



VELAMMAL

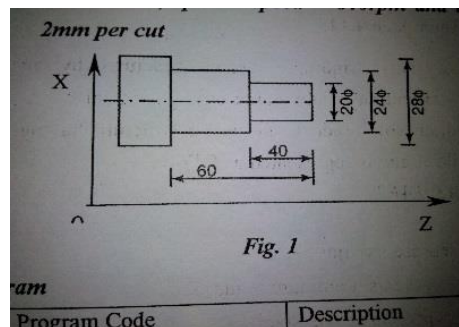
INSTITUTE OF TECHNOLOGY
CHENNAI-601204

QUESTION BANK ME 2252 MANUFACTURING TECHNOLOGY - II

UNIT-5

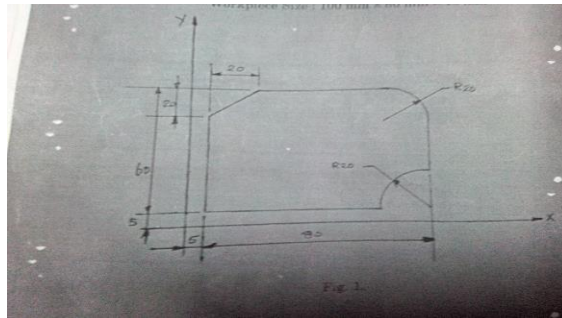
PART B

1. Discuss the major elements of CNC machine tools(8) (Nov/dec-2005)
2. Compare NC machine with CNC machine.(8) (Nov/Dec-2005)
3. Figure shows the finishing size of a round bar. The original diameter of the bar was 28mm. make a part program for facing, parting and reduction of diameter. Take feed=200mm/min, spindle speed=640rpm and depth of cut=2mm per cut.(16) (Nov/dec-2005)

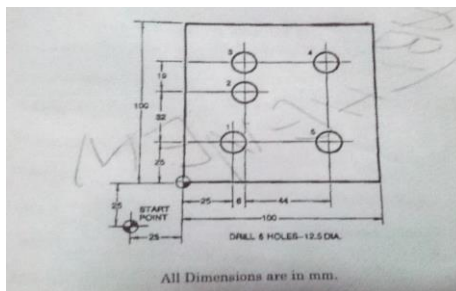


4. With a neat sketch, write critical notes on the construction feature and working of a CNC machine. List their special features of conventional machine. (16) (May/June 2006)
5. Compare manual and computer-assisted part programming. (8) (May/June 2006)
6. Explain, with suitable illustrations, any four ways of representing circle in APT language. (8) (May/June 2006)
7. State a few typical applications where the use of numerical control would be justified. (8) (Nov/Dec-2007)
8. Describe in brief components of a tape-operated NC machine tool. (8) (Nov/Dec-2007)

9. Discuss the advantages of computer numerical control system. (8)
(Nov/Dec-2007)
10. What is the difference between positioning machines and contouring machines? (8) (Nov/Dec-2007)
11. Discuss the importance of slant bed CNC lathe? (8) (April/May-2008)
12. Write short notes on tool magazine, automatic tool changer and palette. (8)
(April/May-2008)
13. Explain the APT system configuration with a neat block diagram. (8)
(April/May-2008)
14. Write the part program for the work piece shown in figure. (April/May-2008)



15. Define CNC and DNC. With a help of a diagram explain the working of NC machine tool. (16) (Nov/Dec-2008)
16. How is manual programming of a NC machine done? (8) (Nov/Dec-2008)
17. Write short notes on APT language. (8) (Nov/Dec-2008)
18. Explain the basis components of an NC system. (8) (Nov/Dec-2009)
19. List down the variance feature of CNC machine. (8) (Nov/Dec-2009)
20. Explain point to point and contour path programming with simple program statements. (8) (Nov/Dec-2009)
21. Write a program (manual part program) to drill five holes in the location shown in Fig.1 and pause at each location where a hole should be drilled. (8)
(Nov/Dec-2009)



22. Discuss the importance design feature of CNC machine tools. (16)
(May/June-2009)

23. Write short notes on; (May/June-2009)

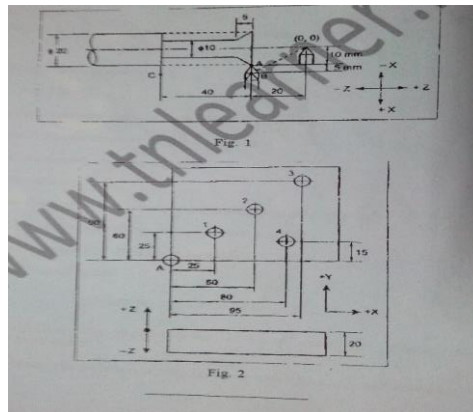
1. NC machine tool classification
2. APT programming structure
3. G and M codes
4. CNC machine vs. conventional machine. (4x4=16)

24. Explain the following in CNC machining (8) (Nov/Dec-2010)

1. Linear interpolation
2. Circular interpolation
3. Cubic interpolation

25. Describe the spindle and feed drives. State the requirement of drives of CNC machine tools. (8) (Nov/Dec-2010)

26. Write a part program for that part show in Fig. 1. (Shown below) (8)
(Nov/Dec-2010)

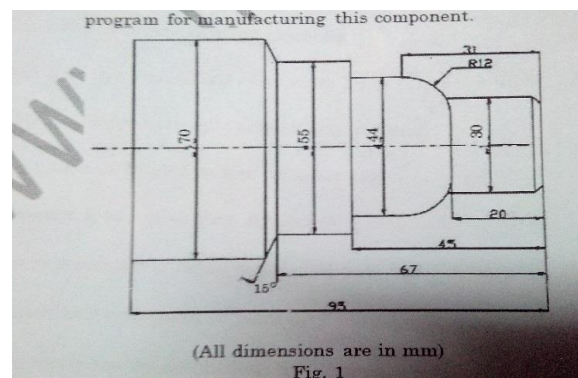


27. Write a part program for drilling hole in the part shown in Fig. 2. (Above) The plate thickness is 20mm. (8) (Nov/Dec-2010)

28. Under what condition of production the numerically controlled machine tool are employed? (6) (April/May-2010)

29. Explain the various elements of NC machine with closed loop control system. (10) (April/May-2010)

30. Explain the main difference between point to point and continuous path type of numerical controlled machine tools. (6) (April/May-2010)
31. List any five motions and control statement of computer assisted NC programming and explain. (10) (April/May-2010)
32. List down the main components of an NC machine tool and explain their function. (8) (April/May-2011)
33. With a neat sketch, explain any one type of axis feed drive of a CNC machine and list its Advantages. (8) (April/May-2011)
34. With a neat sketch, explain the working of ATC. (6) (April/May-2011)
35. A 110mm long cylindrical rod of $\varnothing 75\text{mm}$ is to be turned into a component as shown in Fig.1 using a CNC lathe. Write a CNC program for manufacturing this component. (10) (April/May-2011)



36. Explain the following terms with reference to CNC machine. (8) (Nov/Dec-2011)
1. Tool length compensation.
 2. Cutter radius compensation.
37. With a help of an example explain the difference between point to point and continuous path type of numerically controlled machine tool. (8) (Nov/Dec-2011)
38. Explain the working of a NC machine tool with the help of a diagram. Also state any two advantages and limitations of NC machine. (8) (Nov/Dec-2011)
39. Discuss the functions of the following with reference to NC (8) (Nov/Dec-2011)
1. Linear bearing
 2. Ball screw.

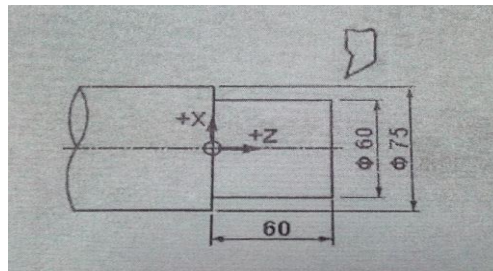
40. What are the special requirements of feed drives of CNC machines? What type of motor is used for feed drives? Name also the method of speed control for each type. (8) (May/June-2012)

50. Sketch any explain the following feature of CNC machine: (May/June-2012)

1. Hydraulic slide ways. (4)

2. Linear bearing with balls. (4)

51.



Write a manual part program to turn the component shown on a CNC lathe from 75mm bar stock. The following data may be assumed:

1. There will be two rough turning and one finish turning. The first cut is with a depth of 3mm for a length of 58mm; the second with a depth of 3mm for a length of 59mm; and the third with a depth of 1.5mm for the full length of 60mm.

2. The shoulder of the work piece is also machined during each cut.

3. The spindle speed is 400rpm and the feed rate is 0.5mm/rev.

Make a free-hand sketch showing relevant points of tool position for each of the three turning operation and then write the manual part program. State also what each line of the program does.

NOTE: If the exact G-codes and M-codes are not known, the student can use his/her own code-number, but the function of such codes must be clearly stated.

(16) (May/June-2012)

52. Write briefly about machining centers. (16) (Nov/Dec-2013)

53. Write brief about open loop, closed loop and adaptive control systems in CNC machine tool. (16) (*Nov/Dec-2013*)
54. What are the requirements of slide ways? (4) (*May/June 2013*)
55. Explain the machining Centre with a neat sketch. (12) (*May/June 2013*)
54. Classify linear interpolation. (4) (*May/June 2013*)
55. Explain the part programming procedure with a suitable example. (12) (*May/June 2013*)



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PART-A

- 1) List the commonly used coordinate systems of CNC machine tools
- 2) Write down the types of statements in APT language?
- 3) Differentiate NC and CNC.
- 4) Give the general form of a geometric statement?
- 5) What is the difference between incremental and absolute system?
- 6) What is the role of computer for NC machine tool?
- 7) Differentiate between fixed zero and floating zero in CNC terminology?
Write short notes on point to point interpolation system?
- 8) Name the various elements of CNC machine?
- 9) What are the classifications of NC machines?
- 10) Compare a closed loop NC system with open loop NC system?
- 11) What is the preparatory function? How is it important in CNC programming?
- 12) Define NC?
- 13) Mention the major elements of NC machines.
- 14) What are the types of motion control system used in NC machines?
- 15) What is mean by APT language?
- 16) State the limitations of CNC machine tools?

- 17) What is a `Canned` cycle?
- 18) Compare a closed loop NC system with open loop NC system?
- 19) What is a preparatory function? How is it important in CNC programming?
- 20) Distinguish between point to point and continuous path systems?
- 21) What do you mean by machining centre with respect to NC machines?
- 22) What is meant by `tool magazine` in a CNC machine?
- 23) What is the function of a subroutine in NC part programming?
- 24) What is meant by numeric control? State their advantages?
- 25) State the differences between CNC and DNC?
- 26) Mention the advantages of stepping motor?
- 27) Define subroutine.