

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2023

Subject Code:3142311

Date:19-07-2023

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.

		MARKS
Q.1	(a) Define testing and list the various reasons for testing.	03
	(b) Provide the full acronym of (i) BIS (ii) ASTM (iii) DIN (iv) ISO	04
	(c) Define MFI. With a simple diagram, explain the Melt flow index test procedure.	07
Q.2	(a) Determine mechanical tests.	03
	(b) Describe the procedure used to test plastics for water absorption.	04
	(c) Give a definition of tensile strength. Explain the tensile strength test in detail.	07
	OR	
	(c) Explain in detail how to perform a three-point bending test.	07
Q.3	(a) Describe the copper wire test for identification.	03
	(b) Give some fundamental explanations for conditioning specimens. Give the humidity and temperature for a typical laboratory.	04
	(c) Explain how to identify certain plastic materials using a combustion test.	07
	(i) HDPE	
	(ii) PP	
	(iii) Nylon	
	(iv) PE	
	(v) PVC	
	(vi) PC	
	(vii) PS	
	OR	
Q.3	(a) Define shear strength and detail the formula for calculating it.	03

	(b)	Briefly discuss the Falling Dart Impact test for plastic sheets and film.	04
	(c)	Draw a diagram to illustrate the cup flow and spiral flow tests.	07
Q.4	(a)	What are flow properties of plastic materials?What impact does it have on the processing parameters of that?	03
	(b)	Give an explanation of plastic materials' stress-strain behaviour.	04
	(c)	Define: (i) Stress (ii) Strain (iii) Gauge length (iv) Necking (v) Yield point (vi) Modulus of elasticity and (vii) Percentage of elongation	07
OR			
Q.4	(a)	Compare and contrast the Izod and Charpy impact tests.	03
	(b)	What is bulk density? Describe the test procedure used to calculate bulk density.	04
	(c)	What exactly are impact properties? Describe the procedure for conducting an impact test.	07
Q.5	(a)	Describe density. What function does density serve in the plastics industry?	03
	(b)	Describe the procedure for preparing samples from thermoset materials.	04
	(c)	Explain the term "hardness." Describe the Rockwell hardness test as per ASTM standard.	07
OR			
Q.5	(a)	Write a brief note about creep.	03
	(b)	Describe the procedure for preparing samples from thermoplastic materials.	04
	(c)	Describe the test procedure to determine the plastic film sample's tear strength.	07
