

Seat No./Enrollment No.: _____

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

Subject Code: 3162310

Date: 29/05/2026

Subject Name: Plastics Packaging 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.**

- Q.1**
- (a)** What are the hazards in distribution? Give two examples. **03**
 - (b)** Discuss package design fundamentals and factors affecting effective design. **04**
 - (c)** Evaluate different packaging materials (glass, metal, plastic, paperboard) in terms of sustainability and cost. **07**
- Q.2**
- (a)** List common plastics used in packaging films. **03**
 - (b)** Discuss shelf life considerations in designing packaging. **04**
 - (c)** Explain the definition, functions, and types of packaging with suitable examples. **07**
- OR**
- Q.2**
- (c)** Discuss bottles and caps used in pharmaceutical, chemical, pesticide, and dairy industries. Include materials and design considerations. **07**
- Q.3**
- (a)** Explain the need and types of cushion packaging. **03**
 - (b)** List plastics used for films and bottles in packaging and their applications. **04**
 - (c)** Analyze multilayer pouch structures for their performance in moisture and oxygen barrier applications. **07**
- OR**
- Q.3**
- (a)** Mention two types of cap designs used in rigid packaging. **03**
 - (b)** Discuss active packaging technologies like aseptic packaging and blister packs. **04**
 - (c)** Explain mechanical tests (drop, vibration, impact, compression) for plastic packages with examples. **07**
- Q.4**
- (a)** List any four packaging machines and briefly describe any one. **03**
 - (b)** Explain types of cap designs like CRC caps and spouts and their applications. **04**

(c) Illustrate MAP, CAP, and vacuum packaging in extending food shelf life. **07**

OR

Q.4 (a) List types of mechanical tests for plastic packages. **03**

(b) Discuss bottling lines automation including labeling, auto capping, and shrink wrapping. **04**

(c) Design a flexible package for ready-to-eat meals integrating active and intelligent packaging elements. **07**

Q.5 (a) Explain online testing of plastic packages. Give one example. **03**

(b) Illustrate shrink wrapping, stretch wrapping, and skin packaging techniques. **04**

(c) Explain induction sealing and heat sealing processes used in plastic packaging. **07**

OR

Q.5 (a) Explain the role of package colour and graphics in customer appeal. **03**

(b) List and explain mechanical tests for plastic packages. **04**

(c) Analyze the failure modes in plastic bottles used for chemical and dairy applications. **07**
