

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023

Subject Code:3151912

Date:11-12-2023

Subject Name:Manufacturing Technology

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) State the chvorinov's rule. Discuss it briefly	03
(b) What is the role of electrode coating in shielded metal arc welding?	04
(c) Differentiate between punching and blanking operations with respect to punch and die dimensions and applications.	07
Q.2 (a) How is the selection of manufacturing process influenced by i) Material of the work piece ii) Quantity to be produced?	03
(b) Explain following patterns with neat sketch: i) Match plate pattern ii) Gated patterns	04
(c) A slab of size 300* 300 * 50 mm is require to be cast from a molten steel using a top riser of 170 mm diameter. If $(d/h) = 2$ for riser, Calculate the freezing ratio.	07
OR	
(c) Draw a neat sketch of gating system. Discuss functions of gating system and differentiate between pressurized and unpressurized gating system.	07
Q.3 (a) Discuss the advantages and limitations of A.C. and D.C. power sources.	03
(b) What is gas welding? Discuss about various types of flames commonly used in gas welding process with specific application of each one.	04
(c) Explain with neat sketch, steps involve in investment casting process. Also discuss how an investment casting component is differ than a sand casting component.	07
OR	
Q.3 (a) Differentiate between soldering and brazing.	03
(b) Differentiate between TIG and MIG welding processes.	04
(c) Discuss about resistance welding cycle. Also discuss heat balance and its importance in quality of resistance welded joint.	07
Q.4 (a) Explain the effects of strain hardening.	03
(b) Discuss about various types of rolling mill arrangements.	04
(c) What is extrusion? Differentiate between forward extrusion and backward extrusion.	07

OR

- Q.4 (a)** Explain the following terms: **03**
i) Ingot, ii) Slab, iii) Billet
- (b)** Enlist examples of specific product manufactured by the following forging processes and why? **04**
i) Drop forging
ii) Machine forging
iii) Smith forging
- (c)** Explain with neat sketch principle and operation of rolling process. **07**
- Q.5 (a)** Name the two products that can be manufactured by either spinning or deep drawing. Also mention at least one product that cannot be manufactured by spinning but may be manufactured by drawing. **03**
- (b)** Classify the types of plastics alongwith the properties and applications of plastics. **04**
- (c)** Enlist various plastic processing technologies. Explain injection moulding process with neat sketches. **07**
- OR**
- Q.5 (a)** Explain following pattern allowances in detail; **03**
i) Draft allowance
ii) Shrinkage allowance
iii) Machining allowance
- (b)** Define and explain following finishing operations: **04**
i) Lapping
ii) Buffing
iii) Burnishing
iv) Polishing
- (c)** Explain with neat sketch compression moulding process. Also enlist advantages, limitations and applications of compression moulding process. **07**
