

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2023****Subject Code:3132301****Date:16-01-2024****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 the term Monomers, Initiator and Degree of polymerization.	03
(b) What is Tacticity ?. Classify Polymers on the basis of Tacticity.	04
(c) Differentiate Thermoplastic and Thermosetting Plastics.	07
Q.2 (a) Define the term functionality of polymer with examples.	03
(b) Explain Bulk Polymerization Technique along with its benefit and drawbacks.	04
(c) Give detail Classification Of Polymers with suitable examples.	07
OR	
(c) What is Polymerization Process ? explain its type with examples.	07
Q.3 (a) Draw the structures of PVC, PAN, PMMA.	03
(b) For polymerization, Explain Initiation, Propagation and Termination steps.	04
(c) What is Glass Transition Temperature? Discuss various factors affecting Tg.	07
OR	
Q.3 (a) What are Biodegradable Polymers ? Give its uses.	03
(b) Describe Polydispersity and Molecular weight distribution in polymers.	04
(c) Explain Suspension Polymerization Technique with its advantages and disadvantages.	07
Q.4 (a) Calculate approximate molecular weight of $[\text{CH}_2\text{-CH}_2]_n$, where $n = 2023$.	03
(b) What is Co-polymer? Write down different types of co-polymer	04
(c) Discuss Crystalline and Amorphous Morphology of Plastics.	07
OR	
Q.4 (a) Write short note on : Number Average and Weight Average Molecular weight.	03
(b) How Crystallinity of polymer effect its Mechanical properties	04
(c) Give short note on : Living Polymerization with example	07
Q.5 (a) Briefly explain Plastics and Elastic properties of Polymer.	03
(b) Differentiate Homo-polymers and Co-polymers.	04
(c) Describe Vulcanization for Rubber.	07
OR	
Q.5 (a) Describe Chain Termination by Chain Transfer Reaction.	03
(b) Write a short note on Hydrolysis & Hydrogenation of Polymer.	04
(c) Give difference between Bulk and Solution Polymerization.	07
