Registration No. :

Total number of printed pages – 2

B. Tech

PCCS 4401

Seventh Semester Examination – 2013
COMPUTER GRAPHICS
BRANCH : CSE, TEXTILE

QUESTION CODE : C- 164

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.
The figures in the right-hand margin indicate marks.

1. Answer the following questions :   2 × 10

    (a) Differentiate between Emissive and Non-emissive displays.

    (b) What is a frame buffer ? Explain its requirement.

    (c) Give the matrix format of a window-to-viewport transformation.

    (d) Give the transformation for 2D reflection along x-axis and using it transform a triangle with vertices (1,0), (5,0) and (2,3).

    (e) Differentiate between line clipping and polygon clipping.

    (f) Can the dimension of a random fractal be estimated ? If yes, specify the method.

    (g) Differentiate between parallel and perspective projection.

    (h) Which visible surface detection technique can be used in both image space and object-space ? Explain why it can be used in both space operations.

    (i) What is radial intensity attenuation ? Explain.

    (j) Write down the working of a data glove.

2. (a) How an image can be drawn in a random scan display device ? Take a house example and draw it using such a system.   5

    (b) Write an Bresenham's line drawing algorithm and using it draw a line connecting (12,15) and (20,30).   5

P.T.O.

3. (a) Give the matrix format of two dimensional composite transformation. Using it rotate a polygon with vertices (1,1), (5,1), (5,4), (3,6), (1,5) through 30° anticlockwise and then shift it 10 places in the x direction. 5

(b) Give the two-dimensional viewing transformation pipeline. Using this map the clipping window to a normalized square. 5

4. (a) What are the various dithering techniques ? Explain using example. 5

(b) What is seed fill algorithm ? Explain using an example. 5

5. (a) Differentiate between parametric continuity conditions and geometric continuity conditions in representing splines. Explain the various conditions using diagrams. 6

(b) Give an account various 2D and 3D projection techniques both in perspective and parallel. 4

6. (a) What is back-face detection technique in visible surface detection ? Explain using a diagram. 5

(b) Give an account of basic illumination models. 5

7. (a) Design the animation sequences starting from storyboard layout. Explain using an example. 5

(b) Give an account of different types of virtual reality systems. Give at least one example from each type. 5

8. Answer any **two** of the following : 5×2

(a) Shear transformation

(b) Scan line algorithm

(c) Procedural animation.

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