B 266

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

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 basic principle of Electro Static lens used in CRT?

2. Define resolution.

3. Find the composite transformation matrix for the sequence, Rotation about origin and uniform scaling with respect to origin.

4. State non zero winding number rule and its significance.

5. What is the difference between window and viewport?

6. What is valuator device give atleast one example?

7. What is the purpose of 'Grids' in picture construction?

8. How do you control aliasing problem? Briefly write.

9. Compare HSV with CMY color model.

10. What is rendering? Also comment the quality of rendered picture.

PART B — (5 × 16 = 80 marks)

11. Discuss the hidden surface elimination technique based on Octree method.

12. (a) Discuss in detail an efficient circle generating algorithm and justify its efficiency clearly.

Or

(b) Discuss in detail scan line polygon filling algorithm, covering all possible slope conditions with edge list as a data structure.

13. (a) Explain in detail Liang – Barsky line clipping algorithm.

Or

(b) Write short notes on :

(i) B – Splines. (4)

(ii) Fractals. (4)

(iii) Bezier curves. (4)

(iv) Color table. (4)

14. (a) Prove that the multiplication of three dimensional transformations matrices for each of the following sequence of operations is commutative.

(i) Any two successive translations. (8)

(ii) Any two successive rotations about any one of the coordinate axes. (8)

Or

(b) (i) Write a procedure to perform a two point perspective projection of an object. (12)

(ii) List the advantages of perspective projection. (4)

15. (a) (i) Discuss in detail Gourand shading with an example. (12)

(ii) List the advantages of Gourand shading with justification. (4)

Or

(b) (i) Discuss in detail phong shading with example. (6)

(ii) Explain the fast phong shading procedure. (10)
