

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3152609****Date:01/02/2021****Subject Name:Thermoplastic Elastomers & Polymer Blends****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q. 1** (a) Define the term Thermoplastic Elastomer (TPE). How it works? (03)
(b) Explain the simple melt mixing method for thermoplastic elastomer blend. (04)
(c) 'The largest application area for the Polyolefin Thermoplastic Elastomer is in the Automotive Market.' Justify the statement. (07)
- Q. 2** (a) Define the term Grafting. Which thermoplastic elastomer is produced by grafting? (03)
(b) List the advantages of the polybutadiene – styrene teleblock polymer. (04)
(c) Discuss in detail about compounding of thermoplastic styrene block copolymer (TPS). (07)
- Q. 3** (a) Describe the Thermoforming process for the Polyolefin Thermoplastic Elastomer. (03)
(b) Explain the thermal properties of polyester thermoplastic elastomer. (04)
(c) Discuss the Dry Blending method for thermoplastic styrene block copolymer (TPS). (07)
- Q. 4** (a) Name the commercially available type of block copolymer with suitable example. (03)
(b) Explain the mechanical properties of thermoplastic styrene block copolymer. (04)
(c) Short note on: "B.F. Goodrich Telcar thermoplastic elastomer". (07)
- Q. 5** (a) What are the full forms of PTMEG and t-CD use in Polyester Thermoplastic Elastomer? (03)
(b) Give the importance of Hytel 10 MS grade for Polyester Thermoplastic Elastomer. (04)
(c) List the reaction components of thermoplastic polyurethane elastomer. Explain it in detail. (07)
- Q. 6** (a) What are the functions of chain extender in thermoplastic polyurethane elastomer? (03)

- (b) Which properties or parameter affected by hardness in Thermoplastic Polyurethane Elastomer? (04)
- (c) Identify the injection molding conditions for Polyester Thermoplastic Elastomer and explain it. (07)

- Q. 7** (a) Summarize the applications of 1, 2- Polybutadiene thermoplastic elastomer. (03)
- (b) Explain the trans 1, 4- polyisoprene thermoplastic elastomer. (04)
- (c) Discuss in detail about compounding of Crosslinked Polyethylene (XLPE). (07)

- Q. 8** (a) Which are the polymerization variables affect the molecular structure of polyethylene in XLPE? (03)
- (b) Give the name of common comonomer are used with ethylene in XLPE synthesis. (04)
- (c) Short note on: "NBR-PVC blends". (07)

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