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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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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.