No. of Printed Pages : 4

MCS-053

10227

MCA (Revised)

Term-End Examination

December, 2010

MCS-053 : COMPUTER GRAPHICS AND MULTIMEDIA

Time : 3 hours *Maximum Marks : 100*

*Note : Question Number 1 is **compulsory**. Attempt **any three** questions from the rest.*

1. (a) What are the limitations of refreshing display devices ? What is the refresh rate in 1024x1024 raster if pixels are accessed at the rate of 250 nano seconds ? 5

(b) Illustrate the Bresenham Line generation algorithm by digitizing the line with end points (20, 5) and (25, 10). 5

(c) Explain the Cyrus Beck line clipping algorithm to clip a line segment for a non-convex clipping window. 5

(d) Define the term projection. Categorise various types of perspective and parallel projections. 5

(e) Explain the Scan - Line method for visible surface detection with the help of suitable diagram. 5

(f) Explain the term anti-aliasing with the help of a diagram. How does the technique of antialiasing work to get rid of the problem of aliasing ? 5

(g) Explain the process of simulating positive Non-zero acceleration. 5

(h) Define the following : 5

(i) icon based authoring tools.

(ii) Virtual reality.

(iii) File compression.

(iv) Bitmap images.

(v) Frame buffer.

2. (a) Write the pseudo code for DDA line drawing Algorithm. What are its advantages and disadvantages ? 8

(b) List the features of the following multimedia tools : 6

(i) Image editing tools

(ii) Sound editing tools

(iii) 3-D modelling and animation tools

(c) Explain the following with the help of a diagram 6

(i) diffused reflection

(ii) specular reflection

3. (a) A square ABCD is given with vertices A(0, 0), B(2, 0), C(2, 2) and D(0, 2). Illustrate the effect of 10

(i) x-shear

(ii) y-shear

(iii) xy-shear

on the given square when $a = 3$ and $b = 4$, where a is shearing in x-direction and b is shearing in y-direction.

(b) Write pseudo code for mid point circle generation algorithm. 5

(c) What is difference between Hypertext and Hypermedia? Briefly describes various links used in Hypermedia. 5

4. (a) Reflect the triangle where vertices are A(-1, 0), B(0, 2) and C(1, 0) about. 8

(i) the horizontal line $y = 2$

(ii) the vertical line $x = 1$

(iii) the line $y = x + 3$

(b) Prove the following for Bezier curve 6

(i) $P(u = 0) = P_o$

(ii) $P(u = 1) = P_n$

(c) What are the various types of Audio file formats and video file formats ? 6

5. (a) Explain the Cohen Sutherland Line Clipping algorithm with an example. What are the limitations of Cohen Sutherland line clipping algorithm ? 8

(b) What is foreshortening factor in the context of parallel projection ? How is it related to Isometric, Diametric and Trimetric projection ? 6

(c) Explain the basic Ray tracing algorithm with the help of suitable diagram. 6