

END TERM EXAMINATION

FIFTH SEMESTER [BCA] DECEMBER-2014

Paper Code: BCA303

Subject: Computer Graphics
(Batch: 2011 onwards)

Time : 3 Hours

Maximum Marks :75

Note: Attempt any five questions including Q.no.1 which is compulsory.
Select one question from each unit.

- Q1 Write short notes on the following:- (2.5x10=25)
- (a) Touch Panel Screen
 - (b) Antialiasing
 - (c) Significance of 4 bit code in line clipping.
 - (d) Homogeneous coordinate system
 - (e) Matrix representation of 2-D shearing.
 - (f) Primitive Instancing
 - (g) Projections
 - (h) Vanishing point
 - (i) Object Space method
 - (j) Frame buffer

UNIT-I

- Q2 (a) Describe Mid-Point line drawing algorithm with it's complete derivation. (6.5)
 (b) Scan convert the straight line using Midpoint line algorithm whose end points are (0,0) and (5,6). (6)

OR

- Q3 (a) Distinguish between following:- (3x2=6)
 (i) Interactive vs. Non Interactive graphics.
 (ii) Raster vs. Random Scan display.
 (b) Discuss Cohen-Sutherland line clipping algorithm with a suitable example. (6.5)

UNIT-II

- Q4 (a) What do you understand by window port and view port? Briefly describe the steps to transform an object from window port to view port view conversion. (6.5)
 (b) Consider a square A(1,0) B(0,0) C(0,1) D(1,1). Rotate the square ABCD by 60° clockwise about the point A(1,0). Also draw the transformed square. (6)

OR

- Q5 (a) Prove that two successive 2-D rotations are additive in nature i.e $R(\alpha)R(\beta) = R(\alpha + \beta)$. (6)
 (b) Reflect a diamond shaped polygon whose vertices are A(-1,0), B(0,-2), C(1,0) and D(0,2) about (i) the horizontal line y=2 (ii) the vertical line x=2. (6.5)

UNIT-III

- Q6 (a) Explain that how solids are represented by using Boundary representation (B-rep) Technique and Constructive Solid Geometry (CSG) Technique? (6.5)
 (b) Describe Polygon Meshes. (6)

OR

- Q7 (a) State the properties of Bezier curve. For the cubic Bazier Curve (n=3), find all the blending functions and the Bezier matrix. (9.5)
 (b) What do you mean by B-Spline curves? Identify the difference between Bezier and B-spline curve. (3)

UNIT-IV

- Q8 (a) How parallel projections are different from perspective projections? Explain by discussing suitable example. (6)
 (b) Perform a perspective projection onto the x=0 plane of the unit cube where centre of projection is at $x_c=-10, y_c=-10$ and $z_c=-10$. (6.5)

OR

- Q9 (a) What is Hidden Surface Removal Method? Why do we need to remove hidden surface? Discuss the Depth Buffer (Z buffer) algorithm for hidden surface removal. (6.5)
 (b) Distinguish between the following:- (3x2=6)
 (i) Cavalier vs. Cabinet projections (ii) 2-D clipping vs. 3-D clipping
