UJ – 164

V Semester B.E. (CSE/ISE) Degree Examination, June/July 2016
(2K11 Scheme)
CI55 : COMPUTER GRAPHICS

Time : 3 Hours Max. Marks : 100

***Instruction** : Answer **any five** full questions selecting at least **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 disadvantage of this. **10**

2. a) Write an OpenGL program for a 2-D Sierpinski gasket using mid-point of each of triangle. Indicate the assumptions made in generating the above. **10**

   b) List out different open GL primitives, giving examples for each. **10**

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

   b) Write a program to demonstrate event driven and menu driven facilities by using open GL. **10**

4. a) Explain the complete procedure of converting a world object frame into camera or frame using the model view matrix. **8**

   b) Explain the following with the open GL functions. **12**

      i) Rotation ii) Translation iii) Scaling.

PART – B

5. a) What are quaternions ? Give the mathematical representation of quaternions. **10**

   b) What is a homogeneous co-ordinate system ? Using this co-ordinate system represent all the basic 2D transformations. **10**

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6. a) Derive the projection matrices for perspective -viewing. **5**

   b) Explain the gluLookAt function. **5**

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

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

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

8. a) Explain the concept of polygon clipping with neat sketches. **10**

   b) Discuss the Bresenham's Rasterization algorithm. How it is better when compared to other existing method ? Describe. **10**
