

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - III EXAMINATION - WINTER 2025

Subject Code: BE03026011

Date: 15-12-2025

Subject Name: Rubber 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) Give difference between Cellulose and Starch in terms of structure and properties.	03
(b) Write about basic classification of Protein with examples. Write about applications of regenerated protein for Polymer industries.	04
(c) List the miscellaneous Natural Organic Polymers. Write about their characteristic features and applications.	07
Q.2 (a) Give synthesis reaction for Butadiene monomer. Write its applications.	03
(b) Give reaction mechanism for Acrylonitrile monomer production by environment friendly route.	04
(c) List the two ways for manufacturing of Styrene monomer from Benzene. Explain about both with necessary reaction mechanisms.	07
OR	
(c) List the reactants for production of Butadiene monomer. Write about any three methods with reactions. Give uses of Butadiene monomer.	07
Q.3 (a) Mention the major factors affecting T _g value of Polymers.	03
(b) Write about configurations involving Asymmetric carbon atom in polymers with schematic diagram.	04
(c) Describe the concept of various transitions of states for Polymeric material with schematic representation.	07
OR	
(a) Give schematic representation showing concept of Glass Transition Temperature for polymers.	03
(b) Write about configurations involving Carbon- Carbon Double Bond in Polymers with structures. Write their significance on properties.	04
(c) Explain in detail about any three factors which affects Polymer Crystallinity. Write about effect of Crystallinity on Polymer properties.	07

- Q.4 (a)** Mention the characteristics of Fluorine element and effect on properties on polymer composition. **03**
- (b)** Write about any two monomeric additives for final polymer composition. **04**
- (c)** Explain the mechanism of Orientation. Write about various Orientation methods and explain the importance of mobility. **07**

OR

- (a)** Write about structural features of Chlorine element and its impact on properties. **03**
- (b)** Write about any two impurities in Final polymer composition. **04**
- (c)** Describe in detail about Axes of Orientation with schematic representation. Explain its importance with examples. **07**
- Q.5 (a)** How blowing agents used to introduce Porosity in polymeric products. Write in brief. **03**
- (b)** Write about determinants of Thermal degradation in polymers. **04**
- (c)** Describe the two basic mechanism of Polymer degradation with schematic diagram. Explain their difference on degradation. **07**

OR

- (a)** Write about the mechanism of Absorption and Adsorption. **03**
- (b)** Write about mechanical degradation in polymers. How it is important during product manufacturing? **04**
- (c)** Describe the Oxidative degradation in polymers with appropriate reaction mechanisms. **07**
