Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2021

Subject Code:3142311 Date:08/09/2021

Subject Name:Plastics Testing-1

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 Testing and list various reasons for testing.	**03**
	(b)	Give characteristics of plastics, sink/float when immersed in to water (a) PP (b) PVC (c) PE (d) PTFE.	**04**
	(c)	Define MFI. Explain Melt flow index test procedure with neat diagram.	**07**
Q.2	**(a)**	Draw the test specimen as per ASTM for Flexural, Impact and Compression strength.	**03**
	(b)	Give density of: LDPE, PS, PVC and PP.	**04**
	(c)	Explain test procedure to determine Tear Strength of plastic film sample.	**07**
		OR	
	(c)	Give ASTM standard to determine Tensile strength for plastics material. Draw tensile test sample and explain test procedure in detail.	**07**
Q.3	**(a)**	Plastic tensile test specimen has width and thickness about 8mm and 3mm respectively. If tensile strength at yield point is 600 kg/cm^2. Calculate load recorded at yield point.	**03**
	(b)	Define Conditioning. Give basic reasons for conditioning specimens. Give standard laboratory temperature and humidity.	**04**
	(c)	Explain the test method to determine bulk (Apparent) density of plastic material in detail.	**07**
		OR	
Q.3	**(a)**	List three thermoplastic and three thermoset materials having self-extinguishing properties.	**03**
	(b)	Explain spiral flow test for thermoset materials.	**04**
	(c)	Define Hardness. Explain Rockwell hardness test as per ASTM standard.	**07**
Q.4	**(a)**	Give flame characteristic and kinds of smoke generated during burning of PP and Nylon.	**03**
	(b)	Explain test method to determine water absorption of plastics.	**04**
	(c)	Define Flexural Strength. Explain the flexural strength test procedure and factors affecting the test results.	**07**
		OR	
Q.4	**(a)**	Give any one solvent for PE, PS, and PVC.	**03**
	(b)	Explain sample preparation technique for thermoset materials.	**04**
	(c)	Discuss determination of specific gravity of solid sample using specific gravity balance.	**07**
Q.5	**(a)**	Give full name of: ASTM, ISO, and BS.	**03**
	(b)	Explain stress-strain behavior for Plastic materials.	**04**
	(c)	Define Impact strength. Explain Izod impact test procedure with factors affecting the test results.	**07**
		OR	

Q.5	**(a)**	Calculate compressive strength of the specimen having Height 2.5 cm, Length 1.4 cm and Width 1.4 cm. Load recorded at crushing is 600 kg.	**03**
	(b)	Explain cup flow test for thermoset materials.	**04**
	(c)	Explain test procedure to determine Shear Strength of Plastic sample.	**07**