



# CBCS SCHEME

18CS62

## Sixth Semester B.E. Degree Examination, Feb./Mar. 2022 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. Explain Refresh Cathode Ray Tube with diagram. (10 Marks)
- b. Write Bresenham's line drawing algorithm for  $|m| < 1.0$ . Digitize the line with end points (20, 10) and (30, 18). (10 Marks)

OR

- 2 a. Compare random scan display with raster scan display and explain the applications of computer graphics. (10 Marks)
- b. Write Midpoint Circle Algorithm. Given a circle with radius  $r = 10$ , demonstrate the midpoint circle algorithm by determining positions along circle octant in first quadrant from  $x = 0$  to  $x = y$ . (Assume circle centre is positioned at origin). (10 Marks)

### Module-2

- 3 a. Explain General Scan line polygon fill algorithm. Also explain Open GL polygon fill primitives. (10 Marks)
- b. Explain Translation, Scaling, Rotation in 2D homogeneous coordinate system with matrix representations. (10 Marks)

OR

- 4 a. Explain two dimensional viewing transformation pipeline with example. (10 Marks)
- b. Explain general two dimensional pivot Point rotation and derive the composite matrix. (10 Marks)

### Module-3

- 5 a. What is Clipping? Explain with example the Sutherland – Hodgman polygon clipping algorithm. (10 Marks)
- b. Describe 3D translation and Scaling, with examples. (10 Marks)

OR

- 6 a. Define Color model. With neat diagram, explain RGB and CMY color model. (10 Marks)
- b. Describe Phong lighting model. Also explain the different types of light sources supported by OpenGL. (10 Marks)

### Module-4

- 7 a. Explain Orthogonal Projections. (10 Marks)
- b. Write and explain Depth Buffer Algorithm. Also explain Back – Face detection method with example. (10 Marks)

OR

- 8 a. Explain the Perspective Projections with reference point and Vanishing Point with neat diagrams. (10 Marks)
- b. Explain the OpenGL 3 D Viewing functions and OpenGL Visibility detection functions. (10 Marks)

**Module-5**

- 9 a. What is the necessity of Programming event driven input? Describe window events and keyboard event. (10 Marks)
- b. Write a short notes on :
- i) OpenGL Curve and Surface functions      ii) Bezier Curve and Surfaces. (10 Marks)
- OR**
- 10 a. What are Display lists? Explain the steps to develop Interactive models and Animating interactive programs. (10 Marks)
- b. Write a short notes on :
- i) Curve and Quadric surfaces      ii) Logic Operations (Graphics). (10 Marks)

\*\*\*\*\*