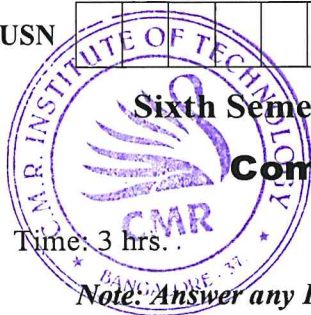


USN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

10CS65



Sixth Semester B.E. Degree Examination, July/August 2022

Computer Graphics and 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 all three input modes with relevant figures. (09 Marks)
b. Describe the importance of display lists. Explain the OpenGL functions used to define and execute a display list with a suitable example. (07 Marks)
c. Discuss the functionality of Display Callback (glutDisplayFunc()) and Idle Callback (glutpostRedisplay()). (04 Marks)
- 4 a. List and explain different Frames in OpenGL. (06 Marks)
b. Explain how to define Vertex Arrays and color Arrays to store vertex and color values. (07 Marks)
c. Explain Affine transformations. (07 Marks)

PART – B

- 5 a. What is concatenation transformation? Explain rotation about a fixed point. (08 Marks)
b. Explain how quaternions are used in rotation in a three-dimensional space, also list some of its advantages. (12 Marks)
- 6 a. Explain the various types of views that are employed in computer graphics systems. (10 Marks)
b. Explain g/Frustrum() with syntax. (06 Marks)
c. Define the term Axonometric projection, also list its types. (04 Marks)
- 7 a. Explain 3 types of light-material interactions with figures. (06 Marks)
b. Describe point sources and spotlight sources with figures. (06 Marks)
c. Describe Phong Lighting Model. (08 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)

CMRIT LIBRARY
RANGALORE - 560 037

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.