# Model Question Paper
## VI Semester B.E.
## Computer Graphics (CS63)

**Time:3 hrs** **Max Marks:100**

**Answer any *five* full questions**

1.a. Describe the classifications of computer graphics applications. (10 Marks)

b. With a neat block diagram explain the conceptual framework for interactive graphics. (10 Marks)

2.a. Explain the midpoint line scan conversion algorithm. Derive the equations for the decision variable. (10 Marks)

b. Given a circle of radius r =10,demonstrate the mid-point circle algorithm by determining positions along the circle octant in the first quadrant from x=0 to x=y. (10 Marks)

3.a. What is clipping?. Explain the Liang-Barsky algorithm for clipping of lines. (10 Marks)

b. Give the working principles of:

i. Electro-static plotter.

ii. Laser printer. (10 Marks)

4.a. Give the logical organization of the video controller in a raster display system. (05 Marks)

b. Prove that two successive rotations are additive. (05 Marks)

c. Explain the steps in transforming a world co-ordinate window into a view port. Also get the transformation matrix. (10 Marks)

5.a. Show that Rz( ).Rx( ).Ry( ).T(-x1,-y1,-z1 ) (10 Marks)

$$\begin{pmatrix} \gamma_{1x} & \gamma_{2x} & \gamma_{3x} & 0 \\ \gamma_{1y} & \gamma_{2y} & \gamma_{3y} & 0 \\ \gamma_{1z} & \gamma_{2z} & \gamma_{3z} & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} . T(-x1,-y1,-z1 )$$

b. Give the subclasses of planar geometric projections. Explain them briefly. (10 Marks)

6.a. Derive $M_{general}$ projection matrix. (10 Marks)

b. Explain clipping against a canonical view volume in 3D. (10 Marks)

7.a. What is select interaction task? Briefly discuss the main issues related to it. (10 Marks)

b. Explain the important design considerations for the user-interface. (10 Marks)

8.a. Explain the B-Spline technique of generating curves and illustrate with example. (10 Marks)

b. Explain the following for visible surface determination. (10 Marks)

i. List-priority algorithm.

ii. BSP Trees