

Paper Id: **140729**

Roll No:

**BTECH**  
**(SEM VII) THEORY EXAMINATION 2019-20**  
**CAD/CAM**

*Time: 3 Hours**Total Marks: 70***Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 7 = 14**

- a. List out input and output devices of CAD.
- b. State the advantages of rapid prototyping.
- c. Write the full form of GKS and IGES. Define IGES.
- d. Differentiate between CNC and DNC machines.
- e. What is Bezier curve? Write its purpose.
- f. What do you mean by iso parametric formulation of FEM solutions?
- g. Define Robot and discuss the various types of Robot configurations

**SECTION B****2. Attempt any three of the following:****7 x 3 = 21**

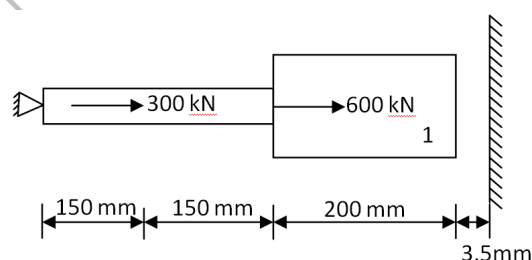
- a. Discuss various types of quadric and superquadric surfaces available in the graphics package. What do you understand by the Blobby Objects?
- b. Derive the parametric equation for Hermite cubic curve? List out its characteristics
- c. Write short note on,
  - i. JIT
  - ii. FMS
- d. Write word address formate part-programming for drilling 2 similar holes in a rectangular plate of thickness 5 mm at points with co-ordintaes (10,25) and (55,60) and also show the part on diagram. BLU = 0.01 mm. Origin and start point is (0,0). Spindle speed 1675 rpm and feed 200 mm/min.
- e. Define Robot and discuss the various types of Robot configurations.

**SECTION C****3. Attempt any one part of the following:****7 x 1 = 7**

- (a) What do you understand by interpolation and approximation spines? Determine and plot the blending functions for Bezier curve.
- (b) What is transformation? Explain the terms; tranalation, rotation, scaling and reflection. Write their transformation also.

**4. Attempt any one part of the following:****7 x 1 = 7**

- (a) Using Bresenham's line algorithm, find the pixel positions along the line path between end points (20, 10) and (30, 18) with a slope of 0.8 and Dx = 10, Dy = 8.
- (b) Determine the nodal displacement, element stresses and support reactions for the bar shown in figure. The cross-sectional areas are mm<sup>2</sup> and 400 mm<sup>2</sup>. Youngs modulus E = 200 x N/m<sup>2</sup>.



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**5. Attempt any *one* part of the following:****7 x 1 = 7**

- (a) What is APT? Write main features of APT. Discuss Macro statements used in APT with suitable examples.
- (b) Write down the shorts notes on the following:
  - (i) Automated Flow Lines
  - (ii) Automated Guided Vehicles (AGVs)

**6. Attempt any *one* part of the following:****7 x 1 = 7**

- (a) Compare NC machines Vs Robots? Also briefly write types and generations of robots with applications.
- (b) Define computer aided process planning. Discuss its advantages and disadvantages. Also discuss under what kind of environment should generative process planning be used instead of variant process planning?

**7. Attempt any *one* part of the following:****7 x 1 = 7**

- (a) What is the basic principle of Rapid prototyping? Explain the general features of rapid prototyping techniques with examples.
- (b) Describe the principle of flexible manufacturing systems. Why is a flexible manufacturing system capable of producing a wide range of lot sizes? Explain.

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