**COMPUTER GRAPHICS AND MULTIMEDIA APPLICATIONS**

**Part A**

1. List the major applications of computer graphics
2. What are the components of CRT
3. Compare emissive displays with non-emissive displays
4. What is the use of Frame buffer
5. Is refreshing mandatory in CRT and DVST? Justify the answer.
6. Define Resolution
7. Define Aspect Ratio
8. List out the merits and demerits of DVST.
9. Differentiate Raster scan and Random scan systems.
10. Define a pixel
11. What are the advantages of Bresenham’s algorithm over DDA algorithm ?
12. How do you find the initial decision parameter in Bresenham’s line drawing algorithm?
13. State the purpose of anti-aliasing. List the antialiasing techniques
14. How do you find the initial decision parameter in mid point sub division circle algorithm?
15. Calculate the xincrement and yincrement using DDA algorithm given (xa,ya)=(5,5) and (xb,yb)=(10,8).
16. List out the various Line attributes.
17. Define a true color system
18. Define antialiasing
19. What is Refresh CRT
20. What is persistence
21. What are geometric transformations
22. List the basic transformations and other transformations.
23. Construct the matrix for reflection
24. Construct the matrix for Shearing
25. What is viewing transformation
26. Derive the formula for rotation
27. Illustrate window to viewport transformation
28. List the logical classification of input devices
29. Distinguish between window port & view port?
30. Given is a point (x,y)=(4,4). Use the translation formula and find where the point will be if it is moved 2 units along X-axis and 3 units along Y-axis
31. What is the use of clipping? How will you clip a point?
32. Use homogeneous coordinates and represent the formula for 2D Scaling
33. Analyze the need for composite transformation
34. Categorize the types of shearing with example
35. Rotate the point (3, 4) by 90 degrees anticlockwise about (0, 0).
36. Scale the line joining the points (4, 4) and (8, 6) by 2 in x-direction and 0.5 in y-direction.
37. Reflect the point (4, 4) in x-axis.
38. Derive the formula for 2D scaling
39. How do you set region code in Cohen Sutherland line clipping algorithm
40. Use homogeneous coordinates and represent the formula for 2D rotation
41. Compute A’, by rotating A(2,2,2) by 90 degree in X,Y and Z axis
42. How do you find the degree and control points of a Cubic Bezier Curve.
43. Translate the object, A(0,0,0), B(2,0,0), C(2,2,0), D(0,2,0)

usingt x=1,ty=1,tz=1.

1. Write the mathematical representation of Bezier Curves.
2. With the matrix representation, explain the 3D rotation
3. With the matrix representation, explain the 3D scaling
4. With the matrix representation, explain the 3D translation
5. Explain Reflection with an example.
6. Formulate the mathematical representation of B-Spline Curves.
7. State the usage of Fractals.
8. What is Koch curve
9. What is Peano Curve
10. Identify the use of translational and rotational sweep?
11. Construct a CSG model using an example.
12. Narrate, how to create contents of vertex table, edge table and surface table for a polygon with an example.
13. Scale the point A(3,4,5) with Sx=Sy=Sz=2 and find A’.
14. What is Parallel Projection
15. What is Perspective Projection
16. Define Depth Cueing
17. What is surfacerendering
18. State the use of Depth buffer and Refresh buffer?
19. List out the various hidden surface elimination methods (visible surface detection method)
20. What is object space method
21. What is image space method
22. Differentiate the object space method from the image space methods?
23. Comment on the painters’ algorithm?
24. Mention the application areas of Halftoning and Dithering.
25. Distinguish A-Buffer algorithm from Depth buffer algorithm
26. How to generate a BSP tree?
27. What is area subdivision method?
28. List out the various ray tracing methods?
29. Compare Ambient, Diffuse and Specular light.
30. Write the drawbacks associated with half tones?
31. Narrate how dithering is done?
32. Formulate the generic matrix that is used to generate the higher order dither matrix.
33. Is Gouraud shading is better than flat shading? Justify the answer.
34. Differentiate Phong and flat shading?
35. What is a color model?
36. Sketch the chromaticity diagram?
37. Formulate the Lambert’s cosine law.
38. What is the purpose of Huffman coding
39. List the various multimedia elements
40. List the various types of compression
41. Differentiate Lossy Compression from Lossless Compression
42. Write a note on MPEG.
43. List the data and file formats.
44. Compare cel animation, kinematics and morphing.
45. Formulate the steps required to perform Morphing in Photoshop.
46. Differentiate computer and television video.
47. List the advantages of MIDI over digital audio?
48. Define compression ratio?
49. Identify and list the types of voice recognition system.
50. State the Rich Text File format .
51. List the various Flash elements
52. How do you crop an image. List its steps
53. What is the use of Marquee tool in Photoshop
54. What is Tweening?
55. What is the use of Lasso tool in Flash? What are the different types of lasso tools?
56. What is a Magic Wand tool ?
57. What is Eye dropper tool in Flash?

**Part B**

1. Explain the various applications of Computer graphics
2. Sketch the working model of CRT
3. Summarize the various types of display processors
4. Construct a Line using Bresenhams Line drawing algorithm with (xa,ya)=(11,15) and (xb,yb)=(17,18).
5. Construct lines with coordinates (x1,y1)=(5,5) and (x2,y2)=(12,10) using DDA algorithm
6. Construct lines with coordinates (x1,y1)=(5,5) and (x2,y2)=(20,18) using Bresenham algorithm
7. Construct a Circle using Midpoint Circle drawing algorithm with (xc,yc)=(0,0) and r=8.
8. Formulate the need for Antialiasing and discuss their techniques.
9. Construct a detailed note on various attributes of output primitives.
10. Construct lines with coordinates (x1,y1)=(5,5) and (x2,y2)=(15,20) using Bresenham algorithm
11. Discuss in detail 2D transformations
12. Summarize 2D transformations with homogeneous coordinates
13. a) Given a triangle ABC, with A (2,2), B (6,2) and C (4,4). Find the reflected position of triangle i.e., with respect to the X, Y and Z-axis.

b) Shear with respect to X and Y axis, given A(2,2), B(6,2) and C(4,4) with Shx=2 and Shy=2.

14. Clip the following line using Cohen Sutherland Line Clipping algorithm.

(xwmin, ywmin) =(100,100) and (xwmax,ywmax)=(400,400). Line L1 with A(200,250)

and B(450,150). Write the algorithm.

1. Generate the Output Vertex List by Clipping the Polygon using Sutherland Hodgeman Polygon Clipping algorithm.
2. Clip the Line using Nicholl- Lee-Nicholl Line Clipping algorithm.
3. a.Given a 3D triangle with points A(0, 0, 0), B(3, 3, 4) and C(3, 3, 5). Apply shear parameter 2 on X axis, 2 on Y axis and 2 on Z axis and find out the new coordinates of the object.

b. Given a 3D triangle with coordinate points A(0, 0, 0), B(3, 3, 4) and C(3, 3, 5). Apply the reflection on the XY, YZ and XZ plane and find out the new coordinates of the object.

1. Explain composite transformation with suitable example
2. Describe the various interactive picture construction techniques.
3. Formulate Sutherland Hodgeman Polygon clipping algorithm with suitable examples considering all possible cases
4. Identify the area in which, the Sweep representation and Boundary representations are applied and becomes mandatory.
5. Explain Bezier curve listing its properties
6. Explain 3D transformations with suitable example
7. a) Given a 3D triangle with points A(0, 0, 0), B(2, 2, 4) and C(3, 3, 6). Apply shear parameter 2 on X axis, 2 on Y axis and 2 on Z axis and find out the new coordinates of the object.

b). Given a 3D triangle with coordinate points A(0, 0, 0), B(2, 2, 4) and C(3, 3, 6). Apply the reflection on the XY, YZ and XZ plane and find out the new coordinates of the object.

1. Construct a Bezier curve with the following Control points. P0(3,3), P1(6,6) and P2(12,4).
2. Compare and Contrast the techniques for generating the Fractals.
3. Explain how 3D object representations are done and construct a model using CSG.\
4. Discuss the procedure for generating the Koch Curves and Peano curves.
5. List the applications of self-similar Fractals and explain how they are framed.
6. Discuss in detail about B-Spline curves
7. Discuss any three Visible Surface Detection methods.
8. Discuss in detail about various Polygon rendering methods.
9. Explain the various illumination models in detail
10. Explain the various ray tracing methods
11. Explain the construction and usage of halftones
12. Give a detailed note on various Color Models and applications.
13. Explain dithering process in detail
14. Explain back face detection method. This method is very useful in the visible surface detection process. Why ? What else can be handled after visible face detection , in order to conclude the set of all visible surfaces ?
15. Justify, where halftones are employed and explain its construction and usage
16. Explain the visible surface detection method which adopts image space method
17. Discuss how the Digital Voice and Audio about how it boosts Multimedia.
18. Integrate the various MIDI standards and recommend the standard suitable for an application with suitable example.
19. Design an animation by adding sounds and publish them using Flash.
20. Explain MIDI with its advantages and disadvantages?
21. State the purpose of shape tweening and classic tweening in flash? Explain the steps to perform them.
22. How will you create an animated logo using Photoshop? Write their steps.
23. Explain Compression and decompression in detail.
24. Give a detailed note on JPEG and MPEG
25. Summarize the various tools used in Photoshop
26. Summarize the various tools used in Flash