

First Semester M.Tech. Degree Examination, January 2011
Computer Graphics and Visualization

Max. Marks:100

Time: 3 hrs.

Note: Answer any FIVE full questions.

- a. What are the applications of computer graphics? Explain. (08 Marks)
- b. Explain the graphics pipeline architecture. (06 Marks)
- c. Explain pinhole camera in detail. (06 Marks)
- 2 a. Write a program segment to generate a sierpinski gasket with 5000 random points. (06 Marks)
- b. What is an aspect ratio? Explain how a mapping is done from window to view port co-ordinate system. (06 Marks)
- c. Name and explain two types of color model. (08 Marks)
- 3 a. What do you mean by display lists? Explain with an example execution of display list. (07 Marks)
- b. What are the logical input devices? Explain the types. (07 Marks)
- c. Explain the event driven inputs. (06 Marks)
- 4 a. Explain how to change a co-ordinate system from one basis vector to another basis vector. (10 Marks)
- b. Explain in detail modeling a colored cube. (10 Marks)
- 5 a. What is homogeneous co-ordinates? Mention its advantages and represent the basic transformation in homogeneous co – ordinates. (12 Marks)
- b. Explain the rotation about an arbitrary point in 3D spaces. (08 Marks)
- 6 a. Explain the different types of projections in detail. (10 Marks)
- b. Write a program to move a camera towards and away from an object using perspective projection. (05 Marks)
- c. Explain normalization in detail. (05 Marks)
- 7 a. Write a program segment using structures to represent meshes of quadrilaterals and shade them. (07 Marks)
- b. Explain the Phong Lighting model and derive equation for calculating intensity. (07 Marks)
- c. Name the different types of shading and explain in detail. (06 Marks)
- 8 a. Derive mathematical formula for Bresenham's midpoint line algorithm and also write the algorithm for the same. (10 Marks)
- b. Explain Cohen Sutherland line clipping algorithm in detail. (10 Marks)