EJ – 1227

V Semester B.E. (CSE/ISE) Degree Examination, June/July 2015
(2K11 Scheme)
CI 55 : COMPUTER GRAPHICS

Time : 3 Hours Max. Marks : 100

***Instruction** : Answer **any five full** questions, selecting atleast **two** from **each** Part.*

PART – A

1. a) With an aid of a functional schematic, describe graphics pipeline with major process in image processing. **10**

   b) Explain the concept of pinhole camera which is an example of an imaging system. Derive the expression for angle of view. Also indicate the advantages and disadvantages of this. **10**

2. a) List out different open GL primitives, giving example for each. **10**

   b) Write an open GL program for a 2-D Sierpinski gasket using mid-point of each of triangle. Indicate the assumptions made in generating the above. **5**

   c) Explain the library organization of open GL interface. **5**

3. a) What are the various clauses of logical input devices that are supported by open GL ? Explain the functionality of each of these clauses. **10**

   b) Explain how an event driven input can be programmed for (i) keyboard (ii) mouse. **10**

4. a) Explain rotation, transformation and scaling, with open GL functions. **10**

   b) Explain the complete procedure of converting a world object frame into camera frame using the model view matrix. **10**

PART – B

5. a) Write an open GL program to rotate a cube about X, Y and Z axis. Use mouse buttons to select axis of rotation. **10**

   b) What is concatenation ? How does it affect the efficiency of transformation ? **5**

   c) What are quaternions ? Explain its advantages. **5**

P.T.O.

6. a) With a neat sketches, explain the various types of views that are employed in computer graphics systems. **10**

   b) Briefly discuss the following along with the open GL functions.

      i) Perspective projection

      ii) Orthogonal projections. **10**

7. a) Explain the Rhong lighting model. Discuss the advantages and disadvantages of this model. **10**

   b) What are the different methods available for shading a polygon ? Briefly discuss any two of them. **10**

8. Write short notes on : **20**

   a) Hidden surface removal

   b) Cohen-Sutherland algorithm

   c) Liang-Barskey algorithm

   d) Bresenham's Rasterization.

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