

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 3161917

Date: 05/06/2026

Subject Name: Computer Aided Manufacturing

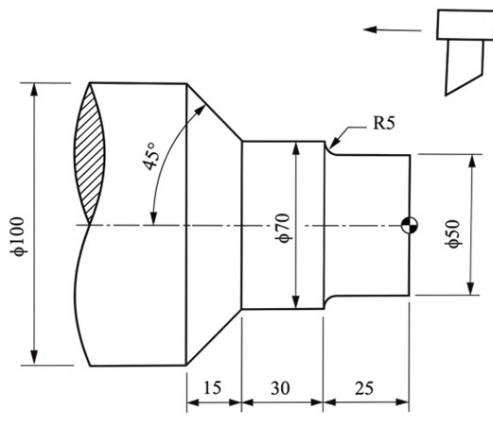
Time: 10:30 AM TO 01:00 PM

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 manufacturing systems and list the components of manufacturing systems. | 03 |
| (b) | Explain in brief about the Programmable Logic Controllers and draw the block diagram showing the components of PLC. | 04 |
| (c) | Write the manual part program for finishing a forged component as shown in figure . Assume the speed and feed on the turning center are 250rpm and 0.35mm/rev. Assume 1 mm material is to be removed radially from the external diameter. Prepare the diagram with tool path using absolute programming coordinates and then prepare the manual part program with each block meaning written aside. | 07 |



- Q.2**
- | | | |
|------------|---|-----------|
| (a) | Write the design and manufacturing attributes typically included in GT Classification system. | 03 |
| (b) | Draw the basic structure of the Opitz coding system. | 04 |
| (c) | Explain the various format used to structure the CNC part program block with example and list the types of cutting tool material used in CNC machine tools. | 07 |

OR

- Q.2**
- | | | |
|------------|---|-----------|
| (c) | Explain the programming command / code meaning G41, M08, G71, G18, M00, G90. Draw the axis designation for CNC milling center and CNC turning center. | 07 |
|------------|---|-----------|

- Q.3**
- | | | |
|------------|--|-----------|
| (a) | Explain the part family concept in GT and list the basic code structures used in GT applications | 03 |
| (b) | List and draw the labelled figure of four most common robot configurations. | 04 |
| (c) | Explain in detail the types of robot programming methods. | 07 |

OR

Q.3	(a) Explain in brief the benefits of CAPP.	03
	(b) List the name of six robot programming language and write the proper industrial application of robots	04
	(c) Write the laws of robotics. Explain with diagram the forward kinematics and inverse kinematics in robotic manipulator.	07
Q.4	(a) List the types of Automated Storage and Retrieval Systems.	03
	(b) Distinguish the flexible manufacturing systems based on number of machines and explain each in brief.	04
	(c) Write in detail the FMS benefits.	07
	OR	
Q.4	(a) List the possible reasons and objectives for Automating a Company's Storage Operations	03
	(b) Categorize the Automated guided vehicles and explain in brief the Vehicle Guidance Technology.	04
	(c) Explain in detail the functions to be performed by the FMS Component "Computer Control System".	07
Q.5	(a) Explain the core components of Expert System.	03
	(b) List and explain in brief the types of problems commonly encountered in planning and control of production.	04
	(c) Define the purpose of JIT. Explain in detail the working of KANBAN Pull system by Toyota Production Systems.	07
	OR	
Q.5	(a) Write the benefits of ERP system in Manufacturing.	03
	(b) Explain the two approaches to Computer Aided Process Planning.	04
	(c) Explain the JIT as a philosophy of manufacturing with types of waste and list the key elements one should follow in JIT approach.	07
