

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3151912

Date: 09/06/2026

Subject Name: Manufacturing Technology

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.**

- Q.1**
- (a) List various plastic molding methods. Explain any one in brief **03**
 - (b) Elaborate on powder coating process in brief **04**
 - (c) State various super finishing processes. Explain any one super finishing process with neat sketch **07**
- Q.2**
- (a) Elaborate on various physical properties of plastic **03**
 - (b) State the functions of (1) facing sand (2) backing sand (3) system sand and (4) core sand **04**
 - (c) Discuss working of cupola furnace in brief with required diagram **07**
- OR
- Q.2**
- (c) What is gating system? What are its functions? Explain any two types of gates with its advantages **07**
- Q.3**
- (a) Define lapping. Explain any one method **03**
 - (b) Enlist the types of flames for gas welding and describe any one with neat sketch **04**
 - (c) Explain (1) Sweep pattern (2) Match plate pattern with neat sketch **07**
- OR
- Q.3**
- (a) What are the applications of ceramic coating? **03**
 - (b) Explain electron beam welding process with required diagram **04**
 - (c) Explain centrifugal casting process with neat diagram **07**
- Q.4**
- (a) List the factors playing a major role in selection of manufacturing process. Discuss any one in brief **03**
 - (b) Elaborate on the importance of manufacturing processes in context of the recent developments in industry **04**
 - (c) Discuss submerged arc welding process in the context of its characteristic features, types of current, power sources, process variables **07**
- OR
- Q.4**
- (a) What is straight and reverse polarity? Discuss in brief **03**
 - (b) List the types of welding joints and explain any one in brief with required sketch **04**
 - (c) Discuss laser beam welding process in the context of its characteristics features, capabilities and its applications **07**

Q.5	(a) Compare brazing and soldering	03
	(b) Differentiate between direct and indirect extrusion	04
	(c) Explain blanking, piercing, coining and embossing in brief with required diagrams	07
	OR	
Q.5	(a) Classify metal joining processes	03
	(b) Differentiate between forward and backward extrusion processes	04
	(c) Explain the principle and operation of rolling process	07

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3151912

Date: 21-05-2024

Subject Name: Manufacturing Technology

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) Explain Polarity in arc welding.	03
	(b) Differentiate between the super finishing processes of honing, buffing, and lapping.	04
	(c) Describe the casting defects in detail using a diagram.	07
Q.2	(a) Discuss the following casting-related terms: (i) Allowance for shrinkage (ii) Allowance for machining	03
	(b) Examine the differences between the cast and forged components with regard to defects directional characteristics, and grain size.	04
	(c) Classify the manufacturing Processes in detail.	07
	OR	
	(c) Explain Investment casting process	07
Q.3	(a) Discuss about the basic characteristics of plastics.	03
	(b) Derive the equation $l = \sqrt{R\Delta t}$ for the length of the deformation zone during the rolling operation.	04
	(c) Draw the three different kinds of flames that are utilized in oxy-acetylene welding. List each's purposes.	07
	OR	
Q.3	(a) Describe the coating's purpose for an arc welding electrode.	03
	(b) Explain the steps involved in drawing wire and tubes.	04
	(c) Give a brief explanation of the explosive welding process using a diagram and list the name of the solid-state welding procedure.	07
Q.4	(a) Why is a gating system's down sprue tapered?	03
	(b) Describe the roll pass procedure in full.	04
	(c) Illustrate Metal inert Gas welding with a neat sketch.	07
	OR	

Q.4	(a)	How does casting work? List the sand casting process step-by-step.	03
	(b)	Distinguish between the processes of extrusion, direct and indirect.	04
	(c)	Differentiate between the welding methods using a laser beam and plasma.	07
Q.5	(a)	Explain the characteristics and uses of any three thermosetting polymers.	03
	(b)	Explain Process of die casting using a line diagram.	04
	(c)	Describe the different kinds of forging defects and list the names of four products that are manufactured via forging.	07

OR

Q.5	(a)	Discuss the shearing, piercing, and blanking operations used in sheet metal work.	03
	(b)	Write the four examples of product manufactured using the casting process and list minimum ten tools used in manual sand-casting process.	04
	(c)	Discuss the plastic injection moulding process, including its working principle, benefits, drawbacks, and uses.	07

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V EXAMINATION – SUMMER 2025

Subject Code:3151912

Date:17-05-2025

Subject Name:Manufacturing Technology

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.

- Q.1** (a) Define Manufacturing processes and enlist various manufacturing processes. **03**
- (b) Explain properties of moulding sand. **04**
- (c) Write difference between Hot rolling and Cold rolling. Explain the terms: Bloom, Billet, Slab, Plate and sheet. **07**
- Q.2** (a) Enlist the various type of patterns used in the casting process. **03**
- (b) Sketch different types of cores used in the foundry practice. **04**
- (c) Explain the casting defects in detail with diagram. **07**
- OR**
- (c) Explain various types of pattern allowances with a neat sketch. **07**
- Q.3** (a) State the purpose of coating on an arc welding electrode. **03**
- (b) Sketch the four types of basic welding joints used in welding. **04**
- (c) Discuss the TIG welding process setup with the help of a neat sketch. Also enlist advantages, disadvantages, and applications. **07**
- OR**
- Q.3** (a) Classify the welding process in detail. **03**
- (b) Explain the types and importance of polarity in electric arc welding process with diagram. **04**
- (c) Sketch the three types of flames used in the oxy-acetylene welding process. Give the uses of each. **07**
- Q.4** (a) Explain sheet-metal working processes: Shearing, Piercing and Blanking. **03**
- (b) Distinguish between wire drawing and tube drawing with neat sketches. **04**
- (c) Classify extrusion processes and explain forward and backward extrusion process. **07**
- OR**
- Q.4** (a) Define following terms; Deep drawing, Coining and Embossing **03**
- (b) Write the significance of recrystallisation temperature in metal forming process. **04**
- (c) Enlist the various type of presses used in forging. Explain with neat sketch. **07**
- Q.5** (a) Why do we require high-quality surface finish components? **03**
- (b) Explain finishing process: 1. Honing 2. Lapping **04**
- (c) Explain Injection moulding process for plastic, by stating its principle of operation, advantages, limitation and applications. **07**

OR

- | | | |
|------------|--|-----------|
| Q.5 | (a) Differentiate Thermosetting plastics and Thermoplastics | 03 |
| | (b) Explain calendaring process. | 04 |
| | (c) Illustrate Barrel Tumbling and Burnishing process with a neat sketch. | 07 |

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- V EXAMINATION-SUMMER 2023****Subject Code: 3151912****Date: 27/06/2023****Subject Name: Manufacturing Technology****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) Name the various patterns that are normally encountered in the foundry practices.	03
	(b) Classify the manufacturing processes.	04
	(c) Differentiate between hot working and cold working process in terms of working temperature, grain size developed, defects generation, residual stresses, dimensional tolerances, and mechanical properties.	07
Q.2	(a) With the help of a neat sketch explain where sweep patterns are employed.	03
	(b) Sketch different types of cores used in the foundry practice.	04
	(c) Compare precision investment casting and shell moulding from the standpoint of process, product, and applications.	07
	OR	
	(c) What are the typical situations in which the following casting processes are used?	07
	a. Precision-investment casting	
	b. Shell-moulding	
	c. True-centrifugal casting	
	d. Pressure die-casting	
Q.3	(a) Draw a clean sketch of the oxidizing flame. Mention the materials that are welded with this flame.	03
	(b) What is arc blow? Enlist some of the methods that are used to reduce the severity of the arc-blow problem.	04
	(c) Describe the thermit welding process and also state its specific advantages and applications.	07
	OR	
Q.3	(a) Describe the carburizing flame with a neat sketch. Mention the materials which use this flame for welding.	03
	(b) Briefly explain the coding method used for the electrodes used in Manual metal-arc welding.	04
	(c) Enlist the defects that are generally found in welding. Describe their cause and remedies.	07
Q.4	(a) Give the three names of thermoplastic and thermosetting plastic materials.	03
	(b) State forging applications. Draw the schematic of stress flow patterns of (a) cast (b) forged part	04

- (c) Explain with sketches the difference between direct and indirect extrusion. **07**

OR

- Q.4** (a) Name the processes used for making **03**
1. Plastic bottle used for storing 1liter water
2. Plastic buckets
3. Plastic top cover of a plain cover copier
(b) Describe the closed impression die forging operation with sketches **04**
(c) Explain briefly the following forging operations with neat sketches: (a) Coining operations: (b) Heading operation; (c) Punching operation (d) Blanking **07**

- Q.5** (a) Compare various surface finishing processes in terms of tolerance and roughness. **03**
(b) How does superfinishing differ from honing? **04**
(c) Discuss the process of stretch blow-moulding with neat sketches. **07**

OR

- Q.5** (a) Why do we require high-quality surface finish components? **03**
(b) Differentiate between the lapping and polishing process in terms of finishing mechanism, surface produced, and metal removal rate, **04**
(c) Describe the thermoforming process. What are its applications? **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V(NEW) EXAMINATION – SUMMER 2022****Subject Code:3151912****Date:09/06/2022****Subject Name:Manufacturing Technology****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 Manufacturing processes and enlist various manufacturing processes. | 03 |
| (b) | Discuss the factors that need to be considered for selecting the manufacturing processes. | 04 |
| (c) | Explain hot working and cold working process. State advantage and disadvantages of the processes. | 07 |

- Q.2**
- | | | |
|-----|---|-----------|
| (a) | State the purpose of coating on an arc welding electrode. | 03 |
| (b) | Explain the common welding defects by stating their causes and their remedies. | 04 |
| (c) | Explain the working principles of Oxy-acetylene gas welding and gas cutting processes. Also differentiate between nozzles used for Oxy-acetylene gas welding and gas cutting process, using sketch. | 07 |

OR

- | | | |
|-----|---|-----------|
| (c) | Explain the working principle of Resistance welding. Differentiate between Spot and Seam Welding processes. | 07 |
|-----|---|-----------|

- Q.3**
- | | | |
|-----|--|-----------|
| (a) | Why a down sprue is made tapered in a gating system ? | 03 |
| (b) | Explain various types of pattern allowances with a neat sketch. | 04 |
| (c) | What is gating system? what are its function? state types of gate with its advantages. | 07 |

OR

- Q.3**
- | | | |
|-----|---|-----------|
| (a) | Explain Cupola furnace with a neat sketch. | 03 |
| (b) | What is pattern? List different patterns and explain each with a schematic diagram. | 04 |
| (c) | Describe the Shell mould casting process in terms of steps involved, its advantages and disadvantages with the help of a neat sketch. | 07 |

- Q.4**
- | | | |
|-----|---|-----------|
| (a) | Define Ingot, Bloom and Billet. | 03 |
| (b) | Distinguish between wire drawing and tube drawing with neat sketches. | 04 |
| (c) | Distinguish between thermoforming process and extrusion process for plastics. | 07 |

OR

- Q.4**
- | | | |
|-----|--|-----------|
| (a) | Explain in brief Strain Hardening. | 03 |
| (b) | Distinguish between TIG and MIG welding processes. | 04 |

- (c) Enlist types of super finishing processes. Discuss the selection criteria for appropriate super finishing process. **07**
- Q.5** (a) Define Forward slip, Backward slip and Neutral point for Rolling process. **03**
- (b) Explain calendaring process. **04**
- (c) Explain Injection moulding process for plastic, by stating its principle of operation, advantages, limitation and applications. **07**
- OR**
- Q.5** (a) With a neat sketch explain the piercing and blanking processes. **03**
- (b) State the significance of the superfinishing process. **04**
- (c) Explain Burnishing process with a neat sketch. **07**
