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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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