Q. P. Code: 25695

**(3 Hours)**   **Max. Marks: 80**

Note:

1. **Question 1 is Compulsory**
2. Solve any three from remaining five
3. Figures to right indicate full marks
4. Assume suitable data if necessary

Question No.		Max. Marks
Q.1	a) Explain explicit and implicit representations of curves and compare parametric and non parametric representations.	10
	b) Explain rapid prototyping. State its advantages and limitations.	10
Q.2	a) Plot the Beizer curve having endpoints P_0 (1,3) and P_3 (7,2). The other control points are P_1 (5,6) and P_2 (6,0). The characteristics polygon is drawn in the sequence $P_0 - P_1 - P_2 - P_3$.	10
	b) What do you understand by complex engineering problem? With suitable example, explain the complexities involved and the tools chosen to solve it.	10
Q.3	a) Explain Stereo-lithography	10
	b) Explain 3D rotation transformation @ Z axis.	10
Q.4	a) Explain Adaptive control system by explaining ACC and ACO	10
	b) Write a complete part program for machining the component shown in figure. Use roughing and finishing cycles for part programming. Assume spindle speed as 200 rpm and feed rate as 0.5 mm/rev.	10

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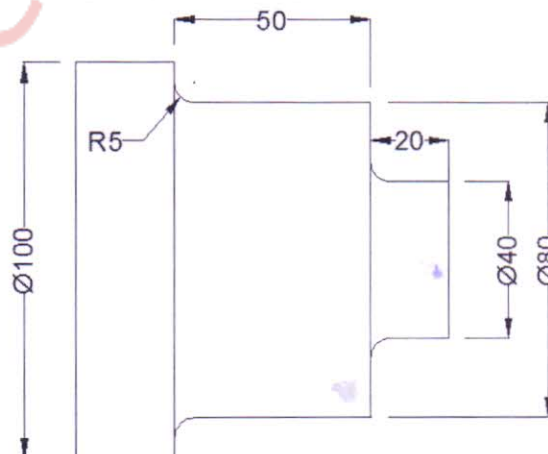
Q.5 a) Determine the mirror coordinates of the triangle having coordinates A(2,4), 10
        B(4,5) and C (2,6) about the line $y = 0.5(x+4)$.

    b) Write a complete APT program for the component shown in figure. The
        component is 5mm thick. Assume spindle spedd as 1000 rpm and feed as 0.3
        mm/rev.

10
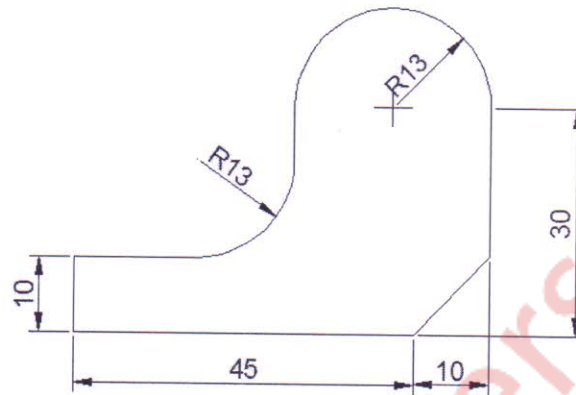
Q.6   Write short note on any **Four**:   20

        a) Obstacles to CIM
        b) Feature based Modeling.
        c) Painter Algorithm
        d) Benefits of Artificial Intelligence
        e) Industrial Robots and its application in manufacturing

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