GUJARAT TECHNOLOGICAL UNIVERSITY

BE-5 SEMESTER – OLD PAPER – S22 TO S26 – QUESTION BANK

Subject Name & Code: Manufacturing Technology - 3151912

Chapter 1: Introduction to Manufacturing Technology

Repeated Questions:

1. Classification of Manufacturing Processes:

- **Q.** Classify manufacturing processes. **(WINTER 2022, 3 Marks; WINTER 2023, 3 Marks; WINTER 2024, 3 Marks)**

2. Definition of Manufacturing Processes:

- **Q.** Define Manufacturing processes and enlist various manufacturing processes. **(SUMMER 2022, 3 Marks; SUMMER 2025, 3 Marks; WINTER 2025, 3 Marks)**

3. Selection of Manufacturing Process:

- **Q.** Discuss the factors for selecting a manufacturing process. / How is the selection of manufacturing process influenced by material and quantity? **(SUMMER 2022, 4 Marks; WINTER 2023, 3 Marks; SUMMER 2026, 3 Marks)**

4. Significance of Manufacturing Processes:

- **Q.** What is the significance of Manufacturing processes for recent development? **(WINTER 2024, 3 Marks; SUMMER 2026, 4 Marks)**

5. Types of Patterns:

- **Q.** List out types of Pattern and explain any three pattern with a neat sketch. **(WINTER 2022, 4 Marks; WINTER 2025, 4 Marks)**

Other Important Questions:

1. Patterns Used in Foundry Practice:

- **Q.** Name the various patterns that are normally encountered in the foundry practices. **(SUMMER 2023, 3 Marks)**
- **Q.** Explain following patterns with neat sketch: i) Match plate pattern ii) Gated patterns **(WINTER 2023, 4 Marks)**
- **Q.** With the help of a neat sketch explain where sweep patterns are employed. **(SUMMER 2023, 3 Marks)**
- **Q.** Explain (1) Sweep pattern (2) Match plate pattern with neat sketch. **(SUMMER 2026, 7 Marks)**

Chapter 2: Foundry Technology (Casting)

Repeated Questions:

1. Pattern Allowances:

- **Q.** Explain various types of pattern allowances with a neat sketch. **(SUMMER 2022, 4 Marks; WINTER 2022, 7 Marks; WINTER 2024, 7 Marks; SUMMER 2025, 3 Marks)**

2. Gating System:

- **Q.** What is a gating system? Why is a down sprue tapered? What are its functions? **(SUMMER 2022, 3 & 7 Marks; WINTER 2023, 7 Marks; WINTER 2024, 4 Marks)**

3. Casting Defects:

- **Q.** Explain the casting defects in detail with a diagram. **(WINTER 2022, 7 Marks; SUMMER 2025, 7 Marks; SUMMER 2025, 7 Marks)**

4. Investment Casting:

- **Q.** Explain the Investment casting process. **(WINTER 2022, 7 Marks; SUMMER 2025, 7 Marks; WINTER 2025, 7 Marks)**

5. Moulding Sand:

- **Q.** Explain properties of moulding sand. / Enlist the properties of moulding sand. Explain any four. **(WINTER 2024, 7 Marks; SUMMER 2025, 4 Marks)**

6. Cores:

- **Q.** What is core? Why and when are cores used? Sketch different types of cores. **(SUMMER 2023, 4 Marks; WINTER 2024, 4 Marks; SUMMER 2025, 4 Marks)**

7. Cupola Furnace:

- **Q.** Explain Cupola furnace with a neat sketch. **(SUMMER 2022, 3 Marks; SUMMER 2026, 7 Marks)**

Other Important Questions:

1. Shell Moulding and Investment Casting:

- **Q.** Compare precision investment casting and shell moulding. **(SUMMER 2023, 7 Marks)**
- **Q.** Describe the Shell mould casting process. **(SUMMER 2022, 7 Marks)**

2. Chvorinov's Rule and Freezing Ratio (Numerical):

- **Q.** State the Chvorinov's rule. Discuss it briefly. **(WINTER 2023, 3 Marks)**
- **Q.** Numerical: A slab of size 300 × 300 × 50 mm is to be cast... Calculate the freezing ratio. **(WINTER 2023, 7 Marks)**

3. Riser Design:

- **Q.** Discuss about Riser design of casting. **(WINTER 2022, 3 Marks)**

4. Casting Defects (Short Notes):

- **Q.** Explain Blow holes, Misrun and warpage in terms of casting. **(WINTER 2024, 3 Marks)**
- **Q.** Explain Blow holes, Shrinkage and warpage in terms of casting. **(WINTER 2025, 3 Marks OR)**

5. Sand Casting and Moulding Sand:

- **Q.** What is casting? List out step by step procedure of sand casting. **(WINTER 2025, 3 Marks)**
- **Q.** State the functions of (1) facing sand (2) backing sand (3) system sand and (4) core sand. **(SUMMER 2026, 4 Marks)**

6. Gating System – Types of Gates:

- **Q.** What is gating system? What are its functions? Explain any two types of gates with its advantages. **(SUMMER 2026, 7 Marks OR)**

7. Special Casting Processes:

- **Q.** Explain centrifugal casting process with neat diagram. **(SUMMER 2026, 7 Marks OR)**

Chapter 3: Metal Joining Processes

Repeated Questions:

1. Arc Welding Electrode Coating:

- **Q.** State the purpose of coating on an arc welding electrode. **(SUMMER 2022, 3 Marks; SUMMER 2025, 3 Marks; SUMMER 2025, 3 Marks)**

2. TIG and MIG Welding:

- **Q.** Differentiate between TIG and MIG welding processes. **(SUMMER 2022, 4 Marks; WINTER 2023, 4 Marks; WINTER 2024, 4 Marks; WINTER 2025, 4 Marks)**

3. Gas Welding:

- **Q.** Explain the Gas welding process. Sketch the types of flames used in oxy-acetylene welding and give their uses. **(SUMMER 2023, 3 & 7 Marks; WINTER 2024, 7 Marks; SUMMER 2025, 7 Marks; WINTER 2025, 3 Marks; SUMMER 2026, 4 Marks)**

4. Soldering and Brazing:

- **Q.** Differentiate between soldering and brazing. **(WINTER 2023, 3 Marks; WINTER 2024, 3 Marks; SUMMER 2026, 3 Marks)**

5. Resistance Welding:

- **Q.** Explain the Resistance welding principle. Differentiate between Spot and Seam welding. **(SUMMER 2022, 7 Marks; WINTER 2024, 7 Marks; WINTER 2025, 7 Marks)**

6. Polarity in Arc Welding:

- **Q.** Explain Polarity in arc welding. **(SUMMER 2024, 3 Marks; SUMMER 2026, 3 Marks OR)**

7. Welding Defects:

- **Q.** Enlist the defects that are generally found in welding. Describe their cause and remedies. **(SUMMER 2022, 4 Marks; SUMMER 2023, 7 Marks; WINTER 2025, 7 Marks OR)**

8. Plasma and Laser Beam Welding:

- **Q.** Distinguish between Plasma and Laser Beam welding processes. **(WINTER 2022, 7 Marks; SUMMER 2024, 7 Marks)**

Other Important Questions:

1. Classification of Welding and Joining Processes:

- **Q.** Classify the welding process in detail. **(SUMMER 2025, 3 Marks)**
- **Q.** Distinguish between welding, soldering, Brazing joining processes. **(WINTER 2025, 3 Marks OR)**
- **Q.** Classify metal joining processes. **(SUMMER 2026, 3 Marks OR)**
- **Q.** List the types of welding joints and explain any one in brief with required sketch. **(SUMMER 2026, 4 Marks OR)**

2. Arc Welding Processes:

- **Q.** Discuss the TIG welding process setup with a neat sketch. **(SUMMER 2025, 7 Marks)**
- **Q.** What is arc blow? How to reduce it? **(SUMMER 2023, 4 Marks)**
- **Q.** Discuss submerged arc welding process in the context of its characteristic features, types of current, power sources, process variables. **(SUMMER 2026, 7 Marks)**

3. Gas Welding Techniques:

- **Q.** Compare the leftward and rightward welding technique with diagram. **(WINTER 2025, 4 Marks OR)**

4. Other Welding Processes:

- **Q.** Describe the thermit welding process. **(SUMMER 2023, 7 Marks)**

- **Q.** Explain electron beam welding process with required diagram. **(SUMMER 2026, 4 Marks OR)**
- **Q.** Discuss laser beam welding process in the context of its characteristics features, capabilities and its applications. **(SUMMER 2026, 7 Marks OR)**

Chapter 4: Forming and Shaping Processes

Repeated Questions:

1. Hot Working and Cold Working:

- **Q.** Explain hot working and cold working processes. Compare them. **(SUMMER 2022, 7 Marks; SUMMER 2023, 7 Marks; WINTER 2024, 7 Marks; WINTER 2025, 3 Marks)**

2. Wire Drawing and Tube Drawing:

- **Q.** Distinguish between wire drawing and tube drawing with neat sketches. **(SUMMER 2022, 4 Marks; SUMMER 2025, 4 Marks; WINTER 2025, 7 Marks)**

3. Extrusion:

- **Q.** Classify extrusion processes and explain forward and backward extrusion process. **(WINTER 2022, 7 Marks; SUMMER 2025, 7 Marks; SUMMER 2026, 4 Marks OR)**
- **Q.** Explain with sketches the difference between direct and indirect extrusion. **(SUMMER 2023, 7 Marks; SUMMER 2026, 4 Marks)**

4. Sheet Metal Operations:

- **Q.** Define: Deep drawing, Coining and Embossing. **(WINTER 2022, 3 Marks; SUMMER 2025, 3 Marks)**
- **Q.** Differentiate between punching and blanking operations. **(WINTER 2023, 7 Marks; WINTER 2024, 7 Marks)**
- **Q.** Explain shearing, piercing, and blanking operations. **(SUMMER 2025, 3 Marks; SUMMER 2025, 3 Marks)**

5. Ingot, Bloom and Billet:

- **Q.** Define: Ingot, Bloom, Billet. **(SUMMER 2022, 3 Marks; WINTER 2024, 3 Marks)**

6. Strain Hardening:

- **Q.** Explain the effects of strain hardening / Explain in brief Strain Hardening. **(SUMMER 2022, 3 Marks; WINTER 2023, 3 Marks)**

Other Important Questions:

1. Rolling:

- **Q.** Write difference between Hot rolling and Cold rolling. Explain the terms: Bloom, Billet, Slab, Plate, and sheet. **(SUMMER 2025, 7 Marks)**
- **Q.** Define Forward slip, Backward slip, and Neutral point in Rolling. **(SUMMER 2022, 3 Marks)**
- **Q.** Derive the equation for the length of the deformation zone during rolling. **(SUMMER 2024, 4 Marks)**
- **Q.** Discuss about various types of rolling mill arrangements. **(WINTER 2025, 4 Marks)**
- **Q.** Explain the principle and operation of rolling process. **(SUMMER 2026, 7 Marks OR)**

2. Forging:

- **Q.** Enlist Forging operations. Discuss any two with a neat sketch. **(WINTER 2024, 7 Marks)**
- **Q.** Explain the types of forging defects and write name of four products which are manufactured using the forging process. **(WINTER 2025, 7 Marks OR)**
- **Q.** Explain briefly the following forging operations with neat sketches: (a) Coining operations: (b) Heading operation; (c) Punching operation (d) Blanking. **(WINTER 2025, 7 Marks OR)**

3. Sheet Metal Operations (Detailed):

- **Q.** Explain blanking, piercing, coining and embossing in brief with required diagrams. **(SUMMER 2026, 7 Marks)**

Chapter 5: Plastic Technology

Repeated Questions:

1. Injection Moulding:

- **Q.** Explain the Injection moulding process with its principle, advantages, limitations, and applications. **(SUMMER 2022, 7 Marks; WINTER 2022, 4 Marks; SUMMER 2025, 7 Marks; WINTER 2025, 7 Marks)**

2. Thermoplastics and Thermosetting Plastics:

- **Q.** Differentiate between Thermoplastics and Thermosetting plastics. **(SUMMER 2023, 3 Marks; SUMMER 2025, 3 Marks; WINTER 2025, 3 Marks)**

3. Blow Moulding:

- **Q.** Explain the Blow moulding process. **(WINTER 2022, 7 Marks; WINTER 2024, 7 Marks)**

4. Properties of Plastics:

- **Q.** Discuss the general properties of plastics. **(WINTER 2022, 3 Marks; SUMMER 2024, 3 Marks; WINTER 2025, 3 Marks OR)**

5. Calendering:

- **Q.** Explain the calendering process. **(SUMMER 2022, 4 Marks; SUMMER 2025, 4 Marks)**

Other Important Questions:

1. Plastic Processing Methods:

- **Q.** Name the processes used for making: Plastic bottles, buckets, etc. **(SUMMER 2023, 3 Marks)**
- **Q.** Describe the thermoforming process. What are its applications? **(SUMMER 2023, 7 Marks)**
- **Q.** Distinguish between thermoforming and extrusion process for plastics. **(SUMMER 2022, 7 Marks)**
- **Q.** Write short note on compression molding. **(WINTER 2025, 4 Marks)**
- **Q.** List various plastic molding methods. Explain any one in brief. **(SUMMER 2026, 3 Marks)**

2. Physical Properties of Plastics:

- **Q.** Elaborate on various physical properties of plastic. **(SUMMER 2026, 3 Marks)**

Chapter 6: Advance Super Finishing Technology

Repeated Questions:

1. Lapping, Honing, Buffing and Polishing:

- **Q.** Explain/Differentiate between Lapping, Honing, Buffing, and Polishing. **(WINTER 2022, 4 Marks; SUMMER 2023, 4 Marks; SUMMER 2024, 4 Marks; WINTER 2024, 4 Marks; WINTER 2025, 4 Marks; SUMMER 2026, 3 Marks)**

2. Burnishing:

- **Q.** Explain the Burnishing process with a neat sketch. **(SUMMER 2022, 7 Marks; WINTER 2022, 7 Marks; SUMMER 2025, 7 Marks; WINTER 2025, 7 Marks OR)**

3. Need for Surface Finish:

- **Q.** Why do we require high-quality surface finish components? **(SUMMER 2023, 3 Marks; SUMMER 2025, 3 Marks; WINTER 2025, 4 Marks OR)**

4. Barrel Tumbling:

- **Q.** Illustrate Barrel Tumbling process with a neat sketch. **(WINTER 2022, 7 Marks; SUMMER 2025, 7 Marks)**

5. Super Finishing Processes and Selection:

- **Q.** Enlist types of super finishing processes. Discuss the selection criteria. **(SUMMER 2022, 7 Marks; WINTER 2025, 7 Marks)**

Other Important Questions:

1. Comparison of Finishing Processes:

- **Q.** Compare various surface finishing processes in terms of tolerance and roughness. **(SUMMER 2023, 3 Marks)**
- **Q.** How does superfinishing differ from honing? **(SUMMER 2023, 4 Marks)**

2. Super Finishing Processes:

- **Q.** State various super finishing processes. Explain any one super finishing process with neat sketch. **(SUMMER 2026, 7 Marks)**

3. Coating Processes:

- **Q.** Elaborate on powder coating process in brief. **(SUMMER 2026, 4 Marks)**
- **Q.** What are the applications of ceramic coating? **(SUMMER 2026, 3 Marks OR)**

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