B.E. (Mechanical) (Sem - VII) (CCB) Date - 18/11/19

[3 Hours] [Total 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	Explain any **Four**:	20
	a) Feature based modeling technique used for 3D modeling.	
	b) Procedure of creating scripts for API.	
	c) Turning Canned Cycle.	
	d) CIM tools used with reference to a manufacturing industry.	
	e) Application of RP in Science and Medicine.	
Q.2	a) Explain Cohen-Sutherland Clipping Algorithm.	10
	b) A triangle with vertices A (1 , 1) , B(2 ,1) and C (2 , 3) has to be rotated by 30° counter clockwise about a point P (3 , 2). Determine the composite transformation matrix and the new coordinates of the triangle.	10
Q.3	a) Plot a Bezier curve having control points as P_0 (1, 2), P_1 (3, 4), P_2 (6, -6) and P_3 (10, 8). Take a step size of 0.2. Also find the midpoint of the curve.	10
	b) Explain Fused Deposition Modelling with its advantages, disadvantages and application.	10
Q.4	a) Find the transformed coordinates when a line (3, 4 , 1), (4 , 2, 2) is rotated about Z axis by an angle of 45° in anticlockwise direction.	10
	b) Differentiate between	
	i) SLA and SLS	10
	ii) Absolute and Incremental programming	

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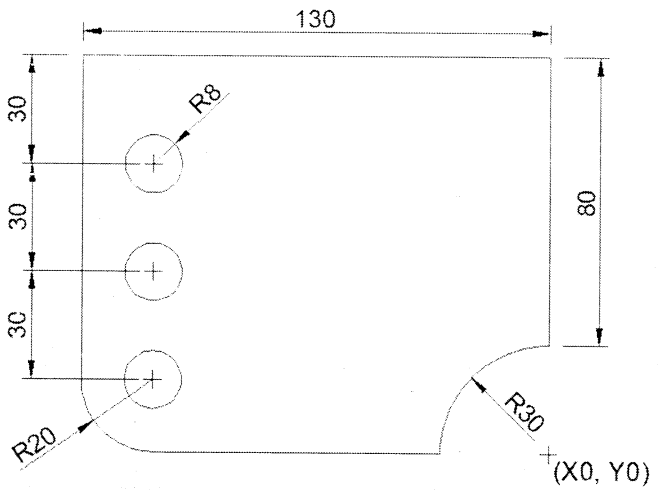
Q.5 a) Explain the need of CIM and its database requirements. 10

b) Write a CNC part program using G and M codes for contouring a component of thickness 10mm. Also drill holes of 16mm diameter as shown in figure. Assume cutter speed as 15m/min and feedrate as 0.2 mm/rev. 10



Q.6 Write short note on: 20

a) Window to Viewport Mapping

b) Artificial Intelligence in Design and Manufacturing

c) Fixture Component Technology

d) Parameter Optimization

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