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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fifth Semester, B.E. - Mechanical Engineering

Semester End Examination; Feb. - 2021

CAD / CAM

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Describe latest in-put and out-put devices used in CAD.

CO2: Explain modeling techniques and Solve problems on transformations.

CO3: Explain the basic components of NC system and Compare CNC machines.

CO4: Identify CNC machine components and cutting tool system used in CNC.

CO5: Develop CNC part program for different operations.

***Note: I) PART - A** is compulsory. **Two** marks for each question.*

***II) PART - B**: Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.*

Q. No.		Questions	Marks	BLs	COs	POs
		I : PART - A	**10**			
I	a.	List the different types of plotters used in CAD	2	L1	CO1	PO3
	b.	Define concatenation of transformation.	2	L1	CO2	PO2
	c.	What is incremental coordinate system?	2	L1	CO3	PO1
	d.	List the feed drives that are used in CNC machine tools.	2	L1	CO4	PO2
	e.	Name the code for spindle stop and change in CNC.	2	L1	CO5	PO5
		II : PART - B	**90**			
		UNIT - I	**18**			
1	a.	With the help of a block diagram, explain product in Conventional manufacturing environment.	9	L2	CO1	
	b.	With sketches, explain the two types of Stroke writing graphic terminals.	9	L3	CO1	PO2
	c.	List the advantages and limitations of CAD / CAM.	9	L2	CO1	PO4
		UNIT - II	**18**			
2	a.	A square (Fig. 2a) with an edge length of 10 units is located in the origin with one of the edges at an angle of 30° with the +*X*-axis. Calculate the new position of the square, if it is rotated about the *Z*-axis by an angle of 30° in the clockwise direction.	9	L3	CO2	PO2

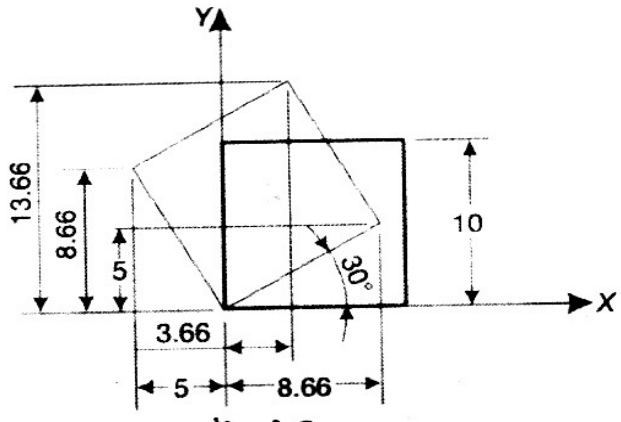

Fig: 2a

Contd… 2

b.	Discuss how solids are created using CSG.	9	L2	CO2	PO3
c.	With sketch give a brief description about Bezier curves.	9	L2	CO2	PO3
	UNIT - III	**18**			
3 a.	Discuss about the basic components of NC System.	9	L2	CO3	PO2
b.	With block diagram, explain the machine control unit of CNC.	9	L2	CO3	PO3
c.	With sketch, explain the three basic types of NC motion control systems.	9	L2	CO3	PO3
	UNIT - IV	**18**			
4 a.	Explain tool change procedure using double gripper with sketches.	9	L2	CO4	PO2
b.	With sketch, briefly describe the absolute encoder and incremental encoder used for rotary position measurement.	9	L2	CO4	PO3
c.	Discuss about cutting tool materials used in CNC machine tools.	9	L2	CO4	PO2
	UNIT - V	**18**			
5 a.	With sketches, explain tool length compensation and cutter radius compensation.	9	L2	CO5	PO4
b.	With block diagram, explain the steps involved in the CNC part programming.	9	L2	CO5	PO5
c.	Write a manual NC part program for the part shown in Fig. 5c. Given the following data:	9	L4	CO5	PO5

For milling	For drilling
Spindle speed: 500rpm	Spindle speed : 2000rpm
Feed rate: 375mm/min	Feed rate : 150mm/min

Assume all other data suitably.

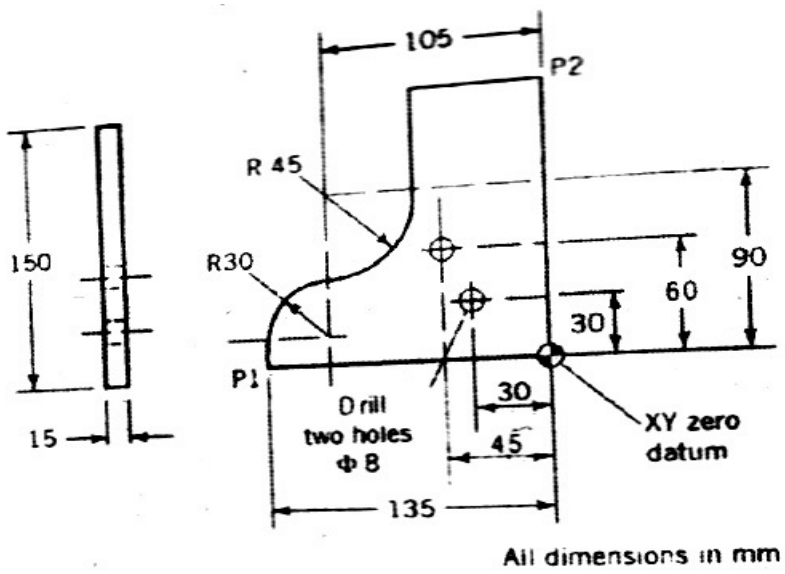

Fig.5c

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