End Semester Examination (25 April 2017)

Computer Aided Manufacturing (CAM) ME1601

B.Tech- VI Semester (Mechanical & Production Engineering)

Time: 3 hrs **MM: 60**

Note: Attempt all the *SIX* questions in sequence, each question carry equal marks.

Q 1. (a) What is Product life cycle? Highlight the influence of CAD/CAM in present competitive environment of product innovation, design and manufacturing. Also describe the automation strategies and future of CAM.

(b) What is Numerical Control? Classify the NC systems and describe all the basic elements of the system. What are the major advantages of CNC machine tool compared to its conventional counter-part? Explain the APT statements: (i) GOTO and GO/TO (ii) GODLTA and GOBACK and (iii) INTOL and OUTTOL.

2. (a) Explain the G codes used for tool offset functions? Draw the Manual Part Programming sheet and explain how the entries are made in the sheet with the help of an example. Briefly *discuss the following NC motion control systems.*

(i) Point -to-point (ii) Straight cut (iii) Contouring

(b) Prepare manual part program for machining the component with 4 holes of 10 mm diameter on 60 mm p.c.d. as shown in **Figure1.**

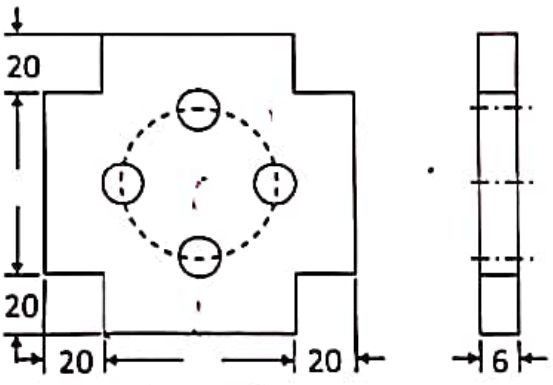

Figure 1

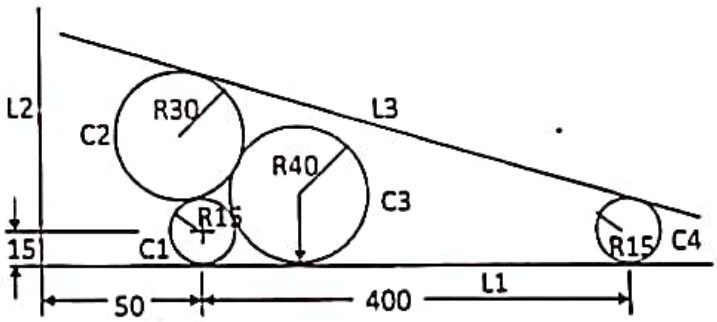

Figure 2

3 (a) Write an APT geometry to define lines and circles shown in **Figure 2.**

b) Explain the function and advantages of DNC and explain the organization of MCU to perform its functions.

4. (a) Discuss the difficulties encountered in using conventional numerical control. Enumerate the advantages of Computer Assisted Part Programming when compared to Manual Part Programming

(b) Prepare NC program in APT for machining the contour shown in **Figure3** with two passes one with rough-cut and other with finish cut.

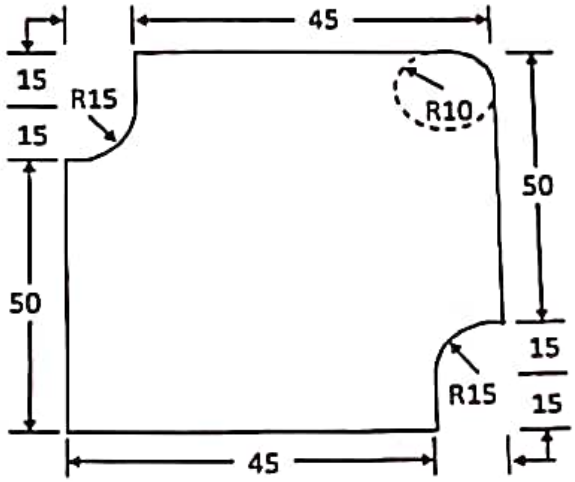

Figure 3

5 (a) Explain the concept of Flexible Manufacturing Systems (FMS) with a typical sketch of layout with its components. Define Automation and Production Systems. Explain different types of Production Systems with their areas of application.

(b) Explain the concept of guided vehicles and its types. Differentiate between AS and RS with applications and advantages in advanced manufacturing systems.

6. Write short notes on any FOUR of the following:

i) Hydraulic and Pneumatic Devices

ii) Feedback Devices

iii) MACROS

iv) Materials handling and Storage system

v) Transfer Lines

**********Good Luck **********