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)**

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