

**2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY**

**III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS  
COMPUTER GRAPHICS  
(ELECTRONICS & COMPUTER ENGINEERING)**

NOVEMBER 2005

TIME - 3 HOUR  
MARK - 80

**Answer any FIVE Questions  
All Questions carry equal marks**

1. Explain briefly about various display devices used in computer graphics. [16]
2. (a) Briefly explain the steps involved in flood-fill algorithm.  
(b) Distinguish flood-fill and scan-line algorithms for polygon filling. [9+7]
3. Give the homogeneous co-ordinate transformation matrices for the following transformations:  
(a) Scale  $x$  direction four times as large and the  $y$ -direction un-changed.  
(b) Clock-wise rotation about the origin, by 60 degrees. [9+7]
4. Find the normalization transformation that maps a window whose lower left corner is at (1,1) and upper right corner is at (3,5) onto  
(a) a view port that is the entire normalized device screen and  
(b) a view port that has the lower left corner at (0,0) and upper right corner at (1/2,1/2). [8+8]
5. What is line segment clipping? Describe the various clipping categories into which the line segments are categorized. What is the significance of each category? [16]
6. (a) Write about 3D viewing transformations.  
(b) Write the 3D homogeneous transformation matrix for each of the following transformation  
i. shift 0.5 in  $X$ , 2.0 in  $Y$  and -0.2 in  $Z$   
ii. Rotate by  $\pi/4$  about  $X$  axis [5+11]
7. Explain the following:  
(a) Painter's algorithm  
(b) Warnock's algorithm. [8+8]
8. Write about the following:  
(a) Generation of curves and surfaces.  
(b) Sweeping method of interpolation. [8+8]