

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3152609

Date: 09/06/2026

Subject Name: Thermoplastic Elastomers and Polymer Blends

Time: 02:30 PM TO 05:00 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.

- Q.1** (a) State the difference between the Hard phase and Soft phase of thermoplastic elastomers. 03
- (b) List the advantages and disadvantages of Thermoplastic Elastomers over Conventional Elastomers. 04
- (c) Write a short note on: “NBR-PVC blends”. 07
- Q.2** (a) List the advantages of Teleblock polymers. 03
- (b) Which are the future requirements of TPE? 04
- (c) Discuss in detail about compounding of Crosslinked Polyethylene (XLPE). 07
- OR
- Q.2** (c) Discuss in detail about compounding of SBS block polymers. 07
- Q.3** (a) Draw the structure of Hytrel copolymer and write its chemical name. 03
- (b) Give the importance of Hytrel 10 MS grade for Polyester Thermoplastic Elastomer. 04
- (c) Describe about the synthesis and chemistry of Thermoplastic styrene block copolymers. 07
- OR
- Q.3** (a) Write the advantages of SBS polymers modification by use of Polystyrene. 03
- (b) Explain the banbury mixing process for the thermoplastic styrene copolymer. 04
- (c) Explain the Injection Molding processing conditions for Polyester thermoplastic elastomers. 07
- Q.4** (a) Define the term Grafting. Write their significance in thermoplastic elastomer blends. 03
- (b) Describe the thermoforming process for the Polyolefin Thermoplastic Elastomer. 04
- (c) Which are the tests conducted for thermoplastic Elastomer products? Explain any three in detail. 07
- OR
- Q.4** (a) Write the significance of Melt Flow Index(MFI). 03
- (b) Write the synthesis of Thermoplastic 1, 2- Polybutadiene. 04
- (c) Short note on: “Uniroyal TPR (Polyolefin thermoplastic elastomer)”. 07

- Q.5** (a) List the applications of thermoplastic Polyurethane elastomers. **03**
(b) Write the importance of Diisocyanate in TPU elastomer. **04**
(c) List the polysiloxane based thermoplastic elastomers. Explain any one in details. **07**
- OR
- Q.5** (a) Define the term Dynamic vulcanisation with suitable example. **03**
(b) Write about characteristics of “Ethylene Ethyl Acetate (EEA) Copolymer” as Thermoplastic elastomer. **04**
(c) Explain in detail about extrusion processing conditions for Thermoplastic Polyurethane Elastomer. **07**
