END TERM EXAMINATION

SECOND SEMESTER[MCA] MAY-JUNE 2009

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Paper Code: MCA-108	Subject:Computer Graphics
Paper ID: 44108	(Batch:2004-2008)

Time: 3Hours	Maximum Marks:60

Note: Q1. Is compulsory. Attempt four questions from the rest.

Q1. Answer **any ten** from the following questions. **(2X10=20)**

(a)Explain Octrees.

(b)Why are hidden surface algorithms needed?

(c)Explain Beizer Surface.

(d)What is scan conversion?

(e)In Back face detection method, derive the condition to detect if a polygon is a back-face. (Viewing direction along –ve z-axis.)

(f)What is scan conversion?

(g)What is meant by addressability?

(h)What is interdot distance?

(i)What is the difference between impact and non-impact printers?

(j)What is resolution?

(k)Explain the relevance of the following diagram to 2-D clipping.

1001	1000	1010
0001	0000	0010
0101	0100	0110

(l) What is dot-size?

   (m) Write the definition of x' and y' given in the following diagram as functions of x,y and 0 (and trigonometric fns).
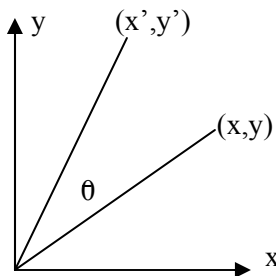
Q2. (a)What is solid modeling? Explain it with one of its techniques. **(5)**

   (b)Derive matrix representation for perspective projection and with the help of this expression find the perspective view of cube for centre of projection at (0,0,-5) with image plane to be XY plane. **(5)**

Q3. (a) Draw a Beizer curve with respect to control points p(1,3),q(2,4),r(5,5),s(7,3) and draw it's covex hull. **(4)**

(b) Answer the following w.r.t Cohen-Sutherland line clipping algorithm. **(6)**
(i) Describe when the clipping of a line segment is considered to be a trivial case?
(ii) How are bit codes assigned to the regions?
(iii) Find the Region Codes for a given line segment PQ with the endpoints given as P(-1,5) and
Q(3,8) and then clip the line with respect to a Rectangular window with lower left corner at (-3,1) and
upper right corner at (2,6).

Q4. (a)What is the use of approximated curve in Computer graphics?What is the advantage of parametric
form of curves with respect to the explicit form of curve in Computer Graphics? **(5)**
(b) In the Bresenham Line drawing algorithm,c alculate pk+1 in terms of pk, dx and dy. **(5)**

Q5. (a)Explain Beizer surface. **(5)**
(b)Find out the projected value for a plane z+d=0 and centre of projection is at (0,0,-d). **(5)**

Q6. (a)Describe the steps of Depth-sort algorithm. **(5)**
(b) Explain different techniques to generate solid models in computer Graphics. **(5)**

Q7. (a) Prove that the blending function of Open uniform B-Spline is equal to that of Beizer curve for
d=n+1(where number control point=n+1 and degree=d-1). **(5)**

Q8. (a)in back-face detection method,derive the condition to detect if a polygon is a back-face(viwing
direction along –ve z-axis). **(5)**
(b)Write briefly about different projections and explain the concept vanishing point. **(5)**