

Seat No./Enrollment No.: _____

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

Subject Code: 3152312

Date: 21/05/2026

Subject Name: Adhesives and Sealants in Plastics

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) Write down polymers used in water based adhesives. **03**
 - (b) Write short note on acrylic adhesives. Give structure of polymers used. **04**
 - (c) Describe and compare various types of adhesive joint design for plastics. **07**
- Q.2**
- (a) Define Solvent Bonding of plastics. Give advantages and disadvantages. **03**
 - (b) Write short note on hot melt adhesives. Give its mechanism of adhesion. **04**
 - (c) Explain the construction and manufacturing of PSA. Give the chemical structure of polymer formulations in making PSA. **07**
- OR
- Q.2**
- (c) Explain adhesive handling, preparation and application. **07**
- Q.3**
- (a) Write down the chemical structure of Polyurethane. **03**
 - (b) Discuss types of cements used in Bonding of plastics. **04**
 - (c) Explain briefly Phenolic resin based adhesive with mechanism of crosslinking. **07**
- OR
- Q.3**
- (a) Describe surface treatment methods for adhesion bonding. **03**
 - (b) Discuss polyisobutylene based adhesive with chemical structure. **04**
 - (c) Explain briefly on butyl rubber based adhesives. Give properties and applications **07**
- Q.4**
- (a) Name adhesives used for wood bonding and packaging. **03**
 - (b) Describe general considerations in Adhesive Selection. **04**
 - (c) What are silicone based adhesives? How they are prepared? Give properties and applications. **07**
- OR
- Q.4**
- (a) Define adhesive form and give its types with examples. **03**
 - (b) Discuss preparation and properties of polyvinyl acetate based adhesives. **04**
 - (c) Write short note on (i) cyanoacrylate adhesives, (ii) anaerobic adhesives **07**
- Q.5**
- (a) Name adhesives used for building and electrical industry. **03**
 - (b) Explain amino resin based adhesive. Give applications. **04**

(c) Describe the form, types and applications of sealants.

07

OR

- Q.5**
- (a)** Define Adhesive and Cohesive joint failure. **03**
- (b)** Write short note on conductive adhesive with properties and applications. **04**
- (c)** Describe the applications of different types of adhesives in aerospace and automotive industry. **07**
