Roll No…… Total Pages: 3

1930

BCA/M-18

COMPUTER GRAPHICS

Paper: BCA-363

Time: Three Hours Maximum Marks: 80

Note: Attempt five questions in all. Q. No.1is compulsory. Attempt four more questions selecting one question from each Unit. All questions carry equal marks.

1. Answer the following in brief :
   (a) What is a bit plane?
   (b) How is a point represented in a Cartesian Coordinate System?
   (c) What do you mean by the term scan conversion?
   (d) How is a point on a circle represented using polar coordinates?
   (e) What happens when shearing transformation is applied to an object?
   (f) What is the effect of dragging technique applied to an object?
   (g) What will be the four bit code for the view area region (viewport/visible area) when Cohen-Sutherland algorithm is applied for clipping lines?
   (h) What will be the 3-D transformation matrix for scaling if Sx=Sy = Sz =2.

UNIT-I

2. (a) Explain any four applications of computer graphics.
   (b) What is the purpose of a look-up table and display processor in a graphics system?
2. Give brief description of the following :
   (a) Plasma panel (b) Joy Stick.

UNIT-II

3. Explain the Bresenham's algorithm for drawing lines and use it to compute the points on a line with end points as (4, 6) and (11, 8).
4. Distinguish between flood-fill algorithm and scan-line fill algorithm for filling objects.

UNIT-III

5. Consider a square with diagonal vertices at (2, 2) and (6, 6). What will be the new coordinates of the vertices of the square if it is scaled to 2 times its original size? Use matrix computations to derive your answer.
7. (a) Derive the rotation transformation w.r.t. the origin.
   (b) What do you mean by composite transformation, inverse transformation, and affine transformation?

UNIT-IV

8. Distinguish between a window and a viewport. Describe the 2-D viewing transformation that maps a window in world coordinates onto a normalized viewport using an appropriate example.
9. (a) Describe any two three-dimensional display methods.
   (b) Write the 3-D transformation matrices for translation and rotation.