USN | 1 | C | M | 1 | 5 | C | S | 0 | 3 | 5 |

10CS65

Sixth Semester B.E. Degree Examination, June/July 2018
Computer Graphics & Visualization

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Explain the concept of pinhole camera of an imaging system. Also derive the expression for angle of view. **(10 Marks)**

b. Discuss the graphics pipeline architecture with the help of a functional schematic diagram. **(10 Marks)**

2 a. Explain the openGL primitives and attributes with examples. **(06 Marks)**

b. Explain the Aspect ratio and viewports with respect to OpenGL. **(04 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 Request mode and Event mode model. **(08 Marks)**

c. Explain logic operations in input interactions. **(06 Marks)**

4 a. Explain the procedure involved in transforming the word frame to camera/eye frame using the model view matrix. **(10 Marks)**

b. Explain a modeling a colored cube in detail with the OpenGL functions used to create a colored cube. **(10 Marks)**

PART – B

5 a. Explain translation, rotation and scaling and also derive a translation, rotation and scaling matrix using homogeneous co-ordinate system. **(10 Marks)**

b. Explain Quaternions and derive the matrix. **(10 Marks)**

6 a. Discuss the following OpenGL functions : (i) gluLookAt (ii) gluPerspective. **(06 Marks)**

b. Write a note on hidden surface removal. **(04 Marks)**

c. Derive the projection matrices for perspective viewing. **(10 Marks)**

7 a. Explain the Phong lighting model. **(10 Marks)**

b. Explain the polygon shading in detail. **(10 Marks)**

8 a. Explain Cohen-Sutherland line clipping algorithm in detail. **(10 Marks)**

b. Explain Hidden-surface Removal using Object Space and Image Space approaches. **(10 Marks)**

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.