

Register Number:.....

B.TECH., DEGREE EXAMINATIONS MAY/JUNE 2013

Fifth Semester

INFORMATION TECHNOLOGY

CSE109: Computer Graphics

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

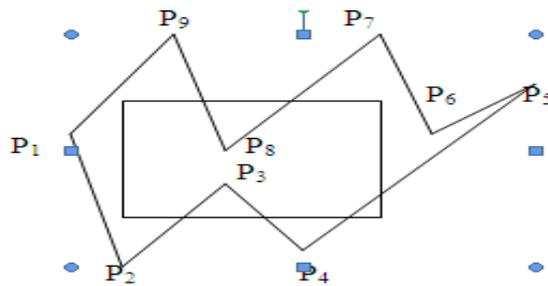
PART A (10x1=10 Marks)

1. A raster color display processor supports a resolution of 1024 x 800 with up to 16 million colors simultaneously displayable. What will be the approximate size of frame buffer used in the display processor?
a) 1.2×10^6 b) 2.4×10^6 c) 16×10^6 d) 10^5
2. The method which uses greater value of delta X or delta Y as one raster unit to draw the line is called as
a) Bresenham's line algorithm b) Generalized Bresenham's algorithm
c) DDA Line algorithm d) Midpoint Line algorithm
3. Cohen and Sutherland clipping algorithm using region codes, a line will be already clipped if the _____
a) Codes of the end point are same
b) Logical AND of the end point code is not 0000
c) Logical AND of the end point code is 0000
d) Both a) and b)
4. A transformation that distorts the shape of an object is _____
a) Scaling b) Shear c) Reflection d) Transformation
5. Find the odd man out in finding with respect to surface identification
a) Depth buffer b) A buffer c) Scan line d) Back – face

13. Represent the matrix in homogeneous co-ordinates for :
- 3D Rotation about y axis
 - 2D Shearing about x axis
14. List the various picture construction techniques
15. Mention the drawback of Cohen-Sutherland line clipping algorithm.
16. What is the use of active edge list in scan line algorithm?
17. Differentiate complementary and primary colors.
18. State the properties of Bezier curves.
19. List out the uses of chromaticity diagram.
20. How is diffuse reflection different from specular reflection?

PART C (5 x 14 = 70 Marks)

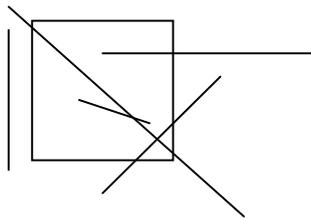
21. a) (i) Derive and represent DDA line drawing Algorithm .Using DDA Algorithm, determine the raster locations to scan convert the lines given below: (10)
- (3, 10) and (5, 13) (5, 12) and (8, 15)
- (ii) Differentiate Pix map and Bit map. (4)
- (OR)**
- b) (i) Write the Bresenham's line generation algorithm for $|M| < 1$ and deduce the decision parameter. Plot the line from (20, 10) to (30, 18). (10)
- (ii) Differentiate Raster-Scan and Random-Scan Devices. (4)
22. a) (i) List out the steps involved in clipping a polygon using Sutherland Hodgeman Polygon Clipping Algorithm. Clip the given polygon using the same. (10)



- (ii) Consider a window with lower left corner WL (10, 10) and top right corner WR(30,20) and a viewport with lower left corner VL(50,50) and top right corner VR(60,55). A triangle A(15,12),B(20,17)and C(25, 12) in the window is transformed to view port. Find out the view port co-ordinates for the triangle. (4)

(OR)

- b) Write the Liang-Barsky line clipping algorithm, and explain the working of the algorithm for the following lines



23. a) (i) Represent the matrix for (4)
- (1) Perspective projection
 - (2) Reflection about both x and y axis
- (ii) Differentiate parallel and perspective projection along with its types. Explain how polygons are represented. (10)

(OR)

- b) Explain with examples of the following methods

- (1) Depth-sorting method (8)
- (2) BSP Tree Method (6)

24. a) (i) Write short notes on Octrees (4)
- (ii) Why is hidden Surface Elimination necessary? Illustrate the use of Z-buffer method for Hidden surface Elimination with an example. (10)

(OR)

- b) How the illumination model is used to render the standard graphics objects formed with polygon surfaces? Explain constant-Intensity shading and Gouraud shading.

25. a) (i) Explain the following (7)

(1) RGB Color model

(2) HLS Color Model

- (ii) Differentiate diffuse reflection with and without light source. Represent the way in which the intensity of reflection at a point is calculated in both the cases. (7)

(OR)

- b) Write short notes on the following

(i) CMY Color model (7)

(ii) HSV Color model (7)
