Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3161917 Date:18-12-2023

Subject Name: Computer Aided Manufacturing

Time: 02:30 PM TO 05:00 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)**	Explain the advantages of Computer Aided Manufacturing.	**03**
	(b)	Define PLC. Brief about the relay device components used in it.	**04**
	(c)	Classify NC machine based on programming method, feedback control and tool motion control system.	**07**
Q.2	**(a)**	Explain tool management system in FMS	**03**
	(b)	What are the components of machine vision system in robotics?	**04**
	(c)	Prepare CNC milling part program to cut the outside of the profile for the figure 1. (Use machining parameter as spindle speed 2000 RPM and Feed 150 mm per min, The thickness of plate is12 mm)	**07**

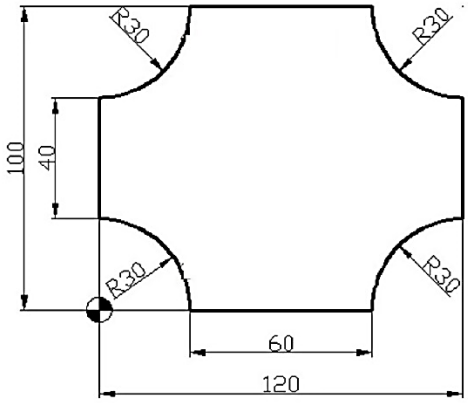

Figure 1

OR

	(c)	Prepare CNC turning part program for the figure 2. (Use stock removal cycle G71 first with depth of cut 0.5 mm and 0.1 mm finishing allowance then use G70 for finishing operation with Spindle speed 700RPM and Feed 0.5 mm per revolution)	**07**

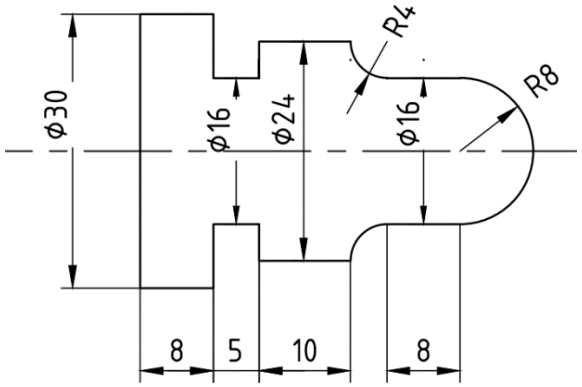

Figure 2

Q.3	**(a)**	Define Part Families. Explain different attributes used for family formation.	**03**
	(b)	List the robot configurations and explain any one with neat sketch.	**04**
	(c)	What is computer aided process planning? Explain benefits over traditional process planning.	**07**
		OR	
Q.3	**(a)**	List the method to make part families. Explain any one in brief	**03**
	(b)	Describe various sensors used in robot technology.	**04**
	(c)	Why is part classification and coding required in GT. Explain OPTIZ system of coding.	**07**
Q.4	**(a)**	Describe the terms with reference to Robot: 1. Payload, 2. Work envelop 3. Manipulator	**03**
	(b)	What are the steps needed to develop the flexible manufacturing cells from scratch?	**04**
	(c)	Explain different types of FMS layout with neat sketch.	**07**
		OR	
Q.4	**(a)**	What are the various types of motion control possible in robots?	**03**
	(b)	Describe with neat sketch AS/RS system used in FMS	**04**
	(c)	Explain different types of AGVs with their advantages and limitations.	**07**
Q.5	**(a)**	What is an ERP System and why is it used?	**03**
	(b)	Explain expert system.	**04**
	(c)	Explain MRP-I and MRP-II.	**07**
		OR	
Q.5	**(a)**	What are the steps to successful ERP implementation?	**03**
	(b)	Explain in brief about the JIT philosophy.	**04**
	(c)	Elaborate on computer integrated production management system with neat flow chart.	**07**

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