B.Tech Degree V Semester Special Supplementary Examination June 2012

CS 504 COMPUTER GRAPHICS

(2006 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. (a) Differentiate between random scan and raster scan display.

(b) What is antialiasing? Briefly explain pixel weighting in antialiasing.

(c) Show that the composition of two rotations is additive by concatenating the matrix representations for $R(\theta_1)$ and $R(\theta_2)$ to obtain $R(\theta_1)\cdot R(\theta_2) = R(\theta_1+\theta_2)$.

(d) Explain the three basic 2D transformations. Also give the homogeneous matrix representation of the above.

(e) Illustrate B spline with its five properties.

(f) What are octrees? How do they differ from quadtrees?

(g) Briefly explain scanline algorithm with an example.

(h) Briefly explain the various steps in creating an animation.

PART B

(4 × 15 = 60)

II. Explain mid point circle drawing algorithm with an example. (15)

OR

III. Illustrate the functioning of CRT with neat diagram. (15)

IV. Define the terms window, view port and viewing pipeline. Explain the window to view port transformation with a neat diagram. (15)

OR

V. Define clipping. Discuss in detail the Sutherland Hodgeman polygon clipping algorithm. (15)

VI. What are splines? Explain different spline representation methods. Briefly explain Hermite splines. (15)

OR

VII. (a) Explain fractal geometric method with example. (10)

(b) Show that two curves $c_1(t) = \left(t^2+3t-3,\ t^3\right)$ and $c_2(t) = \left(t^2+2t+1,\ t+1\right)$ are both c° and g° continuous where they join at $c_1(1) = c_2(0)$. Do they meet at c' and g' continuity? (5)

VIII. (a) Explain Painter's algorithm for hidden-surface elimination method. (10)

(b) Explain A-buffer algorithm to visible surface detection method. (5)

OR

IX. Explain different shading methods. (15)

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