

**7E4060**

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**7E4060****B. Tech. VII Semester (Main/Back) Examination, Nov-Dec-2011****Mechanical Engineering****7ME1 Computer Aided Design****(Common for PI 6.3)****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any **five questions** selecting **one question** from **each unit**. All questions carry **equal marks**. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

**Unit - I**

1. a) Explain application of computers in Mechanical Engineering Design. (8)
- b) Explain algorithms for drawing circle and ellipse. (8)

**OR**

1. Explain various graphics input and output devices with neat sketches. (16)

**Unit - II**

2. a) What are the advantages and disadvantages at wire frame modeling? (8)
- b) Generate a parametric circle at radius 2 with center located at (2, 3). Also give neat sketch. (8)

**OR**

2. a) What are Bezier cubic curves? Derive their properties. (8)
- b) Write short note on :
  - i) Parametric representations of curves.
  - ii) First order continuity of curves
  - iii) Parametric representative of Ellipse. (2×4=8)

### Unit - III

3. a) Derive the parametric representation of Hermite Cubic Curve. (12)  
b) Explain briefly regularized Boolean operations. (4)

OR

3. a) Compare B - rep and CSG techniques of solid modeling.  
b) Show that a bi - cubic surface patch degenerates to a cubic spline if the four corner points of the patch are collapsed to two. (16)

### Unit - IV

4. a) Explain oblique projections. Define vanishing points in perspective view of an object. (8)  
b) Write short note on the following :  
i) Transformation of point  
ii) Axonometric projection (2×4=8)

OR

4. a) What is two dimensional transformation? Discuss translation and scaling with suitable examples. (8)  
b) What is the difference between scaling and rotation. A polygon can be selected by applying :  $x' = x.sx + xf(1-sx)$  and  $y' = y.sy + yf(1-sy)$  prove it. (8)

### Unit - V

5. Explain the cohen sutherland Algorithm used for line segment clipping with a suitable example. (16)

OR

5. a) What do you understand by viewing transformation? (8)  
b) Differentiate between window and view port. (8)