U.S.N.										

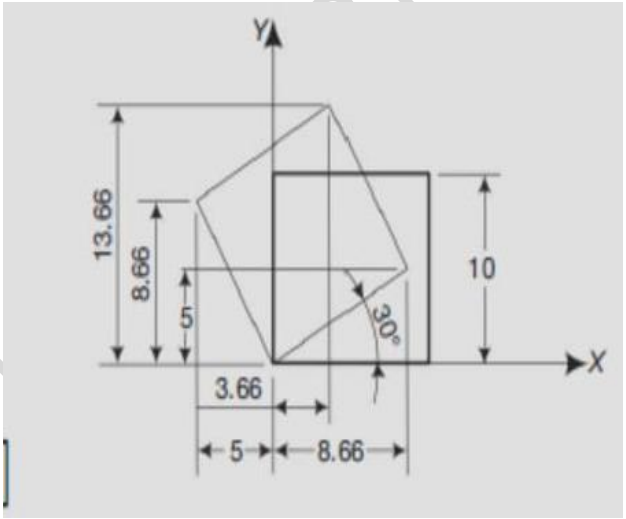
B.M.S. College of Engineering, Bengaluru-560019

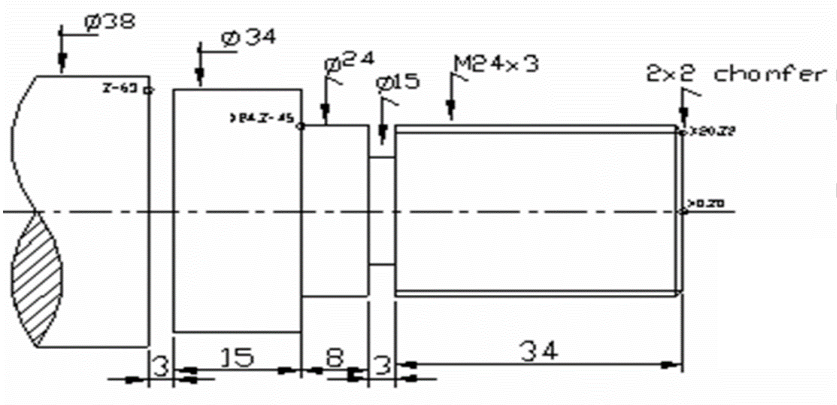
Autonomous Institute Affiliated to VTU

September / October 2024 Supplementary Examinations

Programme: B.E. **Semester: V**
Branch: Mechanical Engineering **Duration: 3 hrs.**
Course Code: 20ME5DCCCR **Max Marks: 100**
Course: CAD/CAM and Robotics

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

			UNIT - I	CO	PO	Marks
1	a)		With the help of a neat block diagram, Explain different phases of a product-lifecycle.	*CO3*	*PO1,3, 4,5*	**10**
	b)		A square with an edge length 10 units is located in the origin with one of the edge at an angle 30^0 with the + X-axis. Calculate the new position co-ordinates of the square, if it is rotated about Z-axis by an angle of 30^0 in the clockwise direction. 	*CO1*	*PO1,3, 4,5*	**10**
			UNIT - II			
2	a)		Fit a cubic Bézier curve for the following control points: (1, 3), (4, 5), (5,7) and (8, 4). Calculate the points at u = 0.4 and 0.6	*CO3*	*PO1,3, 4,5*	**10**
	b)		Briefly explain the properties of B-splines that are useful for CAD applications.	*CO1*	*PO1,3, 4,5*	**10**
			OR			
3	a)		Briefly discuss the properties Bezier curve equation.	*CO2,3*	*PO1,3, 4,5*	**10**
	b)		Why Data exchange format is needed. List few data exchange formats and their applications.	*CO2,3*	*PO1,3, 4,5*	**10**

			UNIT - III			
	4	a)	Explain the architecture of CNC machine, With a neat block diagram.	*CO2,3*	*PO1,3, 4,5*	**12**
		b)	Explain axis designation in CNC machines.	*CO2,3*	*PO1,3, 4,5*	**08**
			UNIT-IV			
	5	a)	Write manual part programming with comments for the turning model as shown in Fig. 5a. Data for Thread M24x3, pitch 3mm, core 20.3194mm, depth 1.840mm. [All dimensions in mm]  Fig. 5a	*CO5*	*PO1,3, 4,5*	**15**
		b)	List and explain few geometric and motion commands of APT programming.	*CO5*		**05**
			UNIT – V			
	6	a)	Explain on anatomy of robots.	*CO2*	*PO1,3, 4,5*	**10**
		b)	Write essential laws and characteristics of Robots.	*CO2*	*PO1,3, 4,5*	**10**
			OR			
	7	a)	Describe different types of sensors with respect to robots.	*CO2*	*PO1,3, 4,5*	**14**
		b)	Write the applications of industrial robots.	*CO2*	*PO1,3, 4,5*	**06**

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