CBCS SCHEME

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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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