BVM College of Management Education,Gwalior

Question Bank

MCA 403

Unit I

Q.1 Discuss mid point circle algorithm.Also demonstrate mid point circle algorithm for given radious r=9 by determining position along the circle octant in the first quadrant.

Q2. Consider two raster system with resolution of 640 by 480 and 1280 by 1224. How many pixel could be accessed per second in each of these systems by a display controller that refreshes the screen at the rate of 60 frames per second? What is the accesstime per pixel in each system?

Q3. Explain the mid point ellips algorithm. Also illustrate the steps in the mid point ellipse algorithm for given input parameters rx=8 and ry =6 by determining raster position along the ellipse path in first quadrant.

Q.4 Discuss the working principles of color CRT. How do we achieve full color frame buffer?discuss in detail.

Q.5 Write Bresenham's line drawing algorithm for slope greater than 1 and also draw the line between the end points (10,20) and (18,30).

Q.6 Discuss Random scan System and Raster scan System.

Q.6 Explain mid point circle generation algorithm .Using this algorithm draw a circle a radius r-10 in the first quadrant x=0 to x=y.

Q.7 Explain with neat diagram working of refresh CRT.

Q.8 Write DDA line drawing algorithm and caclculate pixels that will be used to draw line between (2,3) and (4,4).

Q.9 Explain with example the working of Bresenham's mid point circle drawing algorithm .Choose a circle and calculate pixels in the path of this circle in only first quadrant .

Q.10 differentiate between raster and vector display. Also give architectures of raster and vector display.

Q.11 Develop Bresenham's Circle drawing algorithm for drawing circular arc of radius R centered at (0,0) starting from(r,0) and lying in forth quadrant b/w 0 and -45^0 .

Q.12 Explain the following are

(a) Plasma Panel

(b) Non CRT display devices

(c) Various function provided by interactive input devices

(d) Various function provided by interactive input devices

(e) LCD display

(f) Plotters

(g) Five Application of Computer Graphics

(h) Data compression techniques

Unit II

Q.1 Explain Homogeneous coordinates ,Find the reflected image of polygon whose vertices are A(-1,0),B(0,-2),c(1,0),D(0,2) about the line y=x+2.

Q.2 Explain the following transformations.

(a) Reflection

(b) Shearing

Q.3. Explain the 2-D transformation. Derive a transformation matrix that rotates an object about origin through the angle 45^0 in anticlockwise direction

Q.4 What is shearing transformation?.Write down the x- direction shearing matrix for two dimensions.

Q.4. Determine a sequence of basic transformation that and equivalent to the x-direction shearing

Q.6 Describe an algorithm to fill the inerior of an arbitrary shaped objectd drawn on the screen.

Q.7 Prove that the multiplication of transformation matrices for each of the following sequences of operations of commutative:

(a) Two successive rotation

(b) Two successive scalling

Q.8 Differentiate between flood fill and boundary fill algorithm. Apply the stack base seed fill algorithm to fill the polygon define by the vertices (1,1),(1,4),(3,6),(8,6) and (8,1). The seed pixel is at (4,3) and polygonis boundary filled.

Q.9 Discuss area filling algorithm with advantages and disadvantages of one over the other.

Q.10 Explain the following are

(a) character generation

(b) Attributes of output primitives

(c) Antialiasing Techniques

(d) Area filling algorithm

(e) Composit Transformation

Unit III

Q.1 Explain the gourand shading ? A polyhedral object is to be rendered on the seven using gourmand shading . Describe steps in detail.

Q.2 Why is midpoint subdivision line clipping method best suited for hardware implementations?

Q.3 Explain the RGV and CMY colour model.

Q.4 Develop the specular reflection model for shading. Point out how the choice of power of cosine term is related to the surface property.

Q.5 Compare and contrast between Gouraud and phond shading.

Q.6 Define viewing transformation . Derive the equation for mapping a point (X_w,Y_w) defined in window to viewport location (X_v,Y_v).

Q.7 Describe cohen Sutherland line clipping algorithm. Given a clipping window with corners as (0,0),(5,0),(5,5),(0,5).Find using Cohen Sutherland algorithm if the line p1p2 with p1(-6,-1) and p2(-1,5) can be trivially rejected.

Q.8 Find normalization transformation that maps a window defined by the vertices A(1,1),B(5,3),C(4,5),D(0,3) into a viewport that is entire normalized devices system.

Q.9 What is clipping? Describe Cohen Sutherland bit code method of testing totally visable lines.

Q.10 Define the terms light sources,ambient ,light and diffuse reflections .Give salient features of phong specular reflection model.

Q.11 Explain the following are

(a) Ground Shading

(b) Homogeneous coordinate system

(c) RGB Monitor

(d) Window to viewport transformation

(e) Phong shading Method

(f) YIQ

(g) CMY

(h) HSV

(i) Parallel Projection

(j) Quadric surface

Unit IV

Q.1 Describe the perspective projection.What are Vanishiing points and foreshortening in perspective projection?

Q.2 Find transformation matrix for rotating three dimensional object about an arbitrary axis.

Q.3 Explain Bezier curve with its properties and compare this curve with B-Spline curve.

Q.4 Write three dimensional homogeneous transformation matrix for each of the following

(a) Scaling is X and Y by four times

(b) Rotate by $\pi/3$ about X-axis

Q.5 What are the properties of Bezier Curve? Describe the Bezier curve defined by the control points B(2,1),B(3,2),C(5,0),D(6,2).

Q.6 What is 3-D transformation? Write composite transformations to rotate an object about arbitrary axis.

Q.7 Describe any two hidden surface removel methods

Q.8 Define terms polygon surfaces,polygon data tables and quadric surfaces and explain each with examples.

Q.9 Define perspective projection and derive transformation matrix for perspective projection.

Q.10 How polygon clipping can be processed? Write an algorithm for Sutherland Hodgman algorithm

Q.11 Explain the three dimensional viewing

Q.12 Explain the following are

(a) Polygon clipping

(b) B-spline curve

(c) properties of Bezier curves

Unit V

Q.1 Discuss the components of multimedia system.In What formate these date are stored in Computer? How these are linked with each other?

Q.2 What is the significance of the following file extension in multimedia documents?

.tiff,.Jpg,*.wav,*.avi

Q.3 List four common formats of storing image data.Explain how they are different from each?

Q.4 What are the different types of Authoring tools in multimedia? Discuss each in brief.

Q.5 Explain and discuss various multimedia presentation tools.

Q.6 Discuss various multimedia data file format standards.

Q.7. f 15 minutes of stereo music is stored in MIDI format as well as WAV format,with 16 bit resolution @44.1KHz then what would be storage requirement of two files.

Q.8 Explain the method of encoding the image using JPEG.

Q.9 Explain RIFF file format.Also explain various kinds of chunks RIFF specification defines.

Q.10 What do you mean by MIDI ? What are the advantage of using MIDI files for generating background music for multimedia application.

Q.11 Explain the following are

(a) Multimedia file format standards

(b) Multimedia hardware

(c) Multimedia tools

(d) Multimedia file formats

(e) Authoring tools

(f) JPEG and MPEG file format

(g) Elements of hypertext