

- Q.27 Explain the working of Automatic Tool changer
 Q.28 Describe the construction and working of Stepper Motor.
 Q.29 What is Cutter Radius Compensation. Give different codes with which the Cutter Radius Compensation is used.
 Q.30 Differentiate between Absolute and Incremental System of Programming.
 Q.31 Explain the common faults in Mechanical Components of CNC Machine.
 Q.32 Define Automation. Discuss various types.
 Q.33 What are DO-Loops? Why are they used?
 Q.34 Classify the Cutting Tools used in CNC Machine on the basis of Tool Material.
 Q.35 What is a Robot. Give different applications of Robot.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain the various online Fault Diagnosis Tools used in CNC Machines.
 Q.37 With the help of neat sketch, explain the construction and working of LVDT. Also give the applications of LVDT.
 Q.38 Prepare a Part program for following Turning Operation as shown in Fig 1

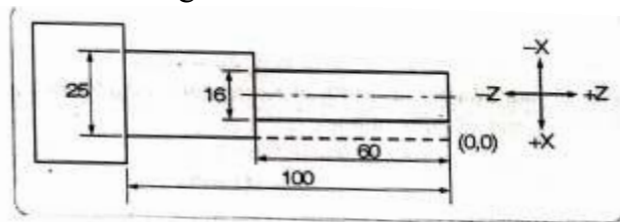


Fig 1

Take Feed = 200 mm / min., speed = 800 rpm, depth of cut = -2 mm per cut . Take absolute system of dimensioning.

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Mech . Engg (MSIL) Subject:- CNC Machines and Automation

Time : 3Hrs.

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SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 A machine is said to have CNC control if
 a) The dimensions of the work piece are measured by sensors while cutting is going on
 b) The tool motion is guided by drum cams and disc cams.
 c) The loading and unloading of the work piece ON and OFF the machine respectively is made automatic
 d) Control is achieved by employment of alphanumeric data
- Q.2 CNC machine lathes have built-in coordinate measuring system. The zero position on the co-ordinate system is called;
 a) Reference point b) Machine zero point
 c) Work zero point d) Program zero point
- Q.3 What is the purpose of using re-circulating ball screw nut mechanism in CNC machine;
 a) To reduce the set up time
 b) For higher surface finish
 c) To remove jerks in machine
 d) To remove backlash

- Q.4 Which type of motor is not suitable for rotary axis of spindle drives of CNC machine tools;
 a) Induction motor b) DC Servo motor
 c) Stepper motor d) Linear motor
- Q.5 Using Anti friction linear guide ways in CNC machine tools, all of following benefits except ;
 a) Less heat generation
 b) Traverse speed
 c) More damping capacity
 d) Reduced stick slip
- Q.6 An ATC plays a significant role in reducing;
 a) Tool change time b) Idle time
 c) Machining time d) Control time
- Q.7 In a CNC machine, which kind of switches examine or detect the presence of an item or object without making contact with them;
 a) Proximity Switches
 b) Limit Switches
 c) Photo-electric Switches
 d) Mechanical Switches
- Q.8 What does an Encoder do;
 a) Senses mechanical motion
 b) Provides information concerning position, velocity and direction.
 c) Converts analog into digital information
 d) All of the above
- Q.9 Incremental encoder is capable of sensing
 a) Direction of movement of the table.
 b) Speed of movement of the table
 c) Speed of rotation of spindle motor.
 d) Speed of rotation of lead screw

- Q.10 Which one of the following is the command for feed motion in straight line;
 a) G00 b) G01
 c) G10 d) G100

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 A punch Tape contain _____
- Q.12 CNC Machine is mostly used for _____ production.
- Q.13 _____ Axis is parallel to Spindle Aaxis.
- Q.14 Coefficient of Friction is reduced in CNC Machine due to _____ action.
- Q.15 _____ Motor is generally used to control the Axis in CNC Machine.
- Q.16 MCU Stands for _____
- Q.17 Servo system is an example of _____ loop system.
- Q.18 Preset Tools are used to avoid wastage of _____ time.
- Q.19 _____ Codes prepares the MCU to perform a specific mode of operation.
- Q.20 Programmable Automation is adopted for _____ Production.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Define NC System. What are the different components of NC System.
- Q.22 Give difference between NC and CNC Machine.
- Q.23 Explain the Principles of designating the Axis of CNC Machine.
- Q.24 Describe the Recirculating Ball Screw type slideways.
- Q.25 Explain the Feedback devices used in CNC Machine.
- Q.26 Give difference between Preset and Qualified Tools.