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Roll No.....

MCA-403

M.C.A. IV Semester

Examination, May 2019

Computer Graphics And Multimedia

Time : Three Hours

Maximum Marks : 70

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

1. a) What is the importance of computer graphics in present scenario? Discuss one most useful application of computer graphics.
   b) Write down Bresenham's algorithm for line and show how it draws a line. Whose start point is (–3, 0) and end point is (4, 4).

2. a) Write mid point circle generation algorithm and use it to indicate which raster location would be chosen in drawing semi-circle.

   $(x-1)^2+(y-3)^2=9$

   b) Discuss following in brief;
      i) Antialiasing technique
      ii) Boundary fill and flood fill algorithm

3. a) The vertices of a triangle are located at $P(80,50)$, $Q(60,10)$ and $R(100,10)$. It is desired to obtain its mirror reflection about the line $y = x + 2$. Work out the necessary transformation matrix to achieve it and also find the position of image triangle.

   b) Find normalized transformation that maps a window defined by the vertices A(1,1), B(5,3), C(4,5) and D(0,3) on to a view port that is entire normalized device system.

4. a) Suppose that a window has its lower left corner at (–3,1) and upper right corner at (2,6). Using Cohen-Sutherland line clipping algorithm, find the visible portion, if any of the line segment joining the point (–4,2) and (–1,7).
   b) Derive the 3D transformations required for rotation about an arbitrary axis in space.

5. a) A Bezier curve is to be drawn using the rectangular points $P_1(40,40)$, $P_2(10,40)$, $P_3(60,60)$ and $P_4(60,0)$. Find the equation of Bezier curve and mid point of this curve. Also draw its rough sketch.
   b) Discuss hidden surface and line removal algorithms with advantages and disadvantages of one algorithm over the other.

6. a) Explain the following:
      i) Depth Buffer and z-buffer method
      ii) Parallel and perspective projection
   b) An object is being viewed from the point (50,0,0).Obtain the transformation matrix to get the projection of a point $P(x,y,z)$ on the yz plane. Obtain the transformation matrix if the projection plane is now $x + 10 = 0$.

7. a) What are the components of multimedia system? How are they link with each other?
   b) Discuss various multimedia data file formats standards.

8. Write short notes on the following. (any four)
   a) Authoring tools
   b) Character generation
   c) Multimedia tools
   d) Polygon clipping
   e) CRT

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