CBCS SCHEME

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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)**

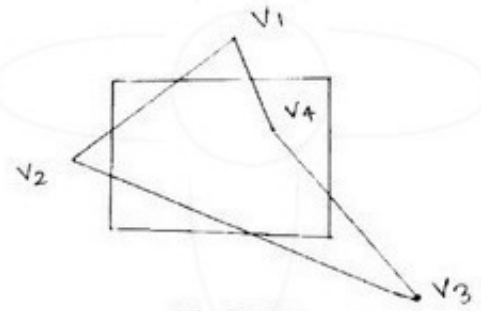

Fig.Q.6(a)

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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