



Paper id: 251042

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**BTECH**  
**(SEM VI) THEORY EXAMINATION 2024-25**  
**CAD/CAM**

**TIME: 3 HRS**

**M.MARKS: 70**

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

**SECTION A**

**1. Attempt all questions in brief.**

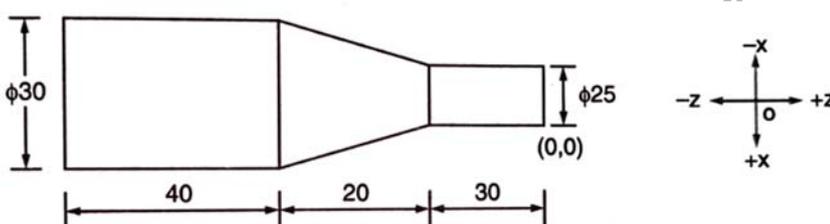
**02 x 7 = 14**

Q no.	Question	CO	Level
a.	What do you understand by CAD/CAM?	1	K2
b.	What is clipping?	1	K1
c.	What are the different types of geometric modeling.	2	K1
d.	What are rational curves? How do they differ from non-rational curves?	3	K2
e.	Differentiate between CNC and DNC machines.	4	K2
f.	What is the function of various G codes and M codes?	4	K1
g.	Explain the Classification and coding.	5	K2

**SECTION B**

**2. Attempt any three of the following:**

**07 x 3 = 21**

a.	Using Bresenham's line algorithm, find the pixel positions along the line path between the end points (20, 10) and (30, 18) with a slope of 0.8. Take $D_x = 10$ and $D_y = 8$ .	1	K3
b.	Explain constructive solid geometry. What is the role of primitives and Boolean operations in CSG?	2	K2
c.	Discuss various types of quadric and superquadric surfaces available in the graphics package. What do you understand by the Blobby Objects?	2	K2
d.	Write a program for taper turning a rod of diameter 30 mm as shown in figure.  	4	K3
e.	What do you understand by Group Technology (GT), list the advantages of GT. Also explain the importance of Adaptive control in machining operations.	5	K2

**SECTION C**

**3. Attempt any one part of the following:**

**07 x 1 = 07**

a.	A triangle has vertices (0, 0), (5, 5), and (8, 8). The following transformations are done in sequence on this triangle: (i) First it is translated by 3 unit in y direction. (ii) Then triangle is rotated by $45^\circ$ in anticlockwise direction. (iii) Then triangle is scaled by 3 units in x- direction. Find the final coordinates of triangle.	1	K3
b.	Generate a Bezier curve passing through control points. (2, 0), (5, 4), (6, 3) and (4, 3).	2	K3



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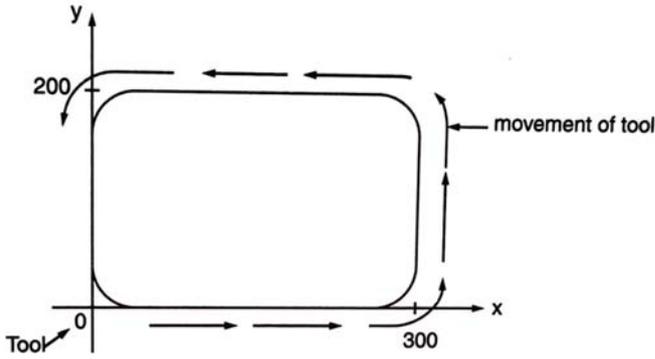
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4. Attempt any one part of the following:

07 x 1 = 07

a.	<p>For a work piece shown in the figure, end milling operation has to be performed.</p>  <p>The diameter of end milling cutter is 25 mm. Feed rate is 50 mm per minute. Assume target point of tool to be located at <math>x = -20</math> mm, <math>y = -20</math> mm, <math>z = 10</math> mm. Write part program for the above operation.</p>	4	K3
b.	Distinguished between interpolation and approximation method for generating control points of splines. Explain the B-Spline curves and its properties.	2	K2

5. Attempt any one part of the following:

07 x 1 = 07

a.	Explain the Product Flow Analysis and Cellular Manufacturing with suitable example.	5	K2
b.	What do you mean by Graphics Standards? Explain GKS, STEP and IGES standards.	3	K2

6. Attempt any one part of the following:

07 x 1 = 07

a.	What do you mean by Boundary representation technique. Explain with example.	2	K2
b.	What is APT? Write main features of APT. Discuss Macro statements used in APT with suitable examples.	4	K2

7. Attempt any one part of the following:

07 x 1 = 07

a.	A square ABCD having coordinates A (0, 0), B (3, 0), C (3, 3), D (0, 3) is subjected to shearing. The shearing factors are 2 and 4 in x and y direction respectively. Find final coordinates.	1	K3
b.	Describe the principle and the different types of flexible manufacturing system (FMS). List the advantages and disadvantages of FMS.	5	K2