

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – SUMMER 2024****Subject Code:3142311****Date:03-07-2024****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) Draw Tensile, Compressive and Flexural test specimen as per ASTM. 03
 (b) Explain Water absorption test method of plastics. 04
 (c) Explain Tensile test procedure as per ASTM standard. 07

- Q.2** (a) State the full forms of ASTM, ISO and BIS. 03
 (b) Explain Izod impact test procedure with neat diagram. 04
 (c) Define MFI. With neat diagram explain Melt flow index test procedure. 07

OR

- (c) Explain the test method to determine bulk (Apparent) density of plastic material in detail. 07

- Q.3** (a) Give density of (1) HDPE (2) PS (3) PP. 03
 (b) Define: specification and standards. Give purpose of specification. 04
 (c) Explain cup flow and spiral flow test with diagram. 07

OR

- Q.3** (a) Give ASTM standards of following testes: 1) Izod Impact 2) Compressive strength 03
 3) Flexural strength.
 (b) List types of Impact tests. Differentiate between Izod and Charpy Impact test. 04
 (c) Define Flexural strength. Explain test procedure to determine flexural Strength (three point bending) of plastic sample. 07

- Q.4** (a) Define: Compressive strength, Impact strength, Hardness. 03
 (b) Explain test procedure to determine compressive strength of Plastics. 04
 (c) Explain Falling dart Impact test for Plastic film and sheets. 07

OR

- Q.4** (a) Give any one solvent for PE, PS, and PVC. 03
 (b) Give standard laboratory temperature and humidity. Give basic reasons for conditioning specimens. 04
 (c) Explain test procedure to determine Shear Strength of Plastic sample. 07

- Q.5** (a) Define: Stress, Elongation, Modulus of elasticity 03
 (b) Discuss in brief sample preparation techniques for plastic film/sheets. 04
 (c) Explain test procedure to determine Trouser Tear Strength of plastic film sample. 07

OR

- Q.5** (a) Give characteristics of plastics, sink/float when immersed in to water (a) PVC (b) PE 03
 (c) Nylon
 (b) Explain the identification of given plastic materials based on burning test. 04
 (a) PE (b) PVC (c) PS (d) Melamine Formaldehyde
 (c) Explain Rockwell hardness test with neat diagram per ASTM standard. 07
