Exam.Code:0917
Sub. Code: 33435

2125

B.E. (Computer Science and Engineering)
Fifth Semester
CS-502: Computer Graphics

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

a) Why is the electronic beam allowed to overscan?

b) Give the general expression for Bezier Bernstein polynomial.

c) Perform a 45° rotation of a triangle A(0,0),B(1,1) and C(5,2) about origin.

d) Give some real-time animation techniques.

e) How do we determine whether a point P is inside or outside a volume?

f) Why are hidden surface algorithms needed?

g) Define computer animation?

h) What are major drawbacks of scan conversion?

i) Why are hidden surface algorithms needed?

j) Differentiate between a window and viewport. (10×1)

UNIT - I

II. a) What are the advantages of plasma displays over Raster scan CRTs? Explain the construction and working of a plasma displays.

b) Compare the Raster scan system with random scan system. Why do we need a display processor? (5,5)

III. a) Describe the Sutherland polygon clipping algorithm with suitable example.

b) Reflect a polygon whose vertices are A(-1,0),B(0,-2),C(1,0) and D(0,2) about the horizontal lines y=2 the line y=x+2. (5,5)

IV. a) Explain the Bresenham's circle generating algorithm.

b) Modify the boundary-fill algorithm for a 4-connected region to avoid excessive stacking by incorporating scan-line methods. (5,5)

P.T.O.

UNIT - II

V. a) Describe the one, two, three principal vanishing point perspective.

b) Derive the three dimensional transformation matrix for scaling an object by a scaling factors in a direction defined by the direction cosines. (5,5)

VI. a) What is Z-buffer?.What are the limitations of Z-buffer algorithm for hidden surface removal?

b) How animations work? Explain different rendering techniques. (5,5)

VII. a) Write short notes on Bezier curves and their properties.

b) Let P(0,0),P(1,2),P(2,1),P(3,-1),P(4,10),P(5,5) be given data points if the interpolation based cubic B-splines is used to find the curve interpolation these data points find a knot set that can be used to define the cubic B-splines. (5,5)

x-x-x