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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)
