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B.E. DEGREE END SEMESTER EXAMINATIONS, APRIL/ MAY 2011
MANUFACTURING ENGINEERING BRANCH
V SEMESTER (REGULATIONS 2008)

MF 9305 CNC MACHINING TECHNOLOGY

Time: 3 Hours

Maximum: 100 Marks

Answer ALL questions

PART A - (10 X 2 = 20 marks)

1. State any four advantages of CNC machine tools.
2. List out any four CNC interpolation methods.
3. State true or false. Justify your answer. Aerostatic guideways can be used in CNC machining centre.
4. Sketch and indicate the errors that can be compensated by using flexible couplings.
5. Distinguish between open loop and closed control system in the context of CNC control system.
6. How do you sense the direction of motion while using grating type transducer?
7. What is meant by cutter radius compensation: how is it programmed?
8. Distinguish between diametric and radius programming.
9. State various daily activities to be performed in the preventive maintenance of CNC machine tools.
10. State any four features that an ideal work holding device would possess for CNC applications

PART B – (5X16=80 Marks)

- 11 i) Enumerate salient features of CNC turning centre. (8)
ii) Discuss DNC with neat block diagram configuration. (8)
 - 12a i) What are the limitations of friction guideways. Describe with neat sketches working principle of any two antifriction guideways. (10)
ii) Enumerate with neat sketch the principle of recirculating roller screw. (6)
- (or)**
- 12b i) Describe with neat sketch working principle of Ballscrew. State its advantages and limitations.. (10)
ii) Discuss salient features of CNC spindle assembly. (6)
- 13a) Discuss relative advantages and limitations of using stepper motors and servo motors as feed drives in CNC machine tool.

(or)

13 b) Explain with neat sketches working principle of the following:

- i) Linear moiré fringe gratings (8)
- ii) Shaft encoder . (8)

14a) Write short notes on

- i) Subroutines (5)
- ii) Mirror image (5)
- iii) Parametric programming (6)

(or)

14 b) Fig. Q14 b) shows a die aperture to be machined from a pre-machined block held in a vice on a milling machine. Write a part program to

- (i) Mill out the aperture using a 10mm diameter slot drill. (6)
- (ii) Drill and ream the dowel holes. (8)
- (iii) Mention the assumptions made. (2)

15 a) Explain the terms, "qualified", "semi-qualified", "preset tooling" and "indexable inserts" in the context of CNC tooling.

(or)

15b) Write short notes on

- i) PCD
- ii) CBN
- iii) Machine vices
- iv) Hydraulic Chucks

(4X 4 = 16)

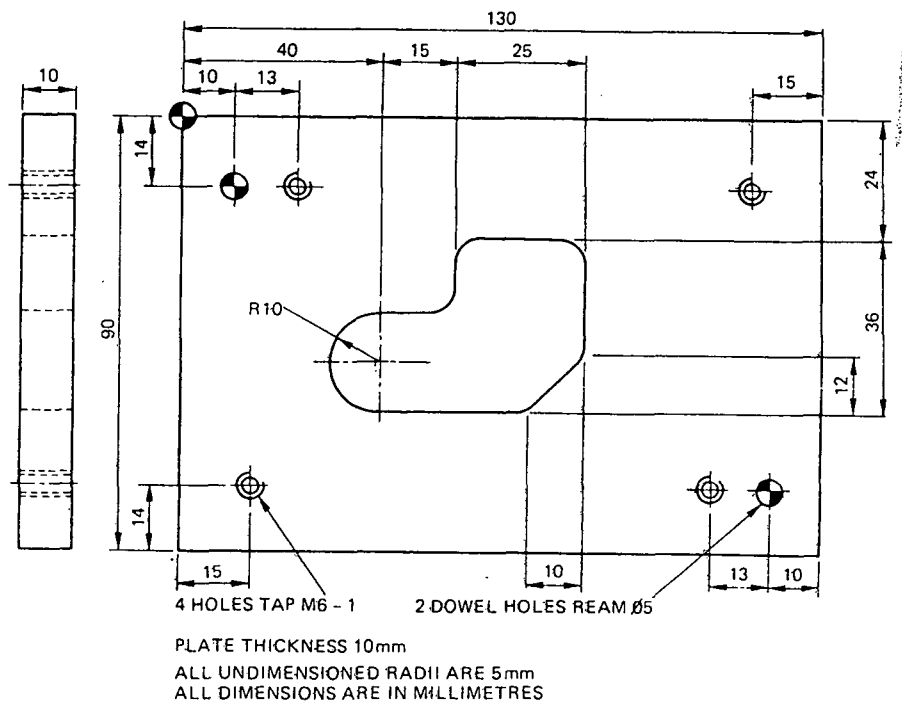


Fig Q14b)