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By K B Hemanth Raj

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USN | | | | | | | | | | **15CS62**

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Computer Graphics and Visualization

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1   a. What is Computer Graphics? Explain the applications of computer graphics.   **(05 Marks)**
    b. Illustrate the sequence of coordinate transformations from modeling coordinates to device-coordinates.   **(05 Marks)**
    c. Explain DDA line drawing algorithm with procedure.   **(06 Marks)**

OR

2   a. Explain the basic operation of CRT with its primary components with neat diagram.   **(08 Marks)**
    b. Digitize the line by using Bresenham's line drawing algorithm with end-points (20, 10) and (30, 18), having slope 0.8.   **(08 Marks)**

Module-2

3   a. How do you classify the polygon? Explain OpenGL polygon fill primitives.   **(07 Marks)**
    b. Explain translation, scaling, rotation in 2D homogeneous coordinate system with matrix representations.   **(09 Marks)**

OR

4   a. Explain general scan-line polygon-fill algorithm in detail.   **(10 Marks)**
    b. What are the entities required to perform a rotation? Show that two successive rotations are additive.   **(06 Marks)**

Module-3

5   a. Define clipping. Briefly explain Co-hen Suterland line clipping without code. Discuss four cases.   **(10 Marks)**
    b. Describe phong lighting model.   **(06 Marks)**

OR

6   a. Clip the polygon given in Fig.Q.6(a), using Suterland Hodgman polygon clipping algorithm with neat sketches.   **(06 Marks)**
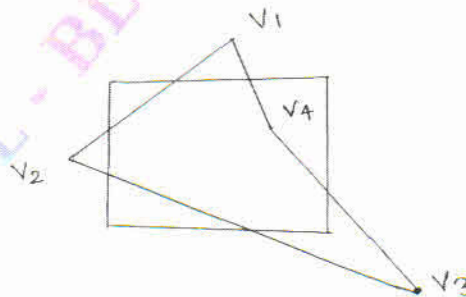

Fig.Q.6(a)

b. Explain the different types of light sources supported by OpenGL. (06 Marks)

c. Explain the RGB and CMY color models. (04 Marks)

Module-4

7 a. Explain the perspective projections with reference point and vanishing point with neat diagrams. (10 Marks)

b. Discuss depth-buffer method with algorithm. (06 Marks)

OR

8 a. Demonstrate how transformation from world coordinates to viewing coordinates with matrix representation. (06 Marks)

b. Explain orthogonal projections in detail. (10 Marks)

Module-5

9 a. Explain the major characteristics that describe the logical behaviour of an input device. Explain how OpenGL provides the functionality of each of the classed of logical input devices. (08 Marks)

b. Describe the logical input operation of picking in selection mode. (04 Marks)

c. What is DisplayList? Write OpenGL code-segment that generate a blue colored square using display list. (04 Marks)

OR

10 a. Explain Bezier spline curves with equations and demonstrate the appearance of Bezier curves for various selection of control points. (08 Marks)

b. What is double buffering? How it is implemented in OpenGL. (04 Marks)

c. Differentiate event mode with request mode. (04 Marks)

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