



SF-8328

**B. E. III (Sem. VI) (Computer) Examination**  
**May / June – 2011**  
**Computer Graphics**

Time : 3 Hours]

[Total Marks : 100

**Instructions :**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :

Name of the Subject :

Subject Code No. :     Section No. (1, 2,.....) :

Seat No. :

Student's Signature

- (2) Use **separate** answer sheet for each section.  
(3) Make assumption whenever required.  
(4) Numbers on the **right** indicate maximum marks.

- 1 (a) Answer the following : 10
- (i) Bresenham's circle drawing algorithm will take reflections of one octet. (True/false)
- (ii) Define : Resolution.
- (iii) Define : Aspect ration.
- (iv) Define : Flood fill.
- (v) Define : Shearing
- (vi) Define : Coordinate transformation.
- (vii) Define : Clipping.
- (viii) The lookup table technique increases the number of intensity levels. (True/False)
- (ix) Aliasing means shading effects. (True/False)
- (x) Define : scan conversion.
- (b) (i) Explain Architecture of Raster system with fixed portion of the system memory reserved for the frame buffer. 5
- (ii) Explain Bresenham's Line drawing algorithm. 5
- 2 (a) Explain NLN line clipping method. 7

OR

- (a) Reflect the diamond shaped polygon whose vertices are A(-1,0), B(0-2), C(1,0) and D (0,2) about (a) the horizontal line  $y=2$ (b) the line  $y=x+2$ . 7
- (b) Explain viewing pipelin and window to view-port transformation. 8
- OR**
- (b) Explain Mid point circle Algorithm for point (x,y), where radius is 8. 8
- 3** Answer any **three** : 15
- (i) What is the relationship between the rotation  $R_{\odot}$   $R_{\ominus}$   $R_{\odot}^l$  ? And show that  $R_{\alpha} \cdot R_{\beta} = R_{\beta} \cdot R_{\alpha} = R_{(\alpha+\beta)}$ .
- (ii) Explain Seed Fill Algorithm.
- (iii) Explain Homogenous Coordinates.
- (iv) Explain Anti aliasing.
- 4** (a) Answer the following : 10
- (i) Derive the condition for cavalier and cabinet projection. 3
- (ii) Give 3D transformation matrix for rotation about y-axis. 2
- (iii) Explain 3D reflection. 2
- (iv) Explain diffuse reflection. 3
- (b) Derive the 3D rotation about an axis parallel to any one of the coordinate axis. 10
- 5** (a) Derive the Blending Function for B-spline Curve and also derive the condition for c0, c1 and G0 and G1 continuity. 10
- OR**
- (a) Given P0(1, 1), p1 (2, 3), p2 (4, 3) and p3 (6, 4) the vertices of Bezier polygon. Determine the points on the Bezier curve for  $t = 0, 1/4, 1/2, 3/4, 1$ . 10
- (b) Explain intitutive color concept. 5
- 6** Answer the following : (any **three**) 15
- (i) Derive the transformation matrix for parallel projection onto xy plane.
- (ii) Explain back-face detection.
- (iii) Explain Different projection scheme.
- (iv) Derive the transformation matrix for perspective projection.
- (v) Explain RGB colour model.