

B. B. TECH.
FIFTH SEMESTER EXAMINATION, 2015-16
ECS504
COMPUTER GRAPHICS

Time: 2 Hours

Max. Marks: 50

Note:

- Attempt all questions.
- Marks and number of questions to be attempted from the section is mentioned before each section.

1. Attempt any *Two* parts of the following:

[2×6]

- a. What is the purpose of a display processor in a computer system? Give the architecture of a raster graphics system with a display processor. ✓
- b. Compare simple DDA line drawing algorithm with Bresenham's algorithm. Does the points generated by both algorithms are same. ✓
- c. Apply midpoint circle drawing algorithm to draw a circle of radius 8. ✓

1 + 2
2 32. Attempt any *Two* parts of the following:

[2×6]

- a. Find the transformation required to reflect a polygon whose vertices are $A(-1, 0)$, $B(0, -2)$, $C(1, 0)$ and $D(0, 2)$ about the line $y = x + 2$. Find reflected image. ✓
- b. Describe in detail the Cohen Sutherland algorithm for line clipping. ✓
- c. Find the transformation matrix that transforms the given square ABCD to half its size with centre still remaining at the same position. Coordinates of the square are $A(1, 1)$, $B(3, 1)$, $C(3, 3)$, $D(1, 3)$ and centre at $(2, 2)$. ✓

3. Attempt any *Two* parts of the following:

[2×6]

- a. Describe perspective projection transformation matrix. ✓
- b. Give the 3D transformation matrix for translation, scaling and rotation with example. ✓
- c. Write 3D line clipping algorithm of Cohen-Sutherland region code method. ✓

4. Attempt any *Two* parts of the following:

[2×7]

- a. Write the properties of B-Spline curves. Also write advantages of B-Spline curves over Bezier curves. ✓
- b. Derive parametric Bezier curve equation controlled by four points $\{(2, 5, 3), (3, -6, 8), (1, -2, 3), (-4, 2, -2)\}$. ✓
- c. Explain diffuse reflection and Gouraud Model. ✓