**Theory**

**Fundamentals of Computer Graphics:** Applications of computer Graphics in various fields, Evolution of computer Graphics, Graphical Input-Output Devices, Random scan displays, Raster scan displays.

**Graphics Primitives:** Algorithms for drawing various output primitives - Line, circle, ellipse, arcs & sectors, Boundary Fill & Flood Fill algorithm, Color Tables.

**2-D & 3-D Geometrical Transformations:** Translation, Rotation, Scaling, Shear, Reflection, Homogenous coordinate system, Composite transformations.

**Viewing &Clipping in 2-D:**Window to View port transformation, Cohen Sutherland, Liang Barsky, Nicholl-Lee-Nicholl Line clipping algorithms

**Lab**

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| S. No | Description |
| 1 | Installation and basics of Basics of OpenGL (library  GLUT, GL, GLU) |
| 2 | Write a program to:   * Create empty window (Black, White and different Colors) * Draw a point of width 10 pixel * Draw a green color line from (10,10) to (50,50) * Draw a triangle on black background * Draw a rectangle on black background |
| 3 | Write a program to draw a line using:   * DDA algorithm * Bresenham’s line algorithm |
| 4 | Write a program to:   * Draw a circle using Midpoint circle algorithm * Draw an ellipse using Midpoint ellipse algorithm |
| 5 | Write a program to fill a polygon using boundary fill and flood fill  algorithm (4-connected and 8-connected) for various concave and convex polygons. |
| 6 | Write a program for drawing the following simple two dimensional objects using certain graphic functions available for drawing lines, rectangles, polygons, ellipses & circles which generates pixel activation list.  (i) House (ii) Car (iii) Fish (iv) Man |