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06CS65

Sixth Semester B.E. Degree Examination, June 2012
Computer Graphics and Visualization

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Briefly explain any two applications of computer graphics. **(04 Marks)**

b. Explain the concept of pinhole camera of an imaging system. Also derive the expression for angle of view. **(06 Marks)**

c. Discuss the graphics pipeline architecture, with the help of a functional schematic diagram. **(10 Marks)**

2 a. With the help of a diagram, describe the open GL interface. **(04 Marks)**

b. Write explanatory notes on: i) RGB color model; ii) Indexed color model. **(06 Marks)**

c. Write an open GL recursive program for 2D-sierpinski gasket with relevant comments. **(10 Marks)**

3 a. What are the two major characteristics that describe the logical behavior of an input device? Explain the different clauses of logical input devices. **(08 Marks)**

b. List the various features that a good interactive program should include. **(04 Marks)**

c. Write an open GL program, to demonstrate the hierarchical means, to draw a rectangle and to increase or decrease the size of the rectangle. **(08 Marks)**

4 a. Explain the procedure involved in transforming the world frame to camera/eye frame using the model view matrix. **(10 Marks)**

b. Write an open GL program to demonstrate the use of homogeneous coordinate transformations and simple data structure for representing a rotating cube with color interpolation. **(10 Marks)**

PART – B

5 a. Define and represent the following 2-D transformations in homogeneous coordinate system: i) Translation; ii) Rotation; iii) Scaling; iii) Reflection. **(12 Marks)**

b. What is concatenation transformation? Explain rotation about a fixed point. **(08 Marks)**

6 a. Discuss the following open GL functions: i) gluLook At; ii) gluPerspective. **(06 Marks)**

b. Write a note on hidden surface removal. **(04 Marks)**

c. Derive the projection matrices for perspective viewing. **(10 Marks)**

7 a. Describe any two types of light sources that are sufficient for rendering most simple scenes. **(04 Marks)**

b. Discuss the phing-lighting model. **(08 Marks)**

c. What are the different methods available for shading a polygon? Discuss any two. **(08 Marks)**

8 a. Explain in brief, Cohen-Sutherland line clipping algorithm with possible cases. **(08 Marks)**

b. What do you mean by antialiasing? Explain. **(04 Marks)**

c. Discuss the Bresenham's rasterization algorithm. **(08 Marks)**

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