Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3161917 Date:30-05-2024

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.**

			MARKS
Q.1	**(a)**	What are the primary objectives of implementing CAM in manufacturing?	**03**
	(b)	Describe the basic architecture of a programmable controller (PLC)	**04**
	(c)	Describe the CIM Wheel to understanding the basic functions and components of a CIM system.	**07**
Q.2	**(a)**	Describe the axis designation system commonly used in CNC machines.	**03**
	(b)	Explain the classification of CNC machines based on their functions and applications.	**04**
	(c)	Explain working of recirculating ball screw. How does a recirculating ball screw contribute to the precision and efficiency of CNC machines?	**07**
		OR	
	(c)	Describe the concept of canned cycles in CNC programming and when they are typically used.	**07**
Q.3	**(a)**	What is a Flexible Manufacturing System (FMS), and how does it differ from traditional manufacturing systems?	**03**
	(b)	Name and define the various types of flexibility associated with Flexible Manufacturing Systems.	**04**
	(c)	What are Automated Guided Vehicles (AGVs), and where are they commonly used in industrial settings? Explain types of Automated Guided Vehicles (AGVs)	**07**
		OR	
Q.3	**(a)**	Explain the concept of a "cell" in FMS layout and its significance.	**03**
	(b)	Define Cellular Manufacturing and its role in improving production efficiency.	**04**
	(c)	Explain the concept of an Automated Storage and Retrieval System (AS/RS) and its advantages in modern warehousing.	**07**
Q.4	**(a)**	What is Production Planning and Control (PPC), and why is it essential in manufacturing?	**03**
	(b)	Enumerate the benefits of implementing Group Technology in manufacturing.	**04**
	(c)	Explain OPITZ system for part classification and coding.	**07**
		OR	
Q.4	**(a)**	Explain Material Requirement Planning (MRP).	**03**
	(b)	Discuss the applications of CAPP systems in modern manufacturing.	**04**
	(c)	Define rank order clustering and its significance in GT. How does rank order clustering assist in grouping similar parts together?	**07**

Q.5	**(a)**	Explain types of gripper used in robotics.	**03**
	(b)	Explain how the JIT philosophy can be applied to Flexible Manufacturing Systems (FMS) to reduce lead times and inventory.	**04**
	(c)	Explain the different methods of programming a robot, including teach pendant and offline programming.	**07**

OR

Q.5	**(a)**	Discuss the various power sources commonly used in robotic systems.	**03**
	(b)	What is a Management Information System (MIS), and what is its role in an organization?	**04**
	(c)	Describe the basic anatomy of a typical industrial robot, including its major components.	**07**

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