

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BEX, BCT	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Computer Graphics

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Write Bresenham's line algorithm (you may assume $|m| < 1$). How the demerit of DDA algorithm is corrected in Bresenham's algorithm? [7+3]
2. Calculate all pixels of a circle in the first octant, proceeding to positive X axis direction. The radius = 30 and center at (10, 20). [10]
3. Perform scaling transformation to the triangle with vertices A (6, 9), B (10, 5), C (4, 3) with scaling factors $S_x = 3$ and $S_y = 2$. [Show the necessary transformation matrix] [10]
4. How do you perform shearing operations in 3-D in different directions? Discuss with necessary shear matrix. [10]
5. Formulate a matrix that converts 2-D scene described in world coordinates to viewing coordinates. [10]
6. What are the object space and image space method of hidden surface removal? Describe back face detection method of hidden surface removal. [4+6]
7. Discuss a constant intensity shading method. Mention the advantage of Phong shading over Gouraud shading. [7+3]
8. Write short notes on: (any two) [5+5]
 - a) Raster display and vector display system
 - b) 2-D viewing pipeline
 - c) Plasma display
