B.Tech. 5th Semester (CS & IT) F-Scheme

Examination, December–2017

COMPUTER GRAPHICS

Paper–CSE-303-F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : ***Question No. 1 is compulsory****. Attempt* ***five*** *questions in total selecting* ***one*** *question from each unit.*

1. Explain the following : 4×5=20

(a) Applications of computer graphics.

(b) Window to viewport mapping.

(c) Types of projections.

(d) Coefficient of reflection and halfway vector.

Section–A

2. (a) Write the step required to plot a line whose slope is between 0° and 45° using the slope-intercept equation. 10

(b) Indicate which raster location would be chosen by Bresenham's algorithm when scan-converting a line from pixel coordinate (1, 1) to pixel coordinate (8,5). 10

3. Explain the architecture of Raster Scan Display. Give the logical organization of a Video Controller and explain its importance in Raster Scan display. 20

Section–B

4. (a) Perform a 60° rotation of triangle A(0,0), B(1,1), C(5,2)

   (i) About the origin and

   (ii) About P(–2,–2). 10

   (b) Write the general form of a shearing matrix with respect to a fixed point P(h,k). 10

5. Contrast the efficiency of clipping between Sutherland-Cohen and Mid-point algorithm. Describe Sutherland-Hodgeman algorithm for polygon clipping. Explain why this algorithm works for convex polygons. 20

Section–C

6. (a) Write 3D transformation matrix to find reflection of a point P (15, 25, 35) about plane z = 0. 10

   (b) What is oblique projection ? Provide some examples of oblique projection. 10

7. Write notes on : 20

   (a) Z-buffer algorithm

   (b) Geometric projections.

Section–D

8. (a) Explain Bezier method of curve drawing. 10

   (b) Describe methods of polygon shading. 10

9. Write notes on : 20

   (a) Bezier curve

   (b) B-spline curve

   (c) Fractals