Q.30 Explain how a cutter radius command is used in a part program.
Q.31 Explain the common faults in Mechanical Components of CNC Machine.
Q.32 Explain the various fields of Automation.
Q.33 What is Subroutine? Give its application.
Q.34 Explain the construction and working of Stepper Motor.
Q.35 Describe how a magnetic tape is prepared.

Section-D

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

Q.36 Prepare a Part program for following Drilling Operation as shown in Fig 1.

Take z = 00 at the surface of work piece and the cutting tool is positioned above the work piece surface. Thickness of work place is 30mm. Assume Spindle Speed = 1200 RPM and Feed rate = 50 mm/Min Assume all other suitable parameters.

Q.37 Describe the various fault finding techniques used in CNC machine.
Q.38 With the help of neat sketch, explain the construction and worming of LVDT. Also give the applications of LVDT.

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Sem- 5 Mechtronics
Sub : CNC Machines & Automation

Time : 3 Hrs. **M.M. : 100**

SECTION-A

Note: Multiple Choice Questions. All Questions are compulsory. (10x1=10)

Q.1 Code G90 describes;
a) Absolute positioning
b) Incremental positioning
c) Circular interpolation clockwise
d) Circular interpolation counter clockwise

Q.2 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.3 The purpose of a feedback device in a CNC machine tool is to provide information of;
a) Which components is being produced, to the operator
b) What percentage of Part Program has been completed?
c) Type of operations, currently running to the operator
d) Tool position or speed to Machine Control

Q.4 Which of these is not a Input Device:
a) Keyboard b) Monitor
c) Floppy Disc d) Pen Drive

Q.5 G words are
a) Spindle Speed Words
b) Feed Rate Words
c) Tool Change Words
d) Preparatory Function Words

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 The Machine Control Unit (MCU) is
a) Brain of the machine
b) Heart of the machine
c) Both A & B
d) None

Q.8 CNC machines
a) Increases production
b) Improves quality
c) Both A & B
d) None

Q.9 The Z-axis of a CNC machine is
a) Spindle Axis b) Inclined Axis
c) Vertical Axis d) None

Q.10 Repairing of a CNC machine needs
a) Highly skilled technician
b) Skilled technician
c) Unskilled technician
d) None

Section-B

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

Q.11 The program is fed in CNC Machine with the help of_____.
Q.12 A CNC Machine requires_____.
Q.13 N.C. stands for _____.
Q.14 Language used in PLC programming is _____.
Q.15 CAD stands for _____.
Q.16 T words are used for _____.
Q.17 G40 Stands for _____.
Q.18 R.P.M. is measured with the help of_____.
Q.19 AGV stands for _____.
Q.20 With the help of Automation production is _____.

Section-C

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

Q.21 Explain the construction of a CNC Machine.
Q.22 Describe any two types input devices used in CNC Machine.
Q.23 Explain the different types of MCU used in CNC Machines.
Q.24 Classify a CNC cutting tool on the basis of tool material.
Q.25 What are Transducers? Explain any one Transducer.
Q.26 Give difference between Open Loop and Closed Loop system.
Q.27 Explain the various programming formats used in CNC part program.
Q.28 Describe the Tool change process in a CNC Machine.
Q.29 Describe Point to Point Control System with example.