

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 140751

Roll No.

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B. Tech.

(SEM. VII) (ODD SEM.) THEORY
EXAMINATION, 2014-15

COMPUTER AIDED MANUFACTURING

Time : 3 Hours]

[Total Marks : 100

- 1 Attempt any FOUR parts : 5×4=20
- Briefly describe the three phases of analog to digital conversion process with neat block diagram.
 - What is adaptive control? Draw a block diagram showing the relationship of adaptive control software to APT program.
 - What are different interpolation schemes possible and explain any one of it.
 - The work table of a positioning system is driven by a lead screw whose pitch = 60mm. the lead screw is connected to the output shaft of a stepper motor through a gear box whose ratio is 5:1 (five turns of the motor to one turn of the lead screw). The stepper motor has 48 step angles. The table must move a distance of 250 mm from its present position at a linear velocity = 500 mm/min. determine how many pulses are required to move the table the specified distance.

- e) What is the difference between a closed-loop control system and an open-loop control system?
- f) Compare Hardware Interpolator with Software Interpolator of DDA technique.

2 Attempt any TWO parts : 10×2=20

- a) Briefly explain the ten strategies for automation and write short notes on automation migration strategy.
- b) What is the common NC machine tool available for the traditional machining operation?
- c) I. Write the basic elements of an automated system and basic type of control system.
- II. What is the difference between fixed automation and programmable automation?

3 Attempt any TWO parts : 10×2=20

- a) Write the complete APT part program to perform the profile milling operation for the part drawing in FIG 1. Tooling = 20mm diameter end mill with two teeth, cutting speed = 125mm/min. and feed = 0.10mm/tooth. The part is 10mm thick. Use the lower left corner of the part as the origin in the x-y axis system.

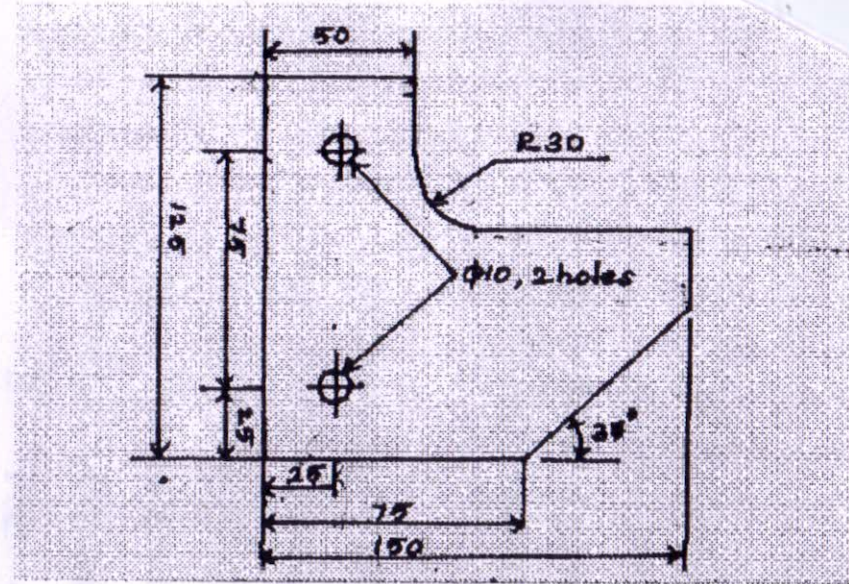


FIG 1

The two holes in the part have already been drilled and will be used for clamping the part during milling. Postprocessor call statement is MACHINE/MILL, 01

- b) Write short notes on manual part programming with example.
- c) What are some of the benefits usually cited for NC compared to using manual alternative methods? Enlist any ten G codes and M codes.
- 4 Attempt any TWO parts : 10×2=20
- a) What is Computer Integrated Manufacturing (CIM)? Mention various elements of CIM and functions of CIM.

- b) With a block diagram explain the main building blocks of FMS and problems in implementing it.
- c) What is generative process planning? Compare retrieval and generative process planning methodologies.

5. Attempt any TWO parts : 10×2=20

- a) Write briefly about the various methods for robot programming
 - b) Write short notes on the following :
 - I. Economics of robotics
 - II. Features of VAL programming
 - c) Discuss briefly the use of sensors and artificial intelligence for intelligent manufacturing.
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