| 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

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