

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V EXAMINATION – SUMMER 2025****Subject Code:3152308****Date:28-05-2025****Subject Name:Plastics Testing-II****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.

	Marks
Q.1 (a) Define: HDT, Dielectric constant, VST.	03
(b) Explain flammability test for self-supporting plastics in Horizontal position with neat diagram.	04
(c) Explain Environmental stress cracking resistance (ESCR) test.	07
Q.2 (a) Give ASTM standards for: Thermal conductivity, ESCR, and Arc resistance.	03
(b) Explain Vicat softening temperature (VST) test procedure with neat diagram.	04
(c) Explain oxygen transmission rate (OTR) to determine barrier properties.	07
OR	
(c) Discuss test procedure to determine thermal conductivity of plastic materials.	07
Q.3 (a) Explain various factors affecting HDT test results.	03
(b) Describe test method to determine coefficient of thermal expansion.	04
(c) Explain test method to determine Refractive index of polymers with neat diagram.	07
OR	
Q.3 (a) Define: Refractive Index, Luminous transmittance and Haze	03
(b) Define Dielectric Strength. Explain test methods used to determine dielectric strength of Plastic materials.	04
(c) Explain heat deflection temperature (HDT) test with neat diagram.	07
Q.4 (a) List the Electrical and Weathering tests carried out for Plastic materials.	03
(b) Explain (1) Volume resistivity (2) Surface resistivity of plastics.	04
(c) Explain accelerated weathering test using exposure to fluorescent UV lamps test with neat diagram.	07
OR	
Q.4 (a) Differentiate between HDT and VST.	03
(b) Discuss Arc Resistance test for Plastic samples.	04
(c) Explain Differential scanning calorimetry (DSC) test method along with its applications.	07
Q.5 (a) Give any 03 plastic materials having inherently flame-retardant properties.	03
(b) Discuss Immersion test for evaluating the resistance of plastics to chemical reagents.	04
(c) Explain Limited Oxygen Index (LOI) test carried out for plastics materials.	07

OR

- Q.5** (a) Explain in brief about Outdoor weathering test for plastics. **03**
(b) Explain Ultrasonic NDT method using transmission Technique. **04**
(c) Describe Capillary Viscometer test used to determine Intrinsic viscosity and Molecular weight. **07**
