

B.E. MECH SEM VII CBCS Exam Seat No. 

[3 Hours]

[Total Marks : 80]

18 NOV 2019

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.

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b) A triangle with vertices A ( 1 , 1 ) , B ( 2 , 1 ) and C ( 2 , 3 ) has to be rotated by  $30^\circ$  counter clockwise about a point P ( 3 , 2 ). Determine the composite transformation matrix and the new coordinates of the triangle.

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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.

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b) Explain Fused Deposition Modelling with its advantages, disadvantages and application.

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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  $45^\circ$  in anticlockwise direction.

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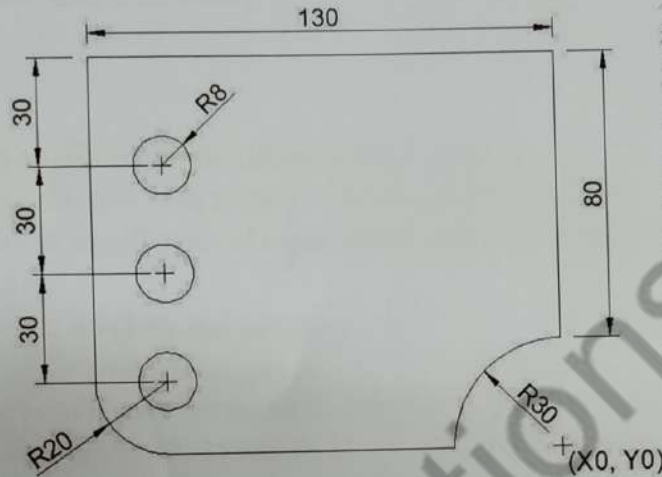
b) Differentiate between

i) SLA and SLS

10

ii) Absolute and Incremental programming

- 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
- Window to Viewport Mapping
  - Artificial Intelligence in Design and Manufacturing
  - Fixture Component Technology
  - Parameter Optimization