

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

**Subject: - Computer Graphics (EX603)**

- ✓ 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. Differentiate Random and Raster display technology. [4]
2. Compare between DDA and Bresenham's line drawing algorithm. Derive and write mid-point algorithm to draw ellipse. [10]
3. The reflection along the line  $y = x$  is equivalent to the reflection along the X-axis followed by counter clock wise rotation by  $\alpha$  (alpha) Degree. Find the angle  $\alpha$ . [10]
4. Write rotation matrix in clockwise direction with respect to x-axis, y-axis and z-axis. Rotate the object (0, 0, 0), (2, 3, 0), (5, 0, 4) about the rotation axis  $y = 4$ . [3+7]
5. Write down properties of Bezier curve. Find equation of Bezier curve whose control points are P0(2,6), P1(6,8) and P2(9,12). Also find co-ordinate of point at  $u = 0.8$ . [10]
6. Explain boundary representation technique to represent the 3D object with suitable example. How can you find the spatial orientation of a surface? [8+2]
7. Explain z-buffer algorithm along with necessary steps needed to calculate the depth. What is its drawback? [10]
8. Define the terms: [10]
  - i) Ambient light
  - ii) Lambert cosine law
  - iii) Diffuse reflection
  - iv) Specular reflection

Also find equation for intensity of point by using Phong illumination model.
9. What is OpenGL? Explain callback function. [4+2]

\*\*\*