1T01417 - B.E.(MECHANICAL)(Sem VII) (R-2012) (CBSGS) / 42802 - CAD/CAM/CAE

**(3 Hours)**   **Max. Marks: 80**
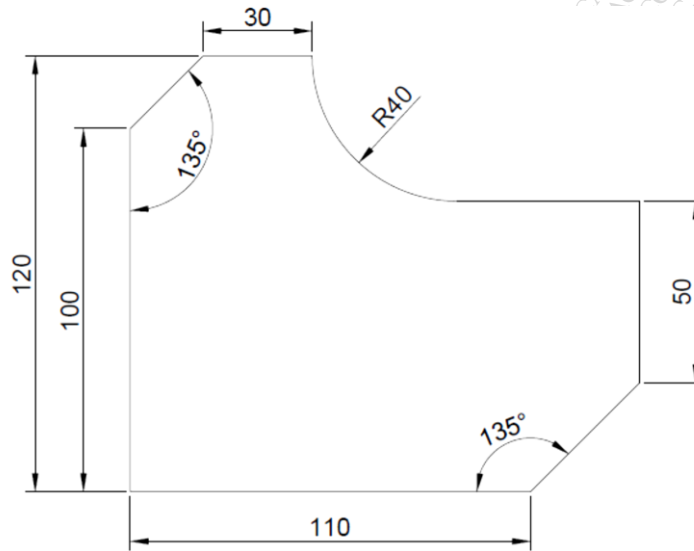
Note:
  1. **Question 1 is Compulsory**
  2. Solve any three from remaining five
  3. Figures to right indicate full marks
  4. Assume suitable data if necessary

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 beizer curve having end points P_0 (1, 1) and P_3 (3, 1). The   **10**
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

Q.3   a) Describe the transformation M_K of a object about a link K which makes   **10**
an angle φ with x-axis. It has slope m and y intercept as (0, C) with y-axis
as shown in Figure.
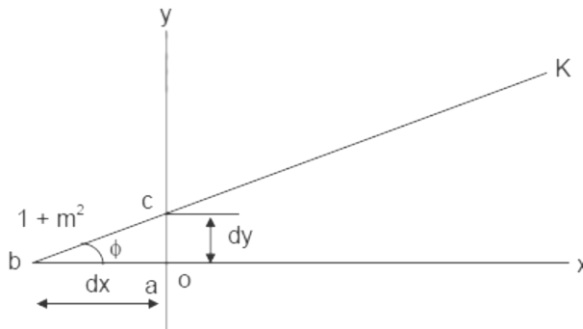
a) Explain Direct Numerical Control(DNC)   **10**

Q.4   a) What is the need for concatenation of transformation? Explain   **10**
with example why the homogeneous coordinate system is
generally used in graphics, in particular for software
implementation.

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

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

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