1128

B.E. (Information Technology)
Fifth Semester
ITE-542/532: 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) Differentiate between random scan ad raster scan.

   b) What is a principle vanishing point?

   c) Explain the working of light pen?

   d) Discuss the need of homogenous coordinates and composite matrix.

   e) Differentiate between window and a viewport.   (5x2)

UNIT – I

II. a) What is a color table? Explain the working of any two color display devices.

   b) What is geometric transformation? Rotate the polygon with co-ordinates A(2,5),B(7,10) and C(10,2) by 30 degree and the scale by factors Sx=2 and Sy=3.   (5,5)

III. a) Illustrate the working of Sutherland Hodgeman algorithm. How can the efficiency and speed of clipping operation be improved?

   b) Explain the scan-line polygon filling algorithm. Differentiate between flood fill and boundary fill using suitable example.   (5,5)

IV. a) Consider the line from (5,5) to (13,9). Illustrate the output of DDA and Bresenham's algorithm to rasterize this line. Discuss the key advantages of Bresenham's algorithm.

   b) Explain: anti-aliasing techniques. Character generation, Shear transformation.   (5,5)

UNIT – II

V. a) Discuss some 3D display methods. Discuss the role of view plane normal, viewing distance and specified in 3D coordinate system?

   b) Explain translation and rotation in 3D coordinate system? Illustrate with suitable examples using the corresponding transformation matrices.   (5,5)

P.T.O.

VI.   a) What are projections? Discuss various types of parallel and perspective projection.

b) Explain the representation of spline curves. Discuss the characteristics of Cubic splines and B-Spline curves.   (5,5)

VII. a) Discuss the classification of visible surface detection methods. What is Back face detection?

b) Discuss A-buffer algorithm and the requisite data structure with suitable example.
                                                                        (5,5)

x-x-x