786

Exam.Code:0917
Sub. Code: 6787

1129

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. Write short answers of the following:-

a) Why computer generated lines which are not parallel to x-axis or y-axis and which are not inclined al ±45° appears to be zigzagged?

b) Why parallel railroad tracks are shown as converging lines in painterly drawings?

c) What is meant be perspective shortening?

d) What are cabinet and cavalier projections?

e) What is the function of a control electrode in CRT?

f) What are homogeneous coordinates?

g) Differentiate between object space and image space methods for visible surface detection.

h) What are the properties of a good line drawing algorithm?

i) What do you mean by scan conversion?

j) What do you mean by interlacing? Why is it useful? (10x1)

UNIT – I

II. a) Describe in detail mid-point circle drawing algorithm. Derive the expressions for the decision parameters.

b) Making use of mid-point circle drawing algorithm, find the co-ordinates of point that lie on the boundary of circle centered at (6,8) and radius of 5 units. (2x5)

III. a) What is meant by clipping? Describe the sequence of steps involved in clipping a line using Cohen-Sutherland line clipping algorithm.

b) What is the difference between Boundary-fill and Flood-Fill algorithms? Write 8-boundary fill algorithm. (2x5)

IV. a) Perform a 45 degree rotation of triangle A(0,0), B(1,1), C(5,2) about P(-1,-1).

b) Differentiate between raster scan systems and random scan systems. (2x5)

P.T.O.

UNIT – II

V. Given a unit cube with one corner at (0,6',0) and the opposite corner at (1,1,1), derive the transformations necessary to rotate the cube by 0 degrees about the main diagonal (from (0,0,0) to (1,1,1)) in the counterclockwise direction when looking along the diagonal towards the origin. (10)

VI. a) Discuss the need to eliminate hidden surfaces. Explain in detail depth buffer method for hidden surface elimination.

b) What are orthographic and oblique projections? Give their general transformation matrices. (2x5)

VII. Write short notes on:-

a) Flat and Smooth Shading

b) B-splines and their properties (2x5)

x-x-x