Suggestion for Computer Graphics and Multimedia (60% common)

1

a) What is scaling?

b) Give the matrix to shear in 2D.

c) What is a composite transformation?

d)What are drawback of Cohen-Sutherland line clipping algorithm?

e) Discuss the conditions for clipping a point against a given rectangular window.

f) What are drawbacks of DDA line drawing algorithm?

g) Derive the component matrix of translation.

h) Show that the composition of two rotation is additive.

i) What is initial decision parameter value for Bresenham's circle drawing algorithm?

j) What is aspect ratio?

k) Name two essential features of graphics software.

l) What are the applications of computer graphics?

m) What is reference point and reference axis of transformation?

n) What is pixel?

o) What is control point?

p) What do you understand by resolution?

q) What is shearing?

r) Derive the component matrix of rotation.

s) What is scan conversion?

t) What is boundary fill algorithm?

u) What is morphing?

v) Why are hypertexts used for information representation in multimedia packages?

w) Show that the composition of two rotation is additive.

x) How the image is drawn in CRT monitor?

y) Write full form of i)MIDI ii)JPEG

2.a) Prove that the multiplication of transformation matrices for two successive rotations is commutative.

b). Magnify the triangle with vertices A(0,0),B(1,1),C(5,2) to twice its size while keeping C(5,2) fixed.

3 a) Prove that 2D rotation and scaling commute if $S_x=S_y$ or $\Theta= n\Pi$ for integer n and otherwise they donot. Here S_x and S_y are the scaling along the X and Y axis respectively and Θ is angle of rotation.

b) Discuss boundary fill and flood fill algorithm.

4a) Discuss Sutherland hodgman polygon clipping algorithm.

b) Perform a 45° rotation of a triangle A(1,1),B(5,1),C(3,5) about an arbitrary point P (3,3) ,about origin

5 a). Explain the importance of homogeneous co-ordinate system.

b). Derive the relationship between window port and view port.

6 a). Write a short note on Bezier curve.

b). The eight-way symmetry of a circle can be used to design an efficient circle drawing algorithm-justify the statement with suitable algorithm.

7 a). Derive a general transformation matrix for 3D rotation about x axis, y axis, z axis.

b) What can be concluded about the visibility of line segment in Cohen-Sutherland line clipping algorithm.

8 a) Use DDA line generation algorithm to draw a line from (2,2) to (6,6)

b) Distinguish between random scan display and raster scan display.

9.a) Find the transformation matrix form about an arbitrary line y=mx+b.

b) Consider the rectangle defined by (100,10),(160,10),(160,40),(100,40). Discuss clipping situation of straight line PQ using Cohen-Sutherland line clipping algorithm where P(50,0) and Q(70,80)

10. a) Derive midpoint line drawing algorithm.

b) What are the advantages of Bresenham's line drawing algorithm over DDA line drawing algorithm?

11. a) Clip a line A(3,20), B(13.3) against a rectangular window whose left-bottom ,top-corner are at the point (5,5), (25,15) respectively..

b) Discuss point clipping algorithm.

12 a)"translation does not depend on reference point"- justify

b) Discuss Cohen-Sutherland line clipping algorithm.

13. a) Derive and write midpoint circle drawing algorithm.

b) Compare parallel and perspective projections with reference to practical use only.

14.

a) Derive a general transformation matrix for 3D translation and scaling.

b) what are the applications of computer graphics
c) Define pixel.
d) Compare storage type CRT against refresh type CRT display. List out the important properties of phosphor being used in CRTs.
e) What is orthographic and oblique projection? Provide some examples of oblique projection.