U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

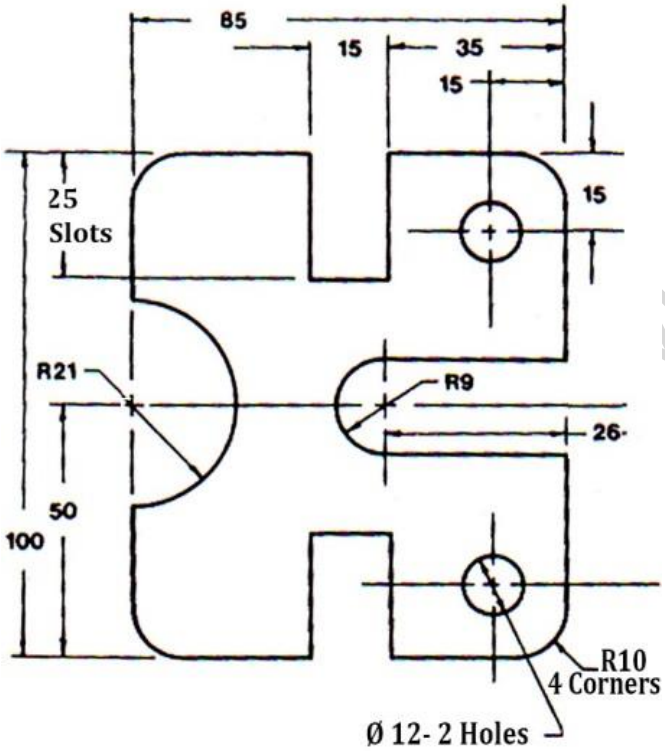
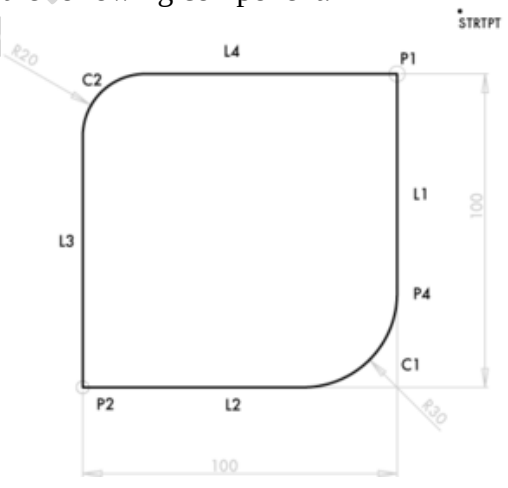
February 2025 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Industrial Engineering & Management **Duration: 3 hrs.**
Course Code: 22IM4PCCIM **Max Marks: 100**
Course: Computers in Manufacturing

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

				CO	*PO*	Marks
			UNIT - I			
1	a)		Define CAD and CAM. What are the advantages and disadvantages in adopting them in different types of Production activities?	*CO*1	*PO1*	**10**
	b)		Discuss the influence of computers in the entire manufacturing cycle today.	*CO*1	*PO1*	**10**
			OR			
2	a)		Explain the functions of a Graphics Package?	*CO*1	*PO1*	**06**
	b)		Enlist the steps in constructing a geometry using graphics.	*CO*1	*PO1*	**06**
	c)		Explain Translation, Scaling, Rotation and Concatenation transformations in 3D.	*CO*1	*PO1*	**08**
			UNIT - II			
3	a)		What are the basic components of an NC system? Explain the working of each of the component parts.	*CO*1	*PO1*	**06**
	b)		What is a Motion Control System in NC machine tools? Explain the three different motion control systems.	*CO*1	*PO1*	**06**
	c)		List and explain the advantages and disadvantages of NC systems.	*CO*1	*PO1*	**08**
			OR			
4	a)		Explain the differences between a conventional machine tool and a NC machine tool.	*CO*1	*PO1*	**08**
	b)		What are the different Tape formats adopted in a NC machine tool. Explain with illustration.	*CO*1	*PO1*	**06**
	c)		Mention different types of drive systems used in CNC machine tools. List & explain their uses and benefits.	*CO*1	*PO1*	**06**
			UNIT - III			
5	a)		Mass production of an important automotive part is to be carried out using an advanced CNC Turning centre. If, an Adaptive control system is installed, then explain, how and on what aspects different ADC systems would benefit the manufacturer?	*CO*1 CO2	*PO1* *PO2*	**12**
	b)		What is an ATC? Explain the step-by-step working of an ATC in CNC milling centre?	*CO*1	*PO1*	**08**

			OR			
	6	a)	With a neat sketch list and explain the Tool signature on a Single Point Cutting Tool.	*CO1*	*PO1*	**08**
		b)	What is an Adaptive Control system? Explain its uses with its types.	*CO1*	*PO1*	**06**
		c)	Explain the uses of the following: i) ATC ii) Tool Magazines and its types iii) Tool Holders	*CO1* CO2	*PO1* *PO2*	**06**
			UNIT - IV			
	7	a)	Explain the utility of a Canned Cycle and a Subroutine in a CNC program with an example for each.	*CO* 2	*PO2* *PO3* *PO12*	**06**
		b)	Write a CNC part program for the following component. 	*CO* 2	*PO2* *PO3* *PO12*	**14**
			OR			
	8	a)	Explain with examples different types APT Programming statements used.	*CO* 2	*PO2*	**06**
		b)	Write geometric and motion statements of the APT program for the following component. 	*CO* 2	*PO2*	**14**

			UNIT - V			
	9	a)	List and explain different programming methods of Robots.	*CO1* *CO4*	*PO1* *PO2* *PO3*	**06**
		b)	With reference to a Robot explain the role of : i) Manipulator ii) Actuator iii)End Effector iv) Sensor	*CO1* *CO4*	*PO1* *PO2* *PO3*	**06**
		c)	What are the considerations for adopting Robots for various applications? Mention some of its applications.	*CO1* *CO4*	*PO1* *PO2* *PO3*	**08**
			OR			
	10	a)	Explain with neat sketches different types of Robot configurations.	*CO1* *CO4*	*PO1* *PO2* *PO3*	**08**
		b)	What are robot work cell control and interlocks? Explain.	*CO1*	*PO1* *PO2* *PO3*	**06**
		c)	What are the advantages and disadvantages of different types of Robot Programming? Explain.	*CO1*	*PO1* *PO2* *PO3*	**06**

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