

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B. Tech. Winter 2019 - 20 Examination

Semester: 5/7

Subject Code: 03109303

Subject Name: Computer Aided Design and
Computer Aided Manufacturing

Date: 03/12/2019

Time: 10:30am to 01:00pm

Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Each of one mark) All questions are compulsory (15)

1. Line Drawing Algorithm “DDA” stands for :
2. List Input and output devices in Computer Graphics
3. Define machine zero.
4. Define “Scan Conversion”
5. Define Pixel
6. ICG stands for _____
7. What is the function of MCU
8. CNC code for home position is
9. A 2 ½ D CAD model will have _____ thickness.
10. Name any one CAD/CAM software.
11. In the following geometric modelling techniques, which cannot be used for FEA

a Wireframe	b Solid	c Surface	d None of these
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12. Which of the following does not belong to the family of conics?

a Parabola	b Hyperbola	c Ellipse	d Line
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13. The fillet command creates :

a Bevel edges	b Round corners	c Smooth edges	d Smooth corners
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14. M05 function of “M” code is used for:

a Tool Change	b Spindle Start CW	c Spindle Start CCW	d Spindle Stop
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15. In a CNC program block N002 G02 G91 X40 Z40....., G02 and G91 refers to

a Circular interpolation in counterclockwise direction and incremental dimension	b Circular interpolation in counterclockwise direction and absolute dimension	c Circular interpolation in clockwise direction and incremental dimension	d Circular interpolation in counterclockwis e direction and absolute dimension
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Q.2 Answer the following questions. (Attempt any three) (15)

- A) State limitations of wire-frame modeling
- B) State the limitations of DDA algorithm.
- C) With a neat sketch explain construction and working of a ball screw nut arrangement used in a CNC machine.
- D) Explain with neat sketch cutter radius compensation in CNC Milling Programming.

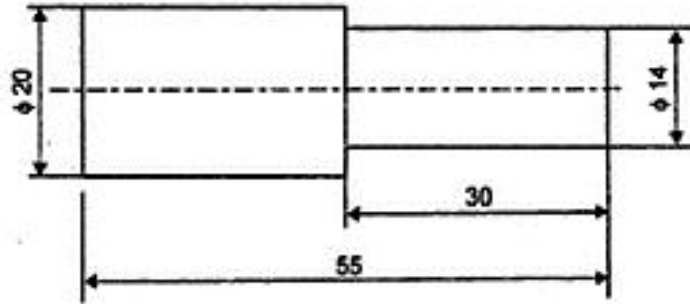
Q.3 A) Using transformation matrix determine the new coordinates of triangle A (10,20), B (30,40) and C (10,60) after it is rotated 60 degree clockwise about A. (07)

- B) Which advantages and limitations one should take care of while making a choice of implementing CNC machine tools in industry? (08)

OR

- B) Explain the concept of CIM wheel. (08)

- Q.4** A) Write a complete part program using appropriate G and M codes for simple turning the component as shown in Figure below. Assume suitable data for speed, feed and depth of cut. The raw material is $\phi 20 \times 60$ mm bar. Only use G01 codes. **(07)**



OR

- A) Explain CSG as a solid modeling scheme with an example of CSG tree. **(07)**
- B) Determine the pixels for a straight line connecting two points (20, 10) and (30, 18) using Bresenham's algorithm **(08)**