

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 45^0 about the origin and then translating one unit in x and y direction.
 - ii. Translating one unit in x and y direction and then rotating 45^0 about 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 $Y_{ref} = -1$;
 - ii. Shear parameter value of 0.5 relative to the line $X_{ref} = -1$;
- 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.