

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV EXAMINATION – SUMMER 2025

Subject Code:3142509

Date:19-05-2025

Subject Name:Manufacturing Technology -I

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) What are the main criteria used for the classification of machine tools?	03
	(b) Discuss the significance of feed and speed in metal cutting operations.	04
	(c) Explain how the selection of cutting parameters influences the efficiency of machining.	07
Q.2	(a) Distinguish between orthogonal and oblique cutting in metal machining.	03
	(b) Describe the different types of chips formed during metal cutting.	04
	(c) Discuss the stress and strain distribution in a metal cutting process.	07
	OR	
	(c) Discuss the operations of boring, reaming, knurling, grooving, and parting off on a lathe	07
Q.3	(a) Explain the working principle of a lathe machine.	03
	(b) Explain the feed mechanism in a lathe and its importance.	04
	(c) Discuss the relationship between cutting speed, feed, and depth of cut in machining time calculations.	07
	OR	
Q.3	(a) List and explain the different parts of a shaper machine.	03
	(b) Discuss the mechanism involved in the operation of a slotter machine.	04
	(c) List and discuss safety precautions that should be observed when operating a shaper machine	07
Q.4	(a) Classify drills based on their applications and materials.	03
	(b) Define reaming and explain its purpose in machining operations.	04
	(c) List and explain different types of drilling machines based on their configurations and applications	07
	OR	
Q.4	(a) Explain the working principles of milling machines in metal cutting.	03
	(b) Explain the types of milling cutters used in various milling operations.	04
	(c) Discuss the factors influencing the selection of cutting speed in milling operations.	07
Q.5	(a) Identify common causes of blade failure in metal sawing.	03
	(b) Classify broaching machines based on their design and applications	04
	(c) Discuss the various types of broaching operations, such as internal, external, and surface broaching.	07

OR

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| Q.5 | (a) | Describe common forms of abrasive tools used in grinding processes. | 03 |
| | (b) | Differentiate between grain and grit in the context of grinding wheels. | 04 |
| | (c) | Explain the principles of through-feed, in-feed, and end-feed grinding in centerless grinders. | 07 |
