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ME – 702

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

PAPER ID : 4021 Roll No.

B.Tech.

SEVENTH SEMESTER EXAMINATION, 2004-2005

COMPUTER AIDED MANUFACTURING (CAM)

Time : 3 Hours *Total Marks : 100*

Note : *Attempt ALL questions.*

1. Attempt *any four* parts of the following : (5x4=20)

(a) What is automation ? Discuss various types of automation. NC machine falls in which type of automation.

(b) Define NC, CNC and DNC system. Write advantages of NC manufacturing over conventional manufacturing.

(c) Describe open loop and closed loop system used in NC machines.

(d) Discuss axis designations of NC machines. Also discuss limitations of NC.

(e) Describe various controls used in CNC.

(f) Discuss main constructional features of NC machines.

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2. Attempt *any four* parts of the following : (5x4=20)

(a) Discuss the various methods of creating part programs with their advantages and limitations.

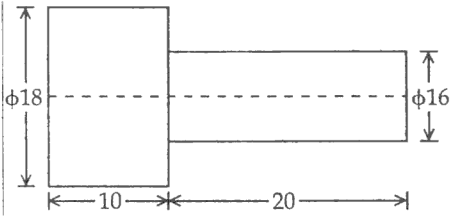
(b) What are canned cycles ? Illustrate six different canned cycles.

(c) What are preparatory and miscellaneous functions ? Write main G and M codes used in manual part programming.

(d) What is APT ? Write main features of APT.

(e) Discuss Macro statements used in APT with suitable examples.

(f) Write NC part program for following Job. (All dimensions are in mm)



Work material = Aluminium

Blank Length = 40 mm

Blank Diameter = 19 mm

Depth of cut = 0.25 mm

3. Attempt *any two* parts of the following : **(10x2=20)**

(a) Describe the principle of operation of a stepper motor.

(b) Describe the principle of operation of closed loop CNC machine.

(c) Distinguish between ACC and ACO types of adaptive control.

4. Attempt *any two* parts of the following : **(10x2=20)**

(a) Define the term flexible manufacturing system. Name main building blocks of FMS and hardware and software components of FMS.

(b) Differentiate between FMC and FMS.

(c) What is CIM ? Mention various elements of CIM.

5. Attempt *any two* parts of the following : **(10x2=20)**

(a) What is Robot ? Identify typical specifications which describe a robot.

(b) Discuss various robot programming methods.

(c) Discuss the term "Artificial Intelligence". How is it used in intelligent manufacturing ?

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