

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:3152308****Date:13/09/2021****Subject Name:Plastics Testing-II****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.

		Marks
Q.1	(a) Define: Dielectric Strength, Refractive index, Vicat softening temperature.	03
	(b) Discuss procedure to determine Vicat softening temperature.	04
	(c) Explain test procedure to determine heat deflection temperature (HDT) of plastic material along with factors affecting test results.	07
Q.2	(a) Give ASTM standards for: Oxygen Index Test, ESCR, HDT.	03
	(b) Define coefficient of thermal expansion and explain test procedure to determine coefficient of linear thermal expansion.	04
	(c) Explain test procedure to determine Dilute Solution Viscosity of Polymers.	07
OR		
Q.3	(c) State test method to determine Arc resistance of plastic materials.	07
	(a) Give ASTM standard to determine dielectric strength and list methods used to determine dielectric strength.	03
	(b) Explain Ultrasonic NDT method using Transmission technique.	04
	(c) Define Luminous transmittance. Explain test procedure to determine Luminous transmittance and Haze.	07
OR		
Q.3	(a) List the typical requirements of an insulator and give any four electrical applications of Plastic materials.	03
	(b) Give types of accelerated weathering tests and explain any one in brief.	04
	(c) Define Thermal conductivity and discuss test procedure to determine thermal conductivity of plastic materials.	07
Q.4	(a) Discuss various factors affecting dielectric strength test results.	03
	(b) Explain flammability test for self-supporting plastics in Horizontal position with neat diagram.	04
	(c) Give significance of Environmental stress cracking resistance (ESCR) and Explain test procedure to determine ESCR with neat diagram.	07
OR		
Q.4	(a) List the major environmental factors that seriously affect plastics and explain about them in brief.	03
	(b) List various chemical resistance test methods. Explain resistance of plastics to chemical reagents by simple Immersion method.	04
	(c) Give importance of Non-destructive Testing (NDT) and Explain Ultrasonic method using Pulse-Echo Technique.	07
Q.5	(a) Describe volume and surface resistivity.	03

- (b) Explain Oxygen transmission rate (OTR) to determine barrier properties. **04**
- (c) Discuss test procedure to determine Oxygen index and explain factors affecting test results. **07**

OR

- Q.5**
- (a) DSC and TGA are used to measure which properties of plastic materials? **03**
 - (b) Explain Refractometric Method to determine refractive index of polymers. **04**
 - (c) Describe Gel permeation chromatography to determine molecular weight distribution of plastics. **07**
