Reg. No. : [   ]

Question Paper Code : R 3640

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fourth Semester

Computer Science and Engineering

CS 239 — INTERACTIVE COMPUTER GRAPHICS

(Regulation 2001)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is 'dot pitch' on a CRT monitor?

2.   What are the common polygon fill styles?

3.   What does color table represent?

4.   Give the equation for a Bezier curve with four control points.

5.   Give the 3D rotation matrix for rotation about z-axis.

6.   Determine the composite matrix for two successive scaling transformations.

7.   What is special about Ray Tracing algorithms?

8.   What do you understand by Wireframe representation of an object?

9.   Define 'color'.

10. Depict the RGB color model.

11. (a) (i) Write a detailed note on Flat Panel display devices. (8)

         (ii) Compare and contrast Raster scan systems and Random scan systems. (8)

Or

    (b) Describe circle drawing algorithm with an example. (16)

12. (a) (i) What do you know about Hierarchical Modeling? Discuss. (8)

         (ii) Write notes on any two popular anti-aliasing techniques. (8)

Or

    (b) (i) Discuss the Uniform Quadratic B-Splines. (8)

         (ii) What are Quadtree and Octree methods of object representation? Explain. (8)

13. (a) (i) Explain Window-ViewPort transformation. (8)

         (ii) Perform the following transformations in succession on a triangle at (1,1), (3,1) and (2,2) and find the new position. (8)

         > Scaling with respect to (2,2) with the scaling factors being 2 and 2 along x and y axes respectively

         > Reflection with respect to x-axis.

Or

    (b) Compare and contrast the types of projections. Derive the perspective projection transformation matrix. (16)

14. (a) Describe the 'Painter's algorithm' for hidden line elimination. (16)

Or

    (b) Describe the Z-buffer method for hidden line elimination. (16)

15. (a) (i) What do you know about CIE color model and what are its advantages? (8)

         (ii) Write notes on HSV and HLS color models. (8)

Or

    (b) Describe Gouraud and Phong shading techniques. (16)