S 9103

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

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 delta-delta Shadow – mask method?

2. Why polar coordinates are not preferred by Circle generating algorithms?

3. List any two properties of B-spline curves

4. State the two basic characteristics of fractal object.

5. Write the three dimensional transformation matrix for z axis shear.

6. How view plane is positioned for a perspective projection to generate a static view?

7. What is meant by object-space method?

8. State the drawback of the depth–buffer method.

9. List out the uses of chromaticity diagram.

10. Draw the HSV hexcone.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Apply midpoint method for the generation of circle and list the algorithm steps. (10)

(ii) Explain briefly about joysticks and digitizers. (6)

Or

(b) (i) Apply Bresenham's approach for line drawing where slope m < 1 and list the algorithm steps. (10)

(ii) Explain in detail about scan line polygon fill algorithm with diagram. (6)

12. (a) Explain in detail about Liang-Barsky line clipping method.

Or

(b) Discuss in detail about hierarchical modeling with structures.

13. (a) (i) Derive a composite transformation matrix where an object undergoes a sequence of following 2-d transformations, scaling, rotation and then translation. (8)

(ii) Write short notes on animation of wireframe models. (8)

Or

(b) Explain in detail about general perspective projection transformations with diagrams.

14. (a) Discuss in detail about Z-buffer method with diagram and detailed steps.

Or

(b) (i) Discuss in detail about OCTREE method for hidden surface elimination. (10)

(ii) Write Short notes on ray-casting method for visibility detection. (6)

15. (a) Discuss in detail about RGB and HLS color model.

Or

(b) Discuss in detail about Phong Shading and fast Phong Shading techniques.

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