

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 7 – EXAMINATION – SUMMER 2026

Subject Code: 3172314

Date: 29/05/2026

Subject Name: Secondary Plastics Processing Techniques

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) Define solvent cementing and explain its basic principle. **03**
 - (b) Illustrate solvent cementing and adhesive bonding with suitable examples. **04**
 - (c) Compare adhesive bonding and thermal welding techniques used in plastics. Give suitable examples. **07**
- Q.2**
- (a) Name different types of solvents used for solvent bonding in plastics. **03**
 - (b) List different types of plastic welding processes and explain any one in brief. **04**
 - (c) Explain the difference between molded-in and post-molding inserts with diagrams. **07**
- OR
- Q.2**
- (c) Describe spin or friction welding of plastics. Discuss its advantages, limitations, and typical applications. **07**
- Q.3**
- (a) Discuss the basic principle of adhesive bonding in plastics. **03**
 - (b) State the guidelines for tool geometry while machining plastics. **04**
 - (c) Explain the role of bolts, nuts, rivets, hinges, and spring clips in plastic assemblies. Include selection criteria. **07**
- OR
- Q.3**
- (a) Differentiate between spin welding and ultrasonic welding. **03**
 - (b) List and explain any two modern decorating techniques: water-transfer and in-mold decorating. **04**
 - (c) Compare screen printing, flexographic printing, gravure printing, and pad printing techniques. Include advantages and limitations. **07**
- Q.4**
- (a) Define post-molding inserts and give one example. **03**
 - (b) Explain the process of hot stamping and its advantages. **04**
 - (c) State machining operations for plastics: drilling, tapping, turning, milling, sawing, and routing. Include tool considerations. **07**
- OR
- Q.4**
- (a) List various surface treatment methods used for plastics. **03**

- (b) Illustrate modern decorating techniques: water transfer, in-mold decorating, flocking, embossing, and surface texturing. Include applications. **04**
- (c) Evaluate different decorating techniques (screen, flexographic, pad printing) in terms of cost, quality, and productivity. **07**
- Q.5** (a) Differentiate between screen printing and pad printing. **03**
- (b) Discuss vacuum metallizing and electrolytic plating techniques for plastics. **04**
- (c) Develop a finishing and machining sequence for producing a precision optical-grade plastic component. **07**
- OR
- Q.5** (a) Describe any one method of polishing plastic products. **03**
- (b) Illustrate the working principle of ultrasonic welding with a neat sketch. **04**
- (c) Explain electrostatic powder coating on plastics. Include fluidized bed, electrostatic spraying, and electrostatic fluidized bed coating. **07**
