10CS65

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020

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.   With a neat block diagram, explain the graphics pipeline architecture.   **(10 Marks)**
    b.   Explain the concept of pinhole camera. Derive the expression for angle of view and also indicate the advantages and disadvantages.   **(10 Marks)**

2   a.   Write an OpenGL recursive program for 2D Sierpinski Gasket using Midpoint Method.   **(10 Marks)**
    b.   Explain the major groups of graphics function with at least two OpenGL functions for each.   **(10 Marks)**

3   a.   Explain the various classes of logical input devices that are supported by OpenGL. Explain the functionality of each.   **(10 Marks)**
    b.   What is meant by measure and trigger of a device? Explain with neat diagram the various models.   **(10 Marks)**

4   a.   Explain the OpenGL frames.   **(06 Marks)**
    b.   Explain rotation and translation transformation with respect to 2-dimensions.   **(08 Marks)**
    c.   Explain the complete procedure of converting world object frame into camera frame using model-view matrix.   **(06 Marks)**

PART – B

5   a.   Write an OpenGL program that allow you to rotate CUBE along x, y, z axis using button.   **(10 Marks)**
    b.   Explain the basic transformations in 3D and represent them in matrix form.   **(10 Marks)**

6   a.   Bring out the deference between perspective and parallel projections.   **(08 Marks)**
    b.   Define projection. Explain the functions used for the purpose in OpenGL:
          i)   Orthographic projections
          ii) Perspective projections   **(12 Marks)**

7   a.   Describe the Phong lighting model and also indicate the advantages and disadvantages.   **(10 Marks)**
    b.   Explain the different methods of shading a polygon. Discuss any two.   **(10 Marks)**

8   a.   Write Cohen-Sutherland line clipping algorithm.   **(10 Marks)**
    b.   Write Bresenham's line drawing algorithm.   **(10 Marks)**

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