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10IS665

Sixth Semester B.E. Degree Examination, June/July 2015

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. Explain the applications of computer graphics. (06 Marks)
b. With a neat diagram, explain the graphics pipeline architecture. (06 Marks)
c. Explain the concept of pinhole camera of an imaging system. Also derive the expression for angle of view. (08 Marks)

2 a. With the help of diagram, describe the openGL interface. (04 Marks)
b. Write a note on RGB color model and indexed color model. (06 Marks)
c. Explain a 2D – Sierpinski gasket program in detail with comments. (10 Marks)

3 a. Explain the different classes of logical input devices. (06 Marks)
b. Explain picking in detail. (08 Marks)
c. Explain the mouse callback function for mouse interface. (06 Marks)

4 a. Define a plane in office space and derive the equation of a plane in office space. (10 Marks)
b. Explain the modeling of a colored cube in detail. (10 Marks)

PART – B

5 a. Define and represent the following 2D transformations in homogeneous Co-ordinate system.
(i) Translation (ii) Scaling (iii) Rotation (10 Marks)
b. Explain the rotation of an object about an arbitrary point (i.e, other than origin) and also derive the concatenation matrix. (10 Marks)

6 a. Derive the perspective normalization matrix for viewing. (12 Marks)
b. Discuss the following openGL functions: i) gluLookAT ; ii) gluPerspective. (08 Marks)

7 a. Explain the phong lighting model. (10 Marks)
b. Explain the polygon shading in detail. (10 Marks)

8 a. Explain Liang Barsky line clipping algorithm. (10 Marks)
b. Explain and derive the equations for Bresenham's line drawing. (10 Marks)

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