CBCS SCHEME

USN | | | | | | | | | | |

15CS62

Sixth Semester B.E. Degree Examination, July/August 2022
Computer Graphics and Visualization

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. List the applications of computer graphics. Explain any two in detail. **(08 Marks)**

b. Explain: i) Color CRT monitors ii) Flat panel displays. **(08 Marks)**

OR

2 a. Explain the display window management using GLUT. **(08 Marks)**

b. Given a radius r = 10, demonstrate midpoint circle algorithm in the first quadrant from x = 0 to x = y. The initial point is $(x_0, y_0) = (0, 10)$. **(08 Marks)**

Module-2

3 a. What is fill area? Explain polygon classification, identifying and splitting concane polygons. **(08 Marks)**

b. Explain the scan line polygon fill algorithm. **(08 Marks)**

OR

4 a. What is homogeneous coordinate? Write the matrix representation for translation rotation and scaling. **(08 Marks)**

b. What is raster operation? Explain the raster methods for geometric transformations. Explain different OpenGL functions used for raster operation. **(08 Marks)**

Module-3

5 a. Explain Cohen-Sutherland line clipping algorithm. **(08 Marks)**

b. Explain the steps in Sutherland-Hudgeman polygon clipping algorithm. Apply the algorithm for the following object. (Ref. Fig.Q.5(b)). **(08 Marks)**

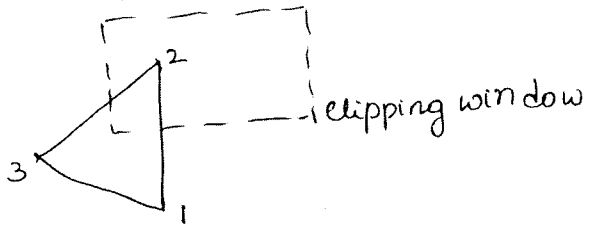

Fig.Q.5(b)

OR

6 a. Explain:
i) OpenGL geometric transformation functions.
ii) OpenGL matrix operations. **(08 Marks)**

b. Explain:
i) RGB color model.
ii) CMY color model. **(08 Marks)**

Module-4

7 a. What is
   i) Parallel projection
   ii) Perspective projection. **(08 Marks)**

   b. Explain the normalization transformation for an orthogonal projection. **(08 Marks)**

OR

8 a. Explain:
   i) gluLookAt( )
   ii) gluFrustum( ). **(08 Marks)**

   b. Explain OpenGL visibility detection functions. **(08 Marks)**

Module-5

9 a. What are the major characteristics that describe the logical behavior of an input device? Explain the various classes logical input devices supported by OpenGL. **(08 Marks)**

   b. What is a display list? Explain definition and execution display list. **(08 Marks)**

OR

10 a. What is double buffering? How it is implemented in OpenGL? **(06 Marks)**

   b. Explain OpenGL i) Quadric surface functions ii) Cubic surface functions. **(04 Marks)**

   c. Explain Bezier curve equations and properties of Bezier curve. **(06 Marks)**

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