

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI • EXAMINATION – SUMMER • 2015

Subject code: 162605

Date: 12/05/2015

Subject Name: Thermoplastic Elastomers & Polymer Blends

Time: 10.30am-01.00pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q. 1 Answer the following. **(14)**

- (i). Define the term: (i) Plastomer , (ii) Virtual crosslink
- (ii). How the SBS block polymer properties are affected by modification with HDPE?
- (iii). How the Hytel co polyester can be synthesized?
- (iv). Write in brief about polyolefin with suitable example.
- (v). Give the melting point range and degree of crystallinity in 1, 2-Polybutadiene thermoplastic Elastomers.
- (vi). Write the importance of chain extender in TPU Elastomer.
- (vii). Give any two differences between the EEA and EVA copolymers.

Q. 2 (a) Write the advantages and disadvantages of thermoplastic Elastomer over conventional rubber. **(07)**

Q. 2 (b) List the methods for preparation of Rubber Plastic blends. Explain them in detail. **(07)**

OR

(b) Which are the tests conducted for thermoplastic Elastomer products? Explain it in detail. **(07)**

Q. 3 (a) Discuss in detail about synthesis and chemistry of thermoplastic Styrene block copolymers. **(07)**

(b) Explain the Injection Molding processing conditions for Polyester thermoplastic Elastomers. **(07)**

OR

Q. 3 (a) Explain the compounding, manufacturing process and properties of shoe sole products. **(07)**

(b) Discuss in detail about environmental and chemical properties of Hytel / Arnitel thermoplastic Elastomers. **(07)**

Q. 4 (a) Explain the thermoplastic polyurethane with its structure monomers. **(07)**

(b) Describe the brief applications of polyolefin thermoplastic Elastomers. **(07)**

OR

Q. 4 (a) Discuss the problems & remedies observed during extrusion process of TPU. **(07)**

(b) Short note on : “Uniroyal TPR polyolefin thermoplastic Elastomer” **(07)**

Q. 5 (a) Explain any one polysiloxane base thermoplastic Elastomer in detail. **(07)**

(b) Short note on; “NBR-Nylon Thermoplastic Elastomers blend”. **(07)**

OR

Q. 5 (a) Explain the processing. Properties and application of 1, 2-polybutadiene thermoplastic Elastomer. **(07)**

(b) Write the technological applications of dynamically vulcanized thermoplastic Elastomers blends. **(07)**