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MANIPAL INSTITUTE OF TECHNOLOGY
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FIFTH SEMESTER B.E. (CSE) DEGREE END SEMESTER EXAMINATION
DEC. 2011
COMPUTER GRAPHICS AND MULTIMEDIA (CSE 305)
DATE: 02-12-2011

TIME: 3 HOURS MAX.MARKS: 50

Instructions to Candidates

- Answer **any five** full questions.
- Missing data can be assumed suitably.

1A. Explain the following terms with respect to CRT?
(i) Persistence (ii) Resolution (iii) Aspect Ratio

1B. Do you think that interlacing gives any extra benefit in the scanning process? Explain?

1C. If a monitor has 525 scan lines with an aspect ratio 4 : 3 and if each pixel contains 8 bits for intensity information, how many bits per second are required to display 30 fps?

1D. Derive the Bresenham's decision parameters to draw a line with slope +ve and greater than 1? (1.5 + 1.5 + 2 + 5)

2A. Show how shear transformation may be expressed in terms of rotation and scaling?

2B. Let R be the rectangular window whose lower left-hand corner is at L(1,2) and upper right- hand corner is at R(9,8). Use the Cohen-Sutherland algorithm to clip the line
(i) A(-1,7) to B(11,1) (ii) C(3,7) to D(3,10)?

2C. Preserving the aspect ratio, find a normalization transformation from window whose lower left corner is at (0, 0) and upper right corner is at (10, 6) onto the normalized device screen, so that aspect ratio are preserved?

2D. Find the effect of translation in the x, y and z directions by -2,-2,-2 respectively, followed by successively a 45 degree rotation about y-axis and 30 degree rotation about z-axis on the homogeneous coordinates [3,2,1,1]? (2 + 3 + 3 + 2)

3A. Devise a method to reflect a 3D object about an arbitrary plane?

3B. Derive the transformation matrix for parallel projection. Show that in the case of orthogonal projection, the object size remains unchanged?

3C. Let the plane of projection XY plane at Z=0 and the centre of projection is at Z = -d. Derive the homogeneous transformation matrix for perspective projection?

3D. Find the transformation for unit cube with (i) Cavalier projection with 45 degree (ii) Cabinet projection with 30 degree? (2.5 + 2.5 + 2 + (1.5+1.5))

4A Classify different projection techniques as a hierarchy?

4B. How does the basic scan line algorithm determine which surfaces are hidden?

4C. Write the advantages and disadvantages of Z-Buffer Algorithm?

4D. Discuss some major properties of Bezier curves and B-spline curves? (2 + 2 + 2 + (2+2))

5A.What do you mean by hue, saturation and intensity? How are they related to dominant color, purity and luminance?

5B. What are additive and subtractive color models? What are their uses?

5C. Differentiate between computer and cell animation?

5D. Write a short note on Animation Languages? (2 + 2 + 2 + 4)

6A. What are the major components of a multimedia document? How they can be compiled together?

6B. Describe the compression technique of JPEG images?

6C. Explain in brief the following file formats?
(i) *.gif (ii) *.tiff (2 + 4 +(2+2))

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