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10IS665

Sixth Semester B.E. Degree Examination, Jan./Feb. 2021
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. Define computer graphics. Explain in detail the application of computer graphics in current day. **(10 Marks)**
b. Explain the working of pinhole camera. Derive angle of view. **(10 Marks)**

2 a. Explain the seven major groups of OpenGL API functions, with example for each function. **(10 Marks)**
b. List out different OpenGL Primitives, giving examples for each. **(10 Marks)**

3 a. What are the various classes of logical input devices that are supported OpenGL? Explain the functionality of each of these classes. **(08 Marks)**
b. What is a measure and trigger of a logical input device? Explain the different modes to obtain the measures with example. **(08 Marks)**
c. List out the characteristics of a good interactive program. **(04 Marks)**

4 a. Explain different frame coordinates in OpenGL, with suitable example. **(10 Marks)**
b. Explain translation, rotation and scaling objects in 2-dimensions. **(10 Marks)**

PART – B

5 a. How an object transformation is implemented in OpenGL? Explain with suitable example. **(10 Marks)**
b. What are quaternions? How it is useful in a three dimensional space. **(10 Marks)**

6 a. Briefly discuss the following along with the functions used for the purpose in OpenGL.
i) Perspective projections ii) Orthogonal projections. **(10 Marks)**
b. What is canonical view volume? Explain the mapping of a given view volume to the canonical form. **(10 Marks)**

7 a. Explain phong lighting model. Indicate the advantages and disadvantages. **(10 Marks)**
b. What are the different methods available for shading a polygon? Briefly discuss any two of them. **(10 Marks)**

8 a. Explain the Cohen-Sutherland line clipping algorithm in detail. **(10 Marks)**
b. Explain the Liang-Barsky line clipping algorithm. **(10 Marks)**

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