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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Sixth Semester, B.E. – Computer Science and Engineering
Semester End Examination; June - 2016
Computer Graphics and Visualization

Time: 3 hrs   Max. Marks: 100

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a.	Define Computer Graphics. Explain the applications of Computer Graphics.	8
b.	Write an OpenGL program to recursively subdivide a tetrahedron to form 3D Sierpinski gasket.	12
2 a.	With a neat diagram explain the pinhole camera also derive the angle of view.	10
b.	Explain different graphics functions with a neat diagram.	10

UNIT - II

3 a.	Explain the different frochies in OpenGL.	10
b.	Explain the basic geometric transformations.	10
4 a.	Write a short note on : i) Affine transformations ii) Bilinear interpolation.	10
b.	Give the matrix representation of 3D geometric transformation and explain.	10

UNIT - III

5 a.	List and explain different logical input devices.	10
b.	Write the pseudo code for Liong Barsky algorithm.	10
6 a.	Get all raster pixel positions to draw a line between (5, 8) and (12, 10).	10
b.	Clip the line $P_1 P_2$ defined by P_1 (-1, -2) and P_2 (2, 4) against the window whose lower left is (0, 0) and upper right is (1, 1) using Liong Barsky algorithm.	10

UNIT - IV

7 a.	Explain Orthographic viewing in OpenGL.	10
b.	Give the metrics for perspective projection and explain.	10
8 a.	List and explain the different types of axonometric projections.	10
b.	Give the matrix representation for orthographic projections and explain.	10

UNIT - V

9 a.	Give the different classifications of surfaces based on the interaction between light and the materials.	10
b.	Explain phong lighting model.	10
10 a.	How is modified phong lighting model different from the original phong lighting model?	10
b.	What are the different types of light sources supported by OpenGL? Explain.	10

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