

Roll No.:

SGT UNIVERSITY

END TERM THEORY EXAMINATION JULY-2022

Faculty/College of Study:	Engineering & Technology	Year/Semester:	6 th Semester
Program:	B. Tech. (ME)	Duration:	03:00 Hrs
Course/Subject:	CNC Programming	Maximum Marks:	60
Course/Subject Code:	13030611	Batch:	2019

Instructions:-

1. Write Your Roll No. on the Question Paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. All Questions are compulsory. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

SECTION-A

(Very Short Answer Type Questions)

Note: All Questions are compulsory: -

[12X1=12 Marks]

S. No.	Question	Marks Allotted
1	What do you mean by DNC?	1
2	Mention some input methods used for an early NC machine.	1
3	Name different components of a CNC machine.	1
4	Name different types of actuators used in a CNC machine.	1
5	What is the purpose of lead screw in a CNC machine?	1
6	Define open loop control in NC machines.	1
7	What are G codes?	1
8	Give the G codes for absolute co-ordinate programming and counter-clockwise circular interpolation.	1
9	What is subroutine?	1
10	Give 2 methods to define a line in APT programming.	1
11	What do you mean by computer assisted part programming?	1
12	How do we use incremental programming method in APT programming?	1

SECTION-B
(Short Answer Type Questions)

Note: All Questions are compulsory: -

[4X2=8 Marks]

S. No.	Question	Marks Allotted
13	What are the various applications of CNC machines?	2
14	Briefly define ATC in the context of CNC machine.	2
15	What do you mean by tool compensation in manual part programming of CNC machines?	2
16	What is CAD/CAM based programming?	2

SECTION-C
(Descriptive Answer Type Questions)

Note: All Questions are compulsory: -

[4X4=16 Marks]

S. No.	Question	Marks Allotted
17	With the help of a suitable block diagram, describe the structure of a CNC machine. OR With the help of suitable examples, differentiate point-to-point and continuous path tool movements in CNC machine tool.	4
18	Name the feed drives that are used in CNC machine tools. Explain any one. OR Briefly explain the general structure of a CNC machining center. Also explain the machine zero and requirement of zero offset in a CNC machine.	4
19	What is part program ? Write the steps to make a part program for a typical CNC machine tool to make a stepped cylindrical component. Take any example you desire. OR Explain the differences between absolute and incremental programming systems in CNC application. Write the suitability of the two systems mentioned above.	4
20	Write the steps to make an APT program for a typical CNC machine tool to mill a particular shape of your choice. OR Give 3 different syntax for defining a point, line and circle in APT coding.	4

SECTION-D

(Long Answer Type Questions)

Note: All Questions are compulsory: -

[4X6=24 Marks]

S. No.	Question	Marks Allotted
21	<p>Write atleast ten applications of CNC machine tools in manufacturing industry. Also mention its limitations.</p> <p style="text-align: center;">OR</p> <p>Differentiate between open loop and closed loop control in machines. Which type of control is used in CNC machines and why? Explain in detail</p>	6
22	<p>Explain in detail about different types of sensors used in feedback mechanism of a CNC machine. Give their names and explain them in detail.</p> <p style="text-align: center;">OR</p> <p>Explain the function and structure of a recirculating ball mechanism in lead screw used in a CNC machine. Also define axes of a CNC machine.</p>	6
23	<p>What are the preparatory and miscellaneous functions used in part programming? Name any five G-codes and five M-codes with their functions.</p> <p style="text-align: center;">OR</p> <p>The component to be drilled is shown in Figure. Develop the part program without and with the use of canned cycle. Assume any other relevant data required.</p> <div style="text-align: center;"> </div>	6
24	<p>Write the geometry and motion statements for milling the part as identified in figure. Assume any other relevant data required.</p> <div style="text-align: center;"> </div>	6