

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3172318

Date:08-05-2025

Subject Name:Plastics Product Design

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) What is product design? What are the roles of a product designer? | 03 |
| (b) What is check list? List the ideal check list for product design. | 04 |
| (c) List the various steps followed in preliminary product design. | 07 |
| Q.2 (a) What are the limitations of plastic materials? | 03 |
| (b) Write short notes on parting line. | 04 |
| (c) Explain wall thickness design considerations while designing the product. | 07 |
| OR | |
| (c) What is the importance of metal inserts in plastic part? Explain briefly about types of inserts. | 07 |
| Q.3 (a) List any three self-lubricating plastic materials. | 03 |
| (b) What are the reasons for the failure of a plastic product? | 04 |
| (c) Explain the long-term and short-term properties of plastics. | 07 |
| OR | |
| Q.3 (a) What care should be taken while selecting a material for making milk pouches? | 03 |
| (b) Explain the importance of designing radii and fillets in a product. | 04 |
| (c) Explain molded holes in product design. | 07 |
| Q.4 (a) What are the disadvantages of injection moulding? | 03 |
| (b) Classify various plastics processing techniques on the basis of product contour. | 04 |
| (c) Compare different plastic processing methods with respect to product size. | 07 |
| OR | |
| Q.4 (a) Which process is used to manufacture thermoplastic chairs and why? | 03 |
| (b) Explain briefly about thermoforming? | 04 |
| (c) Compare blow moulding & rotational moulding processes. | 07 |
| Q.5 (a) Define: i) Draft or Taper ii) Warpage iii) Hinges | 03 |
| (b) What is the importance of ribs and bosses? | 04 |
| (c) Describe the procedure for designing gears. | 07 |
| OR | |
| Q.5 (a) Describe the selection of material for designing a pump impeller. | 03 |
| (b) Explain briefly external and internal threads. | 04 |
| (c) Describe the procedure for designing chemical reactor. | 07 |