Scheme – I

Sample Question Paper

Program Name : **Computer Engineering Program Group**
Program Code : **CO/CM/CW**
Semester : **Third**
Course Title : **Computer Graphics**
Marks : **70**

22318

Time: 3 Hrs.

Instructions:
(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following. **10 Marks**

a) Define pixel and resolution.
b) List any four areas of applications of computer graphics.
c) State any two graphics functions with its syntax.
d) Define scan conversion.
e) List two polygon filling methods.
f) State the concept of Vanishing point.
g) Give the matrix representation for 2D Scaling.

Q.2) Attempt any THREE of the following. **12 Marks**

a) Differentiate between Vector scan display and Raster scan display.
b) Write procedure to fill polygon using Flood fill.
c) Explain 2D transformations with its basic types.
d) Write algorithm to clip line using Cohen Sutherland line clipping algorithm.

Q.3) Attempt any THREE of the following. **12 Marks**

a) Explain following character generation methods with example.
   i) Stroke method ii) Starburst method
b) Explain perspective projection with its types.
c) Explain Window to Viewport transformation.
d) Explain Hilbert's curve with diagram.

Q.4) Attempt any THREE of the following. **12 Marks**

a) Explain with diagram raster scan display technique.

b) Consider the line from (0, 0) to (4, 6).Use DDA algorithm to rasterize this line.

c) A point (4, 3) is rotated counterclockwise by an angle of 45^0. Find the rotation matrix and the resultant point.

d) Explain Arc generation technique using DDA algorithm.

e) Use the Cohen Sutherland algorithm to clip two lines P1(40,15)-P2(75,45) and P3(70,20)-P4(100,10) against a window A(50,10),B(80,10),C(80,40),D(50,40).

Q.5) Attempt any TWO of the following. **12 Marks**

a) Consider the line from (5, 5) to (13, 9).Use the Bresenham's algorithm to rasterize this line.

b) Find a transformation of triangle A(1,0),B(0,1),C(1,1) by

i. Rotating 45^0about the origin and then translating one unit in x and y direction.

ii. Translating one unit in x and y direction and then rotating 45^0about the origin.

c) Write a program in C to generate Hilbert's curve.

Q.6) Attempt any TWO of the following. **12 Marks**

a) Derive the expression for decision parameter used in Bresenham's Circle algorithm.

b) Apply the Shearing transformation to square with A(0,0),B(1,0),C(1,1) and D(0,1) as given below :

i. Shear parameter value of 0.5 relative to the line Yref= -1;

ii. Shear parameter value of 0.5 relative to the line Xref= -1;

c) Write algorithm to clip line using Liang Barsky line clipping algorithm.

Scheme – I

Sample Test Paper - I

Program Name : **Computer Engineering Program Group**
Program Code : **CO/CM/CW**
Semester : **Third**
Course Title : **Computer Graphics**
Marks : **20**

22318

Time: 1 Hour

Instructions:
(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. **08 Marks**

a. State any two graphics functions with its syntax.
b. List any four areas of applications of computer graphics.
c. Define pixel and resolution.
d. Draw 8-way symmetry of circle.
e. Define convex and concave polygon.
f. State equation of line in slope intercepts form.

Q.2 Attempt any THREE. **12 Marks**

a. Differentiate between Vector scan display and Raster scan display.
b. Write a program in C to draw following shapes with given points.
   i) Line (20,20,60,60)
   ii) Circle (100,100,25)
c. Write DDA line drawing algorithm.
d. Consider the line from (5, 5) to (13, 9).Use the Bresenham's algorithm to rasterize this line.
e. Write a program in C to fill polygon using Boundary fill algorithm.
f. Explain graphics pipeline in detail.

Scheme – I

Sample Test Paper - II

Program Name : **Computer Engineering Program Group**
Program Code : **CO/CM/CW**
Semester : **Third**
Course Title : **Computer Graphics**
Marks : **20**

22318

Time: 1 Hour

Instructions:

(1) All questions are compulsory.

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data if necessary.

(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. **08 Marks**

a. Give the matrix representation for 2D Scaling.
b. State the concept of Vanishing point.
c. Define Window and viewport.
d. List four text clipping techniques.
e. List any four types of Curves.
f. State the concept of Interpolation.

Q.2 Attempt any THREE. **12 Marks**

a. Explain parallel projection with its types.
b. Translate the polygon with co-ordinates A(2,5),B(7,10) and C(10,2) by 3 units in x direction and 4 units in y direction.
c. Write algorithm to clip line using Cohen Sutherland line clipping algorithm.
d. Write a program in C to clip polygon using Sutherland Hodgeman
e. polygon clipping algorithm.
f. Explain the procedure to generate Bezier curve.