

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code: 3172318

Date:13-11-2025

Subject Name: Plastics Product Design

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) Write the best suitable materials for the following properties: (i) Self lubricating and Antifriction (ii) Transparency (iii) High water absorption	03
(b) Define: (i) Product Design (ii) check list (iii) Ribs (iv) Bosses.	04
(c) List and explain the General steps to be followed in preliminary product design.	07
Q.2 (a) Short Note: Parting lines.	03
(b) Short Note: Size and location of Gate	04
(c) Explain design consideration of Holes in Plastic Parts.	07
OR	
(c) Define Inserts. Explain design consideration of Inserts in Plastic Parts.	07
Q.3 (a) Explain design procedure to be followed for Designing Bosses for Plastic.	03
(b) Explain design criteria to be followed for Designing wall thickness for Plastic Product.	04
(c) List out various content included in an ideal check list of Product Design.	07
OR	
Q.3 (a) Explain importance of Material selection criteria while designing the plastic product.	03
(b) Explain about short term and long term properties.	04
(c) Explain complete design Procedure for 20000 liters over head water storage Tank (Made of Plastic)	07
Q.4 (a) Explain about design criteria for Compass-box.	03
(b) List advantages and disadvantages of Injection Molding Process.	04
(c) Describe design procedure for Machine Gear.	07
OR	
Q.4 (a) Give classification of various Plastic Processing Techniques on the basis of product contour.	03
(b) Discuss product design enhanced the growth of Plastic material.	04
(c) Explain complete design Procedure for Milk Pouch.	07
Q.5 (a) List the required material properties for Plastic Pipes used for Water transportation.	03
(b) List advantages and disadvantages of compression molding.	04
(c) Explain design procedure for Pump- Impeller(Made of Plastic)	07

OR

- Q.5** (a) (i) A thick section next to thin section will cool last and shrink more away from mold resulting in a ____ mark. **03**
(ii) As a thumb rule, $B = \text{_____} t$.
Where B= width of Ribs, t= thickness of Part.
(iii) Which types of mold design necessary for Plastic parts with under cuts?
- (b) Explain design features of the product to be manufactured by Thermoforming. **04**
- (c) Explain Design Procedure for sharp corners of the product. **07**
