

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2024****Subject Code:3152308****Date:17-12-2024****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
<b>Q.1</b>	(a) Define: Value, Hue and Chroma.	<b>03</b>
	(b) Explain the theory of Volume resistivity.	<b>04</b>
	(c) Explain test procedure to determine Dilute Solution Viscosity of Polymers.	<b>07</b>
<b>Q.2</b>	(a) Explain coefficient of linear thermal expansion test.	<b>03</b>
	(b) Give ASTM standards for: ESCR, HDT, Di-electric Strength and Luminous Transmittance.	<b>04</b>
	(c) Explain GPC technique with diagram. Give its applications.	<b>07</b>
<b>OR</b>		
	(c) Explain water vapour transmission rate (WVTR) to determine barrier properties.	<b>07</b>
<b>Q.3</b>	(a) Write short note on Brittleness temperature of plastics.	<b>03</b>
	(b) Write short note on dielectric constant and dissipation factor.	<b>04</b>
	(c) Explain Dynamic Mechanical Analysis (DMA) Test for polymers.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) List the typical requirements of an insulator and give any four electrical applications of Plastic materials.	<b>03</b>
	(b) Explain Oxygen transmission rate (OTR) with its instrumentation and units.	<b>04</b>
	(c) Define Luminous transmittance. Explain test procedure to determine Luminous transmittance and Haze.	<b>07</b>
<b>Q.4</b>	(a) Differentiate between Dielectric constant and Dissipation factor.	<b>03</b>
	(b) Give types of accelerated weathering tests and explain any one in brief.	<b>04</b>
	(c) Give significance of Environmental stress cracking resistance (ESCR) and Explain test procedure to determine ESCR with neat diagram.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Explain solvent stress cracking resistance.	<b>03</b>
	(b) Explain flammability test for self-supporting plastics in Horizontal position with neat diagram.	<b>04</b>
	(c) Discuss test procedure to determine Oxygen index and explain factors affecting test results.	<b>07</b>
<b>Q.5</b>	(a) Draw a typical DSC thermogram and list the applications of DSC.	<b>03</b>
	(b) Explain Luminous Transmittance and Haze.	<b>04</b>
	(c) Explain TGA technique for polymers.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) DSC and TGA are used to measure which properties of plastic materials?	<b>03</b>
	(b) Explain TMA technique and its use.	<b>04</b>
	(c) Give importance of Non-destructive Testing (NDT) and Explain Ultrasonic method using Pulse-Echo Technique.	<b>07</b>

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