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MCIT-104

M.E/M.Tech., I Semester

Examination, June 2016

Computer Graphics And Multimedia

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any Five questions.
ii) All questions carry equal marks.

1. a) If a monitor has 525 scan lines with an aspect ratio of 4:3 and if each pixel contains 8 bits for intensity information, how many bits per second are required to display 30 frames per second.

   b) Explain Bresenham's Midpoint Circle drawing algorithm.

2. a) A rectangular window whose vertices are at A(0, 0), B(7, 0) C(7, 5) and D(0, 5). A line segment is drawn from P1(6, 10) to P2(10, 4). Apply the Cyrus-Beck method to clip this line.

   b) Compare and contrast Midpoint subdivision and Cohen-Sutherland line clipping algorithms.

3. a) Write a procedure to determine a seed pixel for filling a polygon using the odd-even method.

   b) A rectangular polygon is to be scaled to quadruple its area without changing its centroid. Explain the sequence of basic transformation matrices needed to do this.

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4. a) What do you mean by hidden lines and surfaces? Describe area subdivision method for removing hidden surfaces.

   b) Prove that the perspective projection of a line segment is equal to the line segment between the perspective projection of the endpoints.

5. a) Derive a transformation matrix for parallel projection. Show that in the case of orthogonal projection, the object size remains unchanged.

   b) Differentiate between Gouraud shading and Phong shading methods.

6. a) Explain Z-buffer algorithm with help of an example.

   b) Explain various properties of Bezier curves and B-spline curves.

7. a) Explain the basic steps of MPEG encoding and decoding processes with help of block diagrams.

   b) Describe the compression technique of JPEG images.

8. Write short notes on (any two) of the following:
   a) CMY and HSV color model
   b) Distributed multimedia system
   c) Loss less and Lossy compression techniques
   d) Methods to identify concave and convex polygons

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