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Reg. No. : .....

Name : .....

Seventh Semester B.Tech. Degree Examination, May 2013
(2008 Scheme)
08.701 : COMPUTER GRAPHICS (R)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions

1. Mention and explain about various applications of computer graphics.
2. What is the reason behind the stair-step appearance of lines when drawn with DDA algorithm ?
3. Discuss briefly the flood-fill algorithm.
4. Define scan conversion and Runlength encoding.
5. Draw the schematic of general 3-D transformation pipeline from modeling coordinates to final device coordinates.
6. Can we use line clipping algorithm for clipping polygons ? Justify your answer.
7. What are the data structures used for the representation of a 3-D object ?
8. Give some applications of Image processing.
9. What is meant by Perimeter measurement ?
10. Construct a histogram of the gray levels of the pixels in the following image.

3	4	2	0	0
1	1	4	0	0
0	2	4	1	1
0	0	1	4	2
0	0	1	2	5

(10×4=40 Marks)

P.T.O.

PART – B

11. a) Explain the Bresenham's line drawing algorithm. Show how line is formed by this algorithm for the endpoints (20, 10) and (30, 18). 10

    b) Explain the architecture of Raster scan system with a neat schematic sketch. 10

OR

12. a) Discuss an algorithm to test whether a point is inside a given polygon. 10

    b) Explain Scan line algorithm for filling polygons. What data structure is used to speed up the computation ? 10

13. a) A polygon image has four vertices A (10, 10), B (10, 20), C (20, 10) and D (20, 20). What are the coordinates of the points after performing the following transformations in the given order ?

    i) Reflection along x -axes

    ii) Scaling twice along

    iii) Rotating 60 degrees about the point (15, 15)

    iv) Translating 40 units along x - axes and – 20 units along y-axes.

    v) Reflecting along y-axes. 20

OR

    b) Explain line clipping algorithm. How Cohen-Sutherland algorithm can detect whether a line can be totally rejected, in the first step itself ? 20

14. a) Explain depth buffer algorithm for hidden surface elimination. Indicate how depth calculation is done at each point on a surface ? What are the limitations of this method ? 10

    b) Explain scene segmentation and labeling with an example. 10

OR

15. a) Explain region-labeling algorithm with an example. 10

    b) Explain any two edge detectors with necessary examples. 10