USN | | | | | | | | | | **10IS665**

Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
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. Briefly explain the working of CRT with a neat diagram. What is the difference between interlaced and non interlaced display?   **(10 Marks)**
    b. Discuss the graphics geometric pipeline Architecture, with the help of a functional schematic diagram.   **(10 Marks)**

2   a. List and explain seven major groups of openGL graphic functions.   **(08 Marks)**
    b. What is the difference between GL_TRIANGLE_FAN and GL_TRIANGLE_STRIP, give an example.   **(03 Marks)**
    c. Describe indexed color model with suitable diagram, and also mention any 3 openGL functions used to set color attributes.   **(09 Marks)**

3   a. Which are the six classes of logical input devices? Explain.   **(06 Marks)**
    b. Explain the Input modes in detail with figures.   **(09 Marks)**
    c. Briefly explain "Double buffering" and also mention the functions used to set double buffering and swap buffers.   **(05 Marks)**

4   a. Explain 2D translation, Rotation and scaling operations with their matrix representations.   **(10 Marks)**
    b. Derive the transformation matrix for scaling with respect to fixed point. **(10 Marks)**

PART – B

5   a. Write a note on "Current Transformation Matrix" (CTM). Explain how does openGL supports transformations.   **(10 Marks)**
    b. What are Quaternion's? Explain its mathematical representation and also mention its advantages.   **(10 Marks)**

6   a. What is perspective projection? Describe 3D view, Top view and side view of perspective projection?   **(08 Marks)**
    b. What is orthogonal projection? Explain with a projection matrix?   **(06 Marks)**
    c. Explain the functionality of glLookAt ( ) and glOrtho ( ) functions with syntax. **(06 Marks)**

7   a. List and explain various Light sources in openGL.   **(08 Marks)**
    b. Write a short note on Phong-Lighting model.   **(08 Marks)**
    c. What is flat shading? Explain.   **(04 Marks)**

8   a. Briefly explain Cohen – Sutherland line clipping algorithm.   **(08 Marks)**
    b. Explain DDA algorithm for drawing line.   **(06 Marks)**
    c. Discuss the 2-buffer algorithm for hidden surface removal.   **(06 Marks)**

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