(3 Hours)                                                     Max. Marks: 80
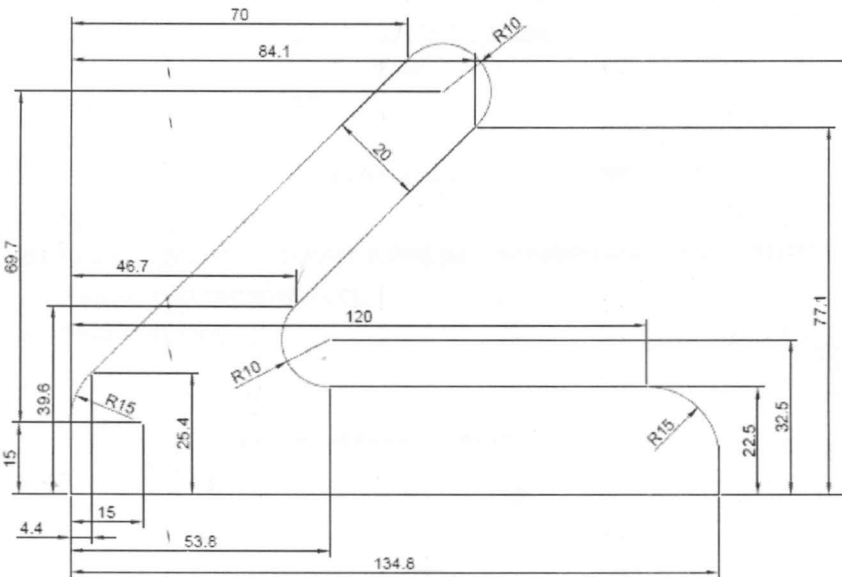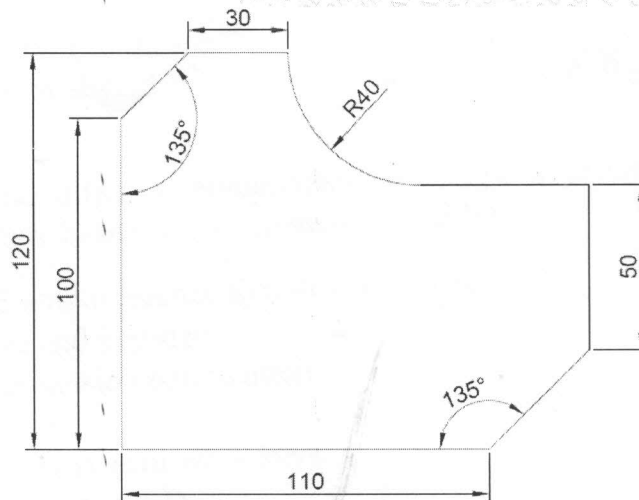
Note:

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 beizer curve having end points $P_0$ (1, 1) and $P_3$ (3, 1). The other      10
control points are $P_1$ (2, 1) and $P_2$ (4, 3). Also find the midpoint of the
curve.

b) Explain Fused Deposition Modelling                                                       10

Q.3    a) Write a complete part program to machine the external contour for the       10
component shown.

      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      10
      triangle is to be reflected about a line P (25, 20) and Q (10, 30).
      Determine the new triangle position.

      b) Explain the procedure of kinematic analysis of a structural system with      10
      an example.

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



      b) Explain the basic components of CIM system.      10

Q.6      Write short note on any **Four**:      20
      a) Benefits of AI
      b) Constructive solid geometry and Boundary representation
      c) Feedback Devices
      d) Advantages of Computer aided part programming as compared to
      manual part programming
      e) Photolithography

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