USN [   ]   **13MCA34**

Third Semester MCA Degree Examination, June/July 2018
Computer Graphics

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a.   Discuss the methods used in openGL for handling window and also write a simple program
         to display a window on screen.   **(10 Marks)**
    b.   Write midpoint ellipse algorithm with explanation.   **(10 Marks)**

2   a.   Digitize a line from (20, 10) to (30, 18) on a raster screen using Bresenham's straight line
         algorithm.   **(05 Marks)**
    b.   Write a C code using open GL to draw a line using DDA algorithm. **(10 Marks)**
    c.   Explain openGL features for graphics programming.   **(05 Marks)**

3   a.   Explain how interior and exterior regions are identified using odd parity rule   **(05 Marks)**
    b.   Write a function to perform 4 connected boundary fill and explain how 8-connected
         boundary fill is better.   **(07 Marks)**
    c.   Using openGL write the code for circle drawing using midpoint circle generation algorithm
         and explain 8 way symmetry of a circle.   **(08 Marks)**

4   a.   Describe how you can achieve two dimensional transformation of reflection and shear.
                                                                           (10 Marks)
    b.   Explain any five openGL two dimensional viewing function with syntax and their relevance.
                                                                           (10 Marks)

5   a.   Describe the procedure to map a clipping window into a normalized view port.   **(10 Marks)**
    b.   Explain Weiler-Atherton polygon clipping in detail.   **(10 Marks)**

6   a.   Explain Cohen-Sutherland line clipping algorithm in detail.   **(10 Marks)**
    b.   How is an object rotated in a three dimensional axis? Bring out in detail how to general three
         dimensional composite rotations can be achieved.   **(10 Marks)**

7   a.   Justify the need for 'Projection' and list different projection techniques with brief
         explanation.   **(10 Marks)**
    b.   Describe Bezier method of curve generation.   **(10 Marks)**

8   Write short notes on:
    a.   Homogeneous coordinates Vs Screen coordinates.
    b.   2D transformation Vs 3D transformations.
    c.   Text clipping.
    d.   Traditional animation techniques.   **(20 Marks)**

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