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15CS62

Sixth Semester B.E. Degree Examination, June/July 2018  
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. With neat diagram, explain the basic design and operation of cathode Ray tube. (08 Marks)  
b. Write Bresenham's line drawing Algorithm for  $|m| < 1.0$ . Digitize the line with endpoints (20, 10) and (30, 18). (08 Marks)

OR

- 2 a. Briefly explain Raster and Random scan displays based on Television Technology. (08 Marks)  
b. Write Midpoint Circle Algorithm. Given a circle with radius  $r = 10$  demonstrate the midpoint circle algorithm by determining positions along circle octant in first Quadrant from  $x = 0$  to  $x = y$  (Assume Circle Centre is positioned at origin). (08 Marks)

Module-2

- 3 a. With neat diagram, explain the two commonly used algorithms for identifying interior areas of a plane figure. (08 Marks)  
b. Explain general two dimensional pivot point rotation and derive the composite matrix. (08 Marks)

OR

- 4 a. Explain General scan line polygon fill algorithm support your claim with a neat diagram. (08 Marks)  
b. Explain two dimensional viewing transformation pipeline. (08 Marks)

Module-3

- 5 a. Explain Cohen Sutherland line clipping clip the lines with coordinates  $(x_0, y_0) = (60, 20)$   $(x_1, y_1) = (80, 120)$  given the window boundaries  $(x_{wmin}, y_{wmin}) = (50, 50)$  and  $(x_{wmax}, y_{wmax}) = (100, 100)$  (08 Marks)  
b. Define color model. With neat diagram explain RGB and CMY color model. (08 Marks)

OR

- 6 a. Explain Sutherland Hodgman Polygon clipping. Find the final clipped vertices for the following Fig Q6(a)

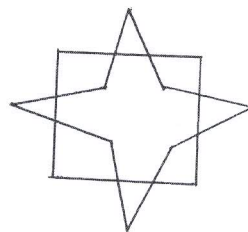


Fig Q6(a)

- b. Explain Specular Reflection and phong model. (08 Marks)

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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Module-4

- 7 a. Explain in detail perspective projection transformation coordinates. (08 Marks)  
b. Write and explain Depth Buffer Algorithm. (08 Marks)

OR

- 8 a. Explain in detail symmetric perspective projection Frustum. (08 Marks)  
b. Explain OpenGL Visibility detection functions. (08 Marks)

Module-5

- 9 a. Give the equation representing control points of the Bezier spline curves. Discuss its properties. Also draw Beizer curve with 4 and 3 control points. (08 Marks)  
b. Explain Request, sample and event Input modes with the Block diagram. (08 Marks)

OR

- 10 a. With the program snapshot , explain the creation of Menus in OpenGL. (08 Marks)  
b. With the role of glCallList ( ) function in creating Displaylists in OpenGL. Write OpenGL code for rendering a simple Animated face. (08 Marks)

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