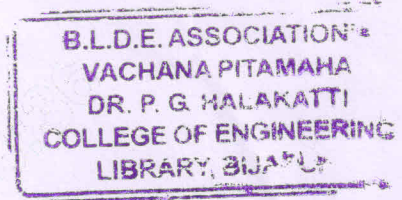## CBCS Scheme

USN | | | | | | | | | | |

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 indentifying 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)
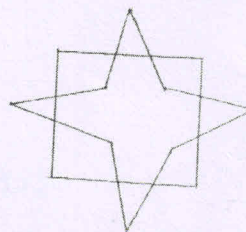

Fig Q6(a)

(08 Marks)

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

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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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