

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3173626**Date:16-01-2023****Subject Name:Polymer Material, Properties and Structure****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: (a) Permeability (b) Chain length (c) Cryoscopy	03
	(b) List out the various polymer molecular weight determination techniques. Explain any one of them.	04
	(c) Write in detail about the glass transition temperature of polymers as well as its Significance. How it affects the application of polymer products?	07
Q.2	(a) Explain glass transition temperature with the help of diagram.	03
	(b) Write in detail about classification of Biopolymers.	04
	(c) Explain in detail the about chemical and physical structure of Polymers.	07
OR		
	(c) Write in short about the Chain flexibility of the polymers.	07
Q.3	(a) Explain Power law for polymers.	03
	(b) Explain the influence of processing parameters on the structure & properties of polymers.	04
	(c) Describe in detail about spherullite with proper diagram and the structure of Polymers.	07
OR		
Q.3	(a) Explain in brief about heat distortion temperature.	03
	(b) Write in detail about configuration and conformation of Polymer Structures.	04
	(c) Explain in detail the process of degradation and also describe the parts due to which degradation occurs.	07
Q.4	(a) What is Shear Test?	03
	(b) Describe the working principle of GPC method used to determine Molecular Weight of Polymers	04
	(c) Write in short about the crystallinity of polymers and the factors affecting the crystallinity of polymers.	07
OR		
Q.4	(a) How to test flexibles films?	03
	(b) What do you mean by SEM? Explain in brief about it.	04
	(c) Write in detail about basics of rheology.	07

- Q.5** (a) What do you mean by surface energy? **03**
(b) How to identify polymers by using chemical methods? **04**
(c) Explain the thermodynamics of polymer dissolution. **07**

OR

- Q.5** (a) Write in short about microscopy. **03**
(b) Mention the advantages and disadvantages of Sem and TEM. **04**
(c) Write a short note on Florry-Huggins theory. **07**
