

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 concave 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)

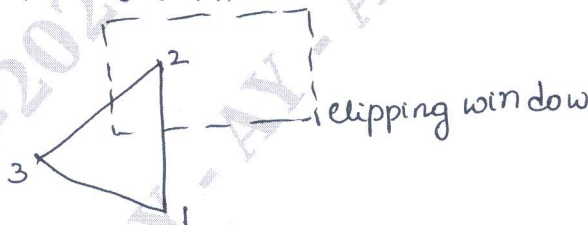


Fig.Q.5(b)

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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, $42+8 = 50$, will be treated as malpractice.

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)
