



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 110504**

Roll No.

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|

**B. Tech.**

**(SEM. V) (ODD SEM.) THEORY  
EXAMINATION, 2014-15  
COMPUTER GRAPHICS**

Time : 2 Hours]

[Total Marks : 50

- 1 Attempt any **two** parts of the following : (2×6=12)
- (a) Differentiate between Random and Raster scan system with example.
  - (b) Write DDA algorithm for line drawing. Rasterized the line between the points (20, 10) and (30, 18) by using the same.
  - (c) Explain the working of colour CRT by using delta shadow mask method.
- 2 Attempt any **two** parts of the following : (2×7=14)
- (a) Write Liange Barsky algorithm for Line Clipping. Use Liange Barsky line clipping algorithm to clip the line P1(-15,-30) to P2(30,60) against the window having diagonally opposite corners as (0,0) and (15,15).

(b) Explain concave and convex polygons with proper example. Discuss Sutherland-Hodgeman polygon clipping algorithm by all possible cases.

(c) Rotate a triangle at A (0,0), B(1,1), C(5,2) by  $45^\circ$  about :

(i) Origin (0,0)

(ii) Point P(-1,-1). Find new coordinates of the rotated figure.

3 Attempt any **two** parts of the following : (2×6=12)

(a) Find the coordinates of a pyramid whose coordinates are A(0,0,0), B(1,0,0), C(0,1,0) and D(0,0,1) after mirror reflection with respect to the plane passing through the origin and having the normal vector  $N = i+j+j$ .

(b) What is Projection ? Derive oblique parallel projection and perspective projection matrices.

(c) Derive a general form of 3D rotation about :

(i) X-axis

(ii) Z-axis

4 Attempt any **two** parts of the following : (2×6=12)

- (a) What is the importance of hidden line and surface removal algorithm ? Discuss the mechanism of Z-buffer surface removal algorithm and differentiate it with A-buffer surface removal algorithm.
- (b) Specify the significance of continuity conditions. Discuss parametric continuity conditions and differentiate it with geometric continuity conditions.
- (c) Explain diffuse reflection and Gouraud model.