

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 4 – EXAMINATION – SUMMER 2026

Subject Code: 3142308

Date: 21/05/2026

Subject Name: Fundamentals of Mold 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.**

- Q.1**
- (a)** Define Core and Cavity. State the role of each in a two-plate injection mold. **03**
 - (b)** Differentiate between Hand Injection Mold and Hand Compression Mold **04**
 - (c)** What is a Bolster? List its types and explain any one type with a neat sketch. **07**

- Q.2**
- (a)** Define: (i) Integer Cavity and Core Plate (ii) Register Ring (iii) Runner **03**
 - (b)** Fill in the blanks: **04**
 - (i) Clamping force depends on the _____ area of molding.
 - (ii) _____ runner cross-section has the highest efficiency.
 - (iii) _____ gate is used for transparent solid block components.
 - (iv) _____ gate is preferred for cylindrical moldings
 - (c)** Explain the function of Guide Pillars and Guide Bushes. State their material and assembly tolerances. **07**

OR

- Q.2**
- (c)** Compare the Integer method with the Insert-Bolster method of mold construction. **07**

- Q.3**
- (a)** What is a Gate? Name any four types of gates used in injection mold design. **03**
 - (b)** Differentiate between Balanced and Unbalanced runner systems. **04**
 - (c)** Explain the working of a Pin Ejection system with a neat labelled sketch. **07**

OR

- Q.3**
- (a)** What is a Sprue? Describe its position and shape in the mold feed system. **03**
 - (b)** Give need for having cooling channels in a mold. Discuss how their positioning affects cycle time. **04**
 - (c)** Compare Pin Ejection, Sleeve Ejection, and Stripper Plate Ejection systems. **07**

- Q.4**
- (a)** List any six components of a standard injection mold base with a one-line function of each. **03**
 - (b)** Define venting and give its importance in a mold cavity. **04**
 - (c)** Write a note on: (i) Sprue Bush – types and design (ii) Register Ring – purpose and design **07**

OR

- Q.4**
- (a)** State importance of Parting Surface in mold design. **03**
 - (b)** List and explain any four factors that influence the selection of mold material. **04**

- (c) Draw the Plan view and Sectional Elevation of a Hand Injection Mold for a simple hollow cylindrical component. Label all parts. **07**
- Q.5** (a) Define Ejector Pin and Ejector Plate. State the function of each in the ejection system. **03**
- (b) Write short notes on: (i) Ejector Rod (ii) Dowel Pins **04**
- (c) Explain the Integer Type Cavity Plate Cooling system with a neat labelled sketch. **07**
- OR
- Q.5** (a) Explain the working of a Sprue Puller. Draw neat sketches of any two types. **03**
- (b) Explain runner balancing. Draw the runner layout for a 4-cavity and an 8-cavity mold. **04**
- (c) Design the complete feed system (Sprue, Runner, and Gate) for a 4-cavity injection mold. Draw a neat top-view sketch with dimensions. **07**
