

**N 1250**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2004.

Fourth Semester

Computer Science and Engineering

CS 239 — INTERACTIVE COMPUTER GRAPHICS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the difference between raster scan and random scan systems?
2. What is frame buffer? What are Bitmap and Pixmap?
3. What is color table?
4. What is windowing and clipping?
5. Write a short note on parallel projection.
6. How will you design animation sequences?
7. Explain briefly the two categories of visible – surface detection algorithms.
8. Define color gamut?
9. State the uses of chromaticity diagram.
10. How will you differentiate computer graphics and image processing?

PART B — (5 × 16 = 80 marks)

11. (i) Explain how the CRT works. (8)
- (ii) Explain the Line DDA algorithm and derive the expression. (8)
12. (a) Explain the two dimensional Bezier curve with five control points, with Bezier blending functions. (16)

Or

- (b) Explain the Geometric construction of Deterministic self-similar Fractals and Statistically self-similar Fractals. (16)

13. (a) (i) Translate and scale the translated polygon which has the coordinate A (2, 5), B (7, 10) and C (10, 2) initially. The translation and scaling factors are given as follows.  $t_x = 3$  units,  $t_y = 4$ ,  $s_x = 2$ ,  $s_y = 2$ . (10)
- (ii) Write notes on perspective viewing transformation. (6)

Or

- (b) (i) Explain about the concept of Cohen – Sutherland Line Clipping algorithm. (8)
- (ii) Explain how to achieve animation using color table and wire frame models. (8)
14. (a) Explain the following visible surface detection methods
- (i) Depth – sorting algorithm (8)
- (ii) Ray – casting algorithm. (8)

Or

- (b) Explain the Octree representation of solid objects. (16)
15. (a) Explain Constant – intensity shading and Gouraud shading methods for rendering an object with polygon surfaces. (16)

Or

- (b) Explain the color models based on specification of luminance and purity values. (16)