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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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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.