

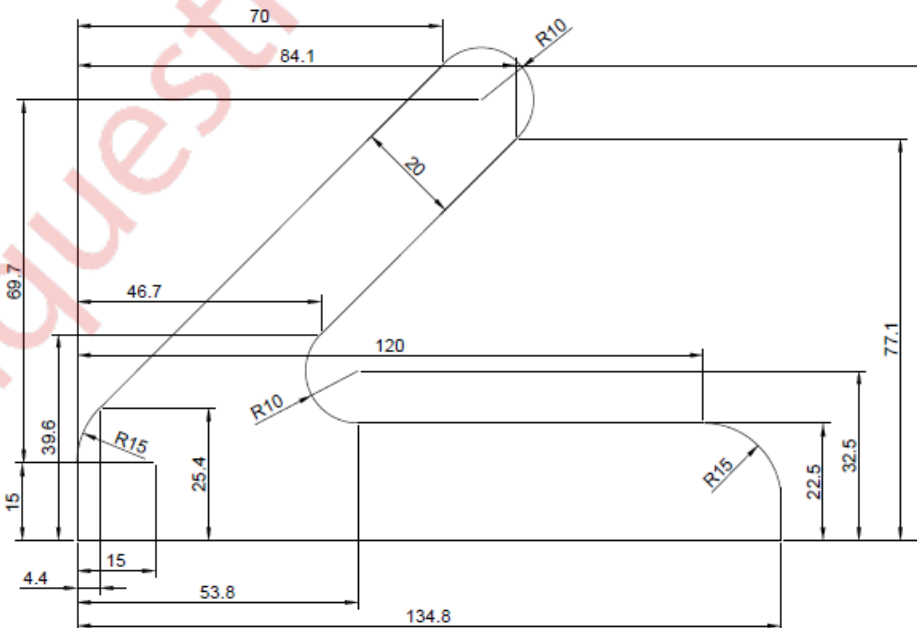
(3 Hours)

Max. Marks: 80

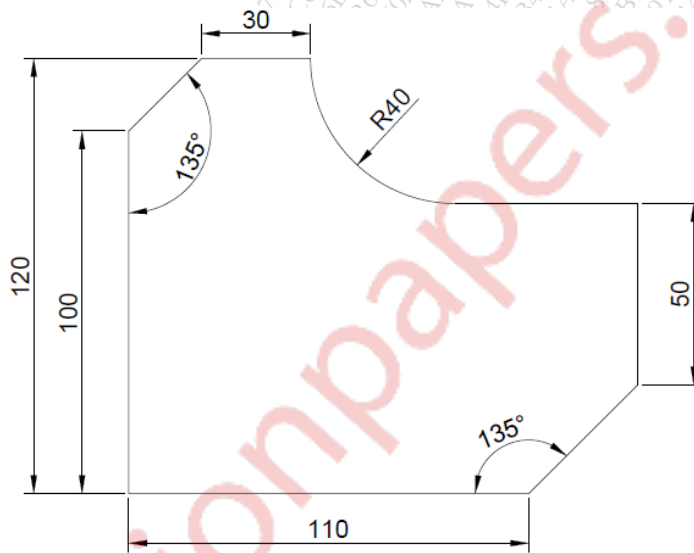
Note:

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 an algorithm for hidden surface removal | 5 |
| b) Explain reflection with respect to 3D transformation | 5 |
| c) Explain the significance of rapid prototyping in product development and testing | 5 |
| d) Explain the roughing and finishing canned cycle for turning. | 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 Fused Deposition Modelling | 10 |
- Q.3
- | | |
|---|----|
| a) Write a complete part program to machine the external contour for the component shown. | 10 |
|---|----|



- b) Explain Adaptive control system by explaining ACC and ACO 10
- Q.4 a) A rectangle ABC has vertices A (5, 10), B (20, 10) and C (20, 20). This triangle is to be reflected about a line P (25, 20) and Q (10, 30). Determine the new triangle position. 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) Explain the basic components of CIM system. 10
- Q.6 Write short note on any **Four**: 20
- Benefits of AI
 - Constructive solid geometry and Boundary representation
 - Feedback Devices
 - Advantages of Computer aided part programming as compared to manual part programming
 - Photolithography
