

C. C.

B 2146

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

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. Define pixel and aspect ratio.
2. Compare the advantages of raster graphics over video monitors.
3. Brief about self-affine and invariant fractals.
4. Define non-zero winding number rule with its significant.
5. Write the transformation matrix for reflection and shear.
6. Describe shift vector.
7. Define image space and object space.
8. State the steps involved in painter's algorithm.
9. What is meant by color gamut?
10. What are the different modes used to provide input to graphics applications?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain DDA line drawing algorithm with example. (8)
(ii) Explain the working principle of CRT. (8)

Or

- (b) Discuss about mid-point circle drawing algorithm with example. (16)

12. (a) Explain Cohen–Sutherland line clipping algorithm. (16)

Or

(b) Write short notes on following : (16)

- (i) Fractals
- (ii) Bezier Curve
- (iii) Color lookup table
- (iv) B-Splines.

13. (a) (i) Translate the Triangle of position A (80, 80), B(80, 120), C(120, 80) with X axis as 3 units and Y axis as 6 units and make its size twice in both axis. (10)

(ii) Derive the co-ordinate and matrix equation for 2D rotation. (6)

Or

(b) Write and explain the steps involved in animation. Explain how to achieve animation using wire frame model. (16)

14. (a) Explain the following hidden surface elimination algorithms :

- (i) Octree methods. (8)
- (ii) Depth Sorting. (8)

Or

(b) (i) What is ray casting? Explain about Ray-Tracing algorithm. (8)

(ii) Discuss Area-Subdivision method. (8)

15. (a) Discuss in detail about Phong shading and fast phong shading. (16)

Or

(b) Discuss the following color models in detail :

- (i) CIE chromaticity. (8)
- (ii) HSV color model. (8)

Time :
1. Li
2. D
3. W
4. W
5. W
6. D
7. St
8. Li
9. W
10. Li
11. (a)