USN

Sixth Semester B.E. Degree Examination, Jan./Feb. 2023
Computer Graphics and Visualization

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   List and explain any six applications of computer graphics. **(08 Marks)**
    b.   Explain the Refresh Cathod Ray Tubes with the neat diagram. **(12 Marks)**

OR

2   a.   Develop the code of the Bresenhams Line Drawing Algorithm. Also illustrate the algorithm the line end points are $(20, 10)$ and $(30, 18)$. **(10 Marks)**
    b.   Write circle drawing algorithm. Given a circle radius $r = 10$, solve the midpoint circle algorithm by determining positions along the circle octant in the first quadrant from $x = 0$ to $x = y$. **(10 Marks)**

Module-2

3   a.   Classify the polygon. Explain two methods for inside-outside test of a polygon. **(10 Marks)**
    b.   Develop the concept of Scanfill algorithm for filling algorithm for filling polygon with suitable diagrams. **(10 Marks)**

OR

4   a.   Explain translation, rotation and scaling of 2D transformation with suitable diagrams, code and matrix. **(10 Marks)**
    b.   Explain OpenGL raster transformations and OpenGL geometric transformation functions. **(10 Marks)**

Module-3

5   a.   Develop the Cohen Sutherland Line Clipping program using OpenGL. **(10 Marks)**
    b.   Explain any two of the 3D geometrical transformation. **(10 Marks)**

OR

6   a.   Explain the Sutherland Hodgeman Polygon clipping with example. **(10 Marks)**
    b.   Discuss the RGB color model and CMY color model. **(10 Marks)**

Module-4

7   a.   Define orthogonal projections. Explain clipping window and orthogonal projection view volume in 3D. **(10 Marks)**
    b.   Explain the three dimensional view pipeline. **(10 Marks)**

OR

8   a.   Construct perspective-projection transformation coordinates and perspective projection equations special cases. **(10 Marks)**
    b.   Explain the Depth-Buffer method and develop its algorithm. **(10 Marks)**

Module-5

9   a.   Explain any three programming event driven input with suitable examples. **(10 Marks)**
    b.   Explain the various input modes with neat diagram. **(10 Marks)**

OR

10 a.   Explain Animating Interactive Program. **(10 Marks)**
    b.   Discuss Logical Device and Hierarchical Menus. **(10 Marks)**

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