Roll No

MCTA - 105

M.E./M.Tech., I Semester

Examination, June 2014

Computer Graphics And Multimedia

Time : Three Hours *Maximum Marks : 70*

Note : i) Attempt any five questions.
ii) All questions carry equal marks.
iii) All parts of the questions must be answered in one place only.

1. a) Distinguish between Raster-Scan systems Random-Scan systems.
   b) How long it will take to load a 640 by 480 frame buffer with 12 per pixel if 10^5 bits can be transferred per second? How long it will take to load a 24-bits per pixel frame buffer with resolution of 1280 by 1024 using the same transfer rate?

2. a) Compare and contrast DDA and Bresenham line drawing algorithms. The end points of a given line are (0, 0) and (6, 18). Compute each value of y and x steps from 0 to 6 using DDA and Bresenham's algorithms and plot the resultant line.
   b) Explain Weiler-Atherton polygon clipping algorithm and state its advantage over Sutherland-Hodgeman polygon clipping algorithm.

3. a) Derive and write the midpoint ellipse drawing algorithm.
   b) Justify that the Sutherland-Hodgeman algorithm is not suitable for clipping when the clipping polygon is a concave window.

4. a) Obtain a transformation matrix for rotation about the line joining the point (0, 0, 0) and (1, 1, 1) with the angle of rotation 45° in counter clockwise sense.
   b) Discuss the methodology of perspective projection and describe how it can be expressed using homogeneous coordinates.

5. a) Write a short note on the perspective projections clearly explaining vanishing points and view volumes.
   b) Explain the following terms with relevant diagram:
      i) Orthogonal projection
      ii) Axonomic and Isometric orthogonal projection

6. a) Discuss the characteristics of Bezier curves and Bezier surfaces in detail.
   b) Draw the CIE chromaticity diagram and explain.

7. a) Explain the Z-Buffer method of Hidden surface removal.
   b) Explain the Gouraud shading model for rendering of polygon surfaces.

8. a) Define MIDI. List its attributes and contrast the use of MIDI and digitized audio in a multimedia production.
   b) Explain MPEG file format for motion picture compression.

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