GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI(NEW) EXAMINATION – WINTER 2022

Subject Code:3161917   **Date:20-12-2022**
Subject Name:Computer Aided Manufacturing
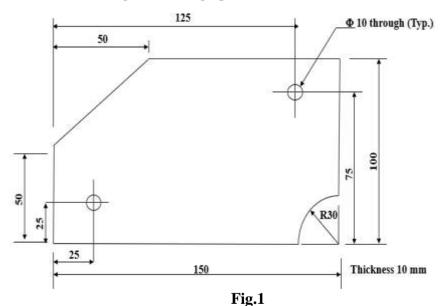**Time:02:30 PM TO 05:00 PM**   **Total Marks:70**
Instructions:
   1. **Attempt all questions.**
   2. **Make suitable assumptions wherever necessary.**
   3. **Figures to the right indicate full marks.**
   4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Explain the benefits of Computer Aided Manufacturing.	**03**
	(b)	Explain the PLC architecture using neat sketch.	**04**
	(c)	Draw and explain the CIM wheel to understand basic functions.	**07**
Q.2	**(a)**	Draw and explain axis designation for vertical axis milling machine.	**03**
	(b)	What are the different elements of an industrial robot?	**04**
	(c)	Illustrate the use of canned cycle and subprograms with example in case of manual part programming.	**07**

OR

	(c)	Write a manual part program for drilling and milling of a component with 10mm thickness as shown in Fig. 1. Consider 10 mm diameter milling cutter and necessary drill size for drilling operation. Assume suitable spindle speed and feed for drilling and milling operation.	**07**

Fig.1

Q.3	**(a)**	Define Part Families. Explain different attributes used for family formation.	**03**
	(b)	Write a short note on: Automated guided vehicle associated with FMS	**04**
	(c)	Discuss the three basic code structures used in classification and coding for group technology.	**07**

OR

Q.3	**(a)**	What is CAPP? Explain its benefits over traditional process planning.	**03**
	(b)	Write a short note on: Tool monitoring system used in FMS	**04**
	(c)	Discuss various codes used for GT. Explain the digits used in Opitz code.	**07**
Q.4	**(a)**	Explain the basic components of FMS	**03**

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(b)	List the robot configurations and explain any one with neat sketch.	**04**
(c)	Write a note on: Different types of flexibility required in an FMS.	**07**

OR

Q.4	**(a)** Describe with neat sketch AS/RS system used in FMS	**03**
	(b) What are SCARA configuration robot? Explain its work envelope.	**04**
	(c) Explain different types of FMS layouts with neat diagram.	**07**

Q.5	**(a)** Describe various sensors used in robot technology.	**03**
	(b) Explain in brief about the JIT philosophy.	**04**
	(c) Elaborate on computer integrated production management system with neat flow chart.	**07**

OR

Q.5	**(a)** What are the various factors which influence the selection of end effector of a robot.	**03**
	(b) Explain the concept of expert system used in manufacturing.	**04**
	(c) Elaborate on JIT production systems. How are these usefully associated with FMS?	**07**

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