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ECS-504

(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 45^0 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.
