Technique with advantages, disadvantages.	07
Q.4	(a) What is the molecular weight of PE if the no. of repeating units is 2004?	03
	(b) What is Copolymer? Write down different types of copolymer	04
	(c) Discuss various factors affecting Crystallinity of plastics.	07
	OR	
Q.4	(a) What is Polydispersity? Describe it.	03
	(b) Give difference between Amorphous & Crystalline Polymers.	04
	(c) Describe Living Polymerizations with example	07
Q.5	(a) Describe Chain Termination by Chain Transfer Reaction.	03
	(b) Explain about Homopolymers and Copolymers giving examples	04
	(c) Give difference between Suspension and Emulsion Polymerization.	07
	OR	
Q.5	(a) Briefly explain about Plastics, Elastomers, and Fibers.	03
	(b) Write a short note on Hydrolysis & Aminolysis Reactions.	04
	(c) Explain Ziegler- Natta Polymerization in detail.	07
