R 8492

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Sixth Semester

Mechanical Engineering

ME 338 — COMPUTER AIDED MANUFACTURING

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define part family.

2. State any two guidelines to be followed in maching process to achieve better manufacturability.

3. Distinguish between open loop control and closed loop control in the context of CNC control system.

4. List out any four CNC interpolation methods.

5. What are the types of motors used in CNC System?

6. What are the feed back devices used in CNC systems?

7. Distinguish between absolute and incremental positional methods.

8. Sketch APT geometry for the following :

   PL1 = PLANE/P4, PARLEL, PL2

   L1 = LINE/P1, ATANGL, 20

9. State various activities of shop floor control.

10. What are benefits of JIT Production?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain with neat sketch, working principle of FDM process. State its strengths and weaknesses. (8)

    (ii) Briefly describe the rational type of computer Aided process planning. (8)

Or

(b) (i) Explain various steps in Production. Flow Analysis (PFA). (8)

(ii) How will concurrent engineering will help to reduce product development time? (8)

12. (a) (i) State the functions of CNC controllers and briefly explain how the functions and performed in a CNC system. (10)

(ii) List the advantages of CNC and DNC Systems. (6)

Or

(b) (i) Describe with neat sketches classification of CNC system based on tool motion. (8)

(ii) Discuss the types of DNC systems. (8)

13. (a) (i) Sketch the ball screws arrangement and explain the working of the system. (10)

(ii) Write a note on the work holding devices used in CNC Systems. (6)

Or

(b) (i) List out various types of antifriction guideways used in CNC machine tools and describe any two with simple sketches. (12)

(ii) Give a note on Automatic tool changers. (4)

14. (a) (i) Describe with a block diagram the various steps in computer Assisted Part Programming. (10)

(ii) Explain the CAD/CAM approach in Part Programming. (6)

Or

(b) The component shown in Fig.14 (b) is to be machined from a low – carbon steel plate which is approximately 2 mm oversize on the profile and has been previously machined to produce the two locating dowel holes, and the clamping hole. It is held in a fixture which locates and clamps the component.

Write a part program to

(i) Mill the profile using a 16 mm diameter and mill. (8)

(ii) Mill the 10 mm slot. (4)

(iii) Drill the four 4 mm diameter holes. (4)

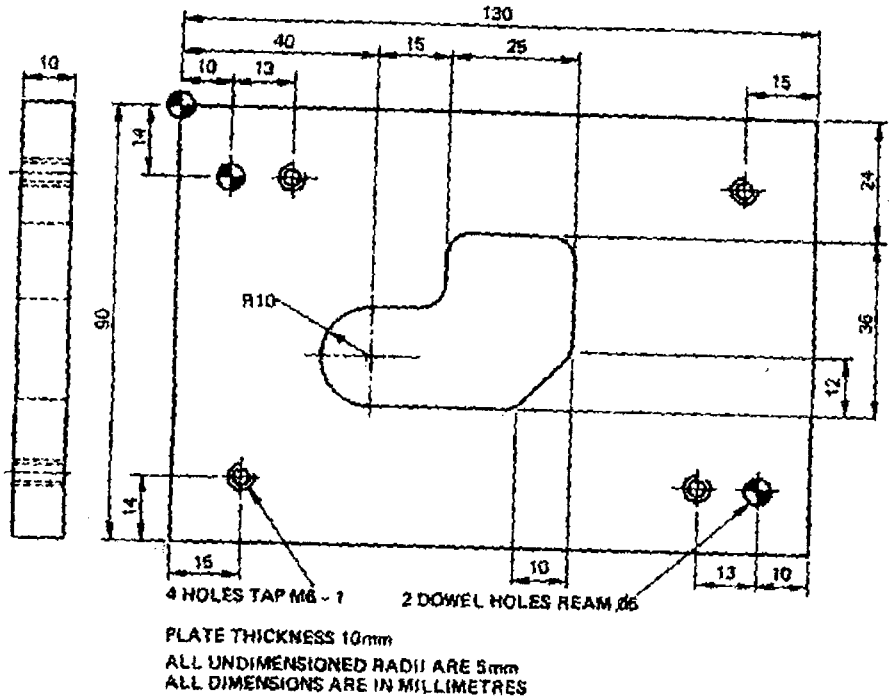

Fig. 14 (b)

15. (a) (i) Describe with neat block diagram typical activities in a production planning and control system. (8)

(ii) Enumerate and briefly discuss the key elements of JIT. (8)

Or

(b) Write short notes on :

(i) Product Data Management. (5)

(ii) Assembly modeling. (6)

(iii) Tolerance modeling. (5)