

Paper Id: **140729**Roll No:

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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

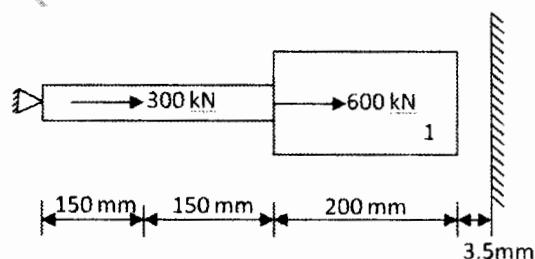
1. Attempt *all* questions in brief. 2 x 7 = 14
- List out input and output devices of CAD.
 - State the advantages of rapid prototyping.
 - Write the full form of GKS and IGES. Define IGES.
 - Differentiate between CNC and DNC machines.
 - What is Bezier curve? Write its purpose.
 - What do you mean by iso parametric formulation of FEM solutions?
 - Define Robot and discuss the various types of Robot configurations

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21
- Discuss various types of quadric and superquadric surfaces available in the graphics package. What do you understand by the Blobby Objects?
 - Derive the parametric equation for Hermite cubic curve? List out its characteristics
 - Write short note on,
 - JIT
 - FMS
 - Write word address format part-programming for drilling 2 similar holes in a rectangular plate of thickness 5 mm at points with co-ordinates (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.
 - Define Robot and discuss the various types of Robot configurations.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7
- What do you understand by interpolation and approximation spines? Determine and plot the blending functions for Bezier curve.
 - What is transformation? Explain the terms, translation, rotation, scaling and reflection. Write their transformation also.
4. Attempt any *one* part of the following: 7 x 1 = 7
- 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 $D_x = 10$, $D_y = 8$.
 - Determine the nodal displacement, element stresses and support reactions for the bar shown in figure. The cross-sectional areas are mm² and 400 mm². Young's modulus $E = 200 \times \text{N/m}^2$.



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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.

MANISH KUMAR JHA

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