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10CS65

Sixth Semester B.E. Degree Examination, June/July 2014
Computer Graphics and Visualization

Time: 3 hrs.

Max. Marks:100

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

PART – A

1   a. "Computer graphics is an essential applied domain in recent years". Justify.   **(06 Marks)**
     b. Explain the pinhole camera imaging system, with a neat block diagram.   **(06 Marks)**
     c. With a neat diagram, explain the graphics pipeline architecture to render an image.
        (08 Marks)

2   a. Explain the seven major groups of OpenGL API functions, with examples for each function.
        (10 Marks)
     b. Explain the color contribution for rendering an image in computer graphics.   **(10 Marks)**

3   a. What is a measure and trigger of a logical input device? Explain the different modes to obtain the measure, with example.   **(06 Marks)**
     b. What is a display list? How it increases the performance of a graphics system? Explain with example.   **(06 Marks)**
     c. List out the characteristics of a good interactive program, with example for each.   **(08 Marks)**

4   a. Explain different frame coordinates in OpenGL, with suitable example.   **(10 Marks)**
     b. Explain translation, rotation and scaling of objects in 2 – dimensions.   **(10 Marks)**

PART – B

5   a. How an object transformation is implemented in OpenGL? Explain with suitable example.
        (10 Marks)
     b. What are quaternions? How it is useful in a three-dimensional space?   **(10 Marks)**

6   a. Explain different types of views in graphics system.   **(06 Marks)**
     b. How perspective projection differs from orthogonal projection? Give OpenGL functions for the same.   **(06 Marks)**
     c. Write a program to display a set of values $\{f_i\}$ as a rectangular mesh.   **(08 Marks)**

7   a. Explain Cohen–Sutherland clipping algorithm without codes. Explain its advantage over Liang Barsky algorithm.   **(10 Marks)**
     b. Explain the phong lighting model.   **(10 Marks)**

8   Write a short notes on :
     a. Light sources
     b. Liang Barsky clipping algorithm
     c. Hidden surface removal
     d. Rasterization.
        (20 Marks)

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