



(3 Hours)

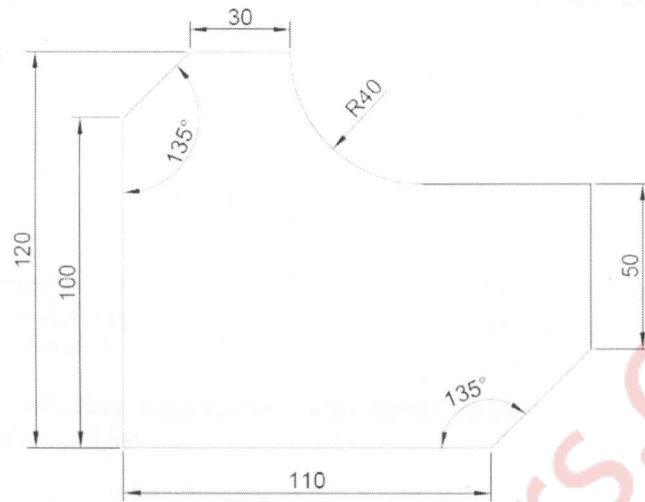
Max. Marks: 80

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

- Q.1
- a) Explain Cohen-Sutherland Line clipping algorithm. 5
 - b) Explain the roughing and finishing canned cycle for turning. 5
 - c) Explain rotation with respect to 3D transformation. 5
 - d) Explain the significance of rapid prototyping. 5
- Q.2
- a) Plot the bezier curve having end points $P_0 (1, 1)$ and $P_3 (3, 1)$. The other control points are $P_1 (2, 1)$ and $P_2 (4, 3)$. Also find the midpoint of the curve. 10
 - b) Explain Feature based Modeling 10
- Q.3
- a) Describe the transformation M_K of a object about a link K which makes an angle ϕ with x -axis. It has slope m and y intercept as $(0, C)$ with y -axis as shown in Figure. 10
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- a) Explain Direct Numerical Control(DNC) 10
- Q.4
- a) What is the need for concatenation of transformation? Explain with example why the homogeneous coordinate system is generally used in graphics, in particular for software implementation. 10
 - b) Explain the procedure of kinematic analysis of a structural system with an example. 10

- Q.5 a) Write a part program in APT for the component shown in Fig using end mill cutter of 20mm diameter. Clearly show the axes system chosen with a sketch and the direction of the cutter for the motion statements. 10



- b) Socio-Techno-Economic aspects of CIM. 10

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

- a) Use of CAE in Engineering Analysis.
- b) Constructive solid geometry and Boundary representation
- c) Automated Storage/Retrieval System(AS/RS)
- d) 3D Printing
- e) APT statements
