Hall Ticket No | | | | | | | | | | | Question Paper Code: BCC001

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech I Semester End Examinations (Regular) - January/February, 2018

Regulation: IARE–R16

ADVANCED CAD
(CAD/CAM)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) The vertices of a triangle are situated at points (10,20), (25,45) and (35,25). Find the coordinates of the vertices if the triangle is rotated by 30^0 in counterclockwise direction about its centroid. **[7M]**

   (b) Explain the concept of obtaining a reflection about an arbitrary line starting from the reflection about an axis. **[7M]**

2. (a) Explain Z-buffer algorithm for hidden surface removal. **[7M]**

   (b) Differentiate between model coordinate system, working coordinate system and screen coordinate system. **[7M]**

UNIT – II

3. (a) Find the midpoint of a Hermite cubic spline with the two points as (1,1) and (6,5) and the tangent vectors as (0,4) and (4,0). **[7M]**

   (b) Derive the parametric equation of cubic Bezier curve. **[7M]**

4. (a) Differentiate between C^0, C^1 andC^2 order of continuity for joining two curves. **[7M]**

   (b) The coordinates of four points are given by (2,2), (2,3), (3,3) and (3,2). Find the equation of the Bezier curve. Also find points on the curve for u=0.25, 0.5, 0.75. **[7M]**

UNIT – III

5. (a) Derive the parametric equation of ruled surface. **[7M]**

   (b) Explain the boundary conditions of a rectangular surface patch. **[7M]**

6. (a) Differentiate between analytic and synthetic surface. **[7M]**

   (b) Describe the different representation schemes of curve. **[7M]**

UNIT – IV

7. (a) Find the equation of the Bezier surface with four control points P00(0,0), P10(4,0), P01(0,2) and P11(4,2). Also find the surface vectors and its midpoint. **[7M]**

   (b) Draw a composite Bezier surface of zero order and first order continuity. **[7M]**

8. (a) Derive the parametric equation of coons surface. **[7M]**

   (b) Explain the following surface manipulation. **[7M]**

   i. Trimming

   ii. Segmentation

UNIT – V

9. (a) Differentiate between Boundary representation and Constructive Solid Geometry echniques in solid modeling. **[7M]**

   (b) Draw a detailed sketch of Constructive Solid Geometry tree with suitable example. **[7M]**

10. (a) Explain initial graphics exchange specification (IGES) file structure. **[7M]**

    (b) In what way does VRML language benefits collaborative design? Explain. **[7M]**

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