

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 4 – EXAMINATION – SUMMER 2026

Subject Code: 3142311

Date: 30/05/2026

Subject Name: Plastics Testing-1

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) Give the behavior of following plastics when immersed in water- sink/float. (i) PE (ii) PS (iii) PVC. **03**
 - (b) Give ASTM standards of following testes: i) Tensile ii) Flexural iii) Izod Impact iv) MFI **04**
 - (c) Define Melt flow index (MFI). Explain MFI test procedure with neat diagram. **07**
- Q.2**
- (a) What is standard? Give basic reason of testing. **03**
 - (b) Define bulk density. Explain test procedure to determine bulk density. **04**
 - (c) Explain test procedure to determine Izod impact strength with neat diagram. **07**
- OR
- Q.2**
- (c) Discuss determination of specific gravity of solid sample using specific gravity balance. **07**
- Q.3**
- (a) Compare Izod and Charpy Impact test. **03**
 - (b) Explain water absorption test method for plastics. **04**
 - (c) Illustrate the typical Stress-Strain curve and explain. **07**
- OR
- Q.3**
- (a) Give density of (i) PP (ii) PVC (iii) PS. **03**
 - (b) Give basic reasons for conditioning specimens. Give the standard laboratory temperature and humidity. **04**
 - (c) Explain three-point bending flexural strength test procedure with neat diagram. **07**
- Q.4**
- (a) Draw the test specimen as per ASTM for Impact, Flexural and Compression test. **03**
 - (b) Write burning behavior of given plastic materials (i) PP (ii) PVC (iii) PS (iv) Phenol Formaldehyde for identification. **04**
 - (c) Explain Falling dart Impact test for Plastic film and sheets. **07**
- OR
- Q.4**
- (a) Define: Stress, Strain and Modulus of elasticity. **03**
 - (b) Explain test procedure to determine compressive strength of Plastics. **04**
 - (c) Explain Rockwell hardness test with neat diagram per ASTM standard. **07**
- Q.5**
- (a) Explain Spiral flow test with neat diagram. **03**
 - (b) Explain (i) copper wire test and (ii) drop test for identification of Plastics. **04**

(c) Explain Durometer hardness (Shore D hardness) test for Plastics. **07**

OR

Q.5 (a) List the methods of preparing samples from thermoplastic and thermoset materials. **03**

(b) Explain (i) flotation test and (ii) visual examination for identification of plastics. **04**

(c) Explain test procedure to determine Trouser Tear Strength of plastic film sample. **07**
