

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 3162607

Date: 22/05/2026

Subject Name: High Performance Elastomers

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.**

- Q.1**
- | | | |
|-----|--|----|
| (a) | Differentiate High Performance Elastomers from General synthetic rubbers. | 03 |
| (b) | What is Hydrogenation of Nitrile rubber? Write with reaction mechanism. | 04 |
| (c) | What is RDB level for Hydrogenated Nitrile rubber. Write about its significance on properties of rubber in detail. | 07 |

- Q.2**
- | | | |
|-----|---|----|
| (a) | Write about properties and applications of Hypalon. | 03 |
| (b) | Explain the manufacturing of Chlorosulfonated Polyethylene rubber in detail. | 04 |
| (c) | Write about different monomers used in synthesis of Fluoro elastomers. Draw their structures and write their basic characteristics. | 07 |

OR

- Q.2**
- | | | |
|-----|---|----|
| (c) | Describe the manufacturing of Fluorocarbon rubbers in detail. | 07 |
|-----|---|----|

- Q.3**
- | | | |
|-----|---|----|
| (a) | Give reaction mechanism for production of EVA copolymer. | 03 |
| (b) | Mention basic properties and applications of EVA rubber. | 04 |
| (c) | List the monomers used in synthesis of Acrylic rubbers. Draw their structures and write advantages and limitations of each. | 07 |

OR

- Q.3**
- | | | |
|-----|---|----|
| (a) | Write about compounding of EVA rubber. | 03 |
| (b) | Write about Vamaq. Differentiate Vamaq from other Acrylic elastomers. | 04 |
| (c) | Mention the cure site monomers for ACM rubber. Draw their structures and write characteristics. | 07 |

- Q.4**
- | | | |
|-----|---|----|
| (a) | Draw the structure of Chlorinated Polyethylene. | 03 |
| (b) | List basic grades of Epichlorohydrin rubbers. write their basic properties. | 04 |
| (c) | Write in detail about compounding and processing of Epichlorohydrin elastomers. | 07 |

OR

- Q.4**
- | | | |
|-----|---|----|
| (a) | List the properties and applications of CM rubber. | 03 |
| (b) | Give synthesis reaction for Epichlorohydrin Homopolymer. | 04 |
| (c) | Give difference between grades of Epichlorohydrin rubbers. Mention their properties and applications. | 07 |

Q.5

(a) Name the monomers used in production of Perfluorocarbon elastomers. write its chemical significance. **03**

(b) Write about compounding of Fluoro elastomers. **04**

(c) Describe the curing system for Fluoro elastomers. **07**

OR

Q.5 **(a)** Write the advantage of FFKM rubber over FKM rubber. **03**

(b) Explain about processing of Fluoro elastomers. Write about environmental concern during processing. **04**

(c) Write one formulation using Fluoro rubber for production of Hose used in Automobile industry with 45 Shore A hardness. **07**
