END TERM EXAMINATION

FIFTH SEMESTER [BCA] DECEMBER 2013

Paper Code: BCA303 Subject: *Computer Graphics*
(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 section.**

Q1 Describe the following in brief: - (2.5×10=25)

(a) Matrix representation of 2D rotation.
(b) Random versus Raster scan displays.
(c) Resolution.
(d) Conditions for smoothly joining two Bezier curve segments.
(e) Image space method versus object space method.
(f) Frame buffer.
(g) Regularized boolean set operations .
(h) Polygon mesh.
(i) Types of projections.
(j) Dream weaver.

UNIT-I

Q2 (a) Describe Cohen–Sutherland algorithm for line clipping. Give its limitations. (6.5)

(b) Using Bresenham's circle drawing algorithm draw the quadrant of a circle with centre as (0,0) and radius 8. (6)

OR

Q3 (a) Using Bresenham's line drawing algorithm find out the list of the activated pixels for the line from (20,10) to (25,14). (6.5)

(b) Give the conceptual framework for interactive graphics. Enumerate the advantages of interactive graphics? (6)

UNIT-II

Q4 What are homogeneous coordinate systems? Explain their use in computer graphics. A Polygon has four vertices located at A (20, 10), B (60, 10) ,C(60, 30) and D(20, 30).Indicate a transformation matrix to double the size of the polygon with point A located at the same place? Show your steps. Workout the coordinates of the transformed polygon. (12.5)

OR

Q5 (a) Give the transformation matrices for the various 3D transformations in homogeneous coordinates (6)

(b) Discuss steps to window-to-view port transformation and hence derive the transformation matrix. (6.5)

P.T.O.

UNIT-III

Q6 (a) Explain Octree representation (5)

(b). Determine the Bezier curve with four control points. State and prove a property of Bezier curve. (7.5)

OR

Q7.(a) Describe B-Splines and their application in detail. (7.5)

(b) Describe constructive solid geometry with the help of an example. (5)

UNIT-IV

Q8 (a) Discuss the Depth-Buffer(z-buffer) algorithm for hidden surface removal. (5)

(b) Explain the various types of parallel projections. (7.5)

— OR —

Q9 (a) Discuss depth –sorting method(Painter's algorithm) for hidden surface removal. (5)

(b).Explain persepective projection and its types. Discuss the relative advantages and disadvantages of perspective projections and parallel projections. (7.5)

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