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Sixth Semester B.E. Degree Examination, June/July 2015
Computer Graphics and Visualization

Time: 3 hrs.

Max. Marks:100

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

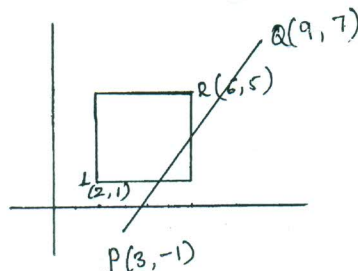
PART – A

- 1 a. What is computer graphics? List and explain major categories of applications of computer graphics. (10 Marks)
- b. Explain graphics pipeline architecture with neat diagram. (10 Marks)
- 2 a. Write a c/c++ program to recursively subdivide a tetrahedron to form 3D Sierpinski gasket. The number of subdivision is to be specified by the user. (12 Marks)
- b. List and explain the major categories of graphics API functions. (08 Marks)
- 3 a. Define trigger of a device and measure of a device. List and explain various input modes. (10 Marks)
- b. What is double buffering? How OpenGL implements double buffering? Explain. (06 Marks)
- c. List out any four characteristic of good interactive program. (04 Marks)
- 4 a. Write a program in c/c++ to draw a color cube and spin it using OpenGL transformation matrices. (12 Marks)
- b. Explain bilinear interpolation of assigning colors. (08 Marks)

PART – B

- 5 a. Explain translation, scaling and rotation of 3D objects in homogeneous coordinate. (12 Marks)
- b. What are Quaternion's? How it is useful to carry out rotation operation? (08 Marks)
- 6 a. Explain two types of simple projections. (10 Marks)
- b. Explain projections in OpenGL. (10 Marks)
- 7 a. With neat diagrams, explain various light sources. (12 Marks)
- b. How material properties are specified in OpenGL? Explain. (08 Marks)
- 8 a. Clip a line PQ against clipping window LR (Fig.Q.8(a)) using Cohen Sutherland line clipping algorithm. Draw the result after clipping. (10 Marks)

Fig.Q.8(a)



Data:

P = (3, -1)

Q = (9, 7)

L = (2, 1)

R = (6, 5)

- b. What is hidden surface removal in computer graphics? Explain. What are the various approach for hidden surface removal? Explain. (10 Marks)

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