Name : .....

Seventh Semester B.Tech. Degree Examination, November 2015
(2008 Scheme)
08.701 : COMPUTER GRAPHICS (R)

Time: 3 Hours Max. Marks : 100

PART – A

Answer **all** questions, **each** question carries **4** marks.

1. What is interlaced scanning ? How does it improve display process ?
2. Briefly explain beam-penetration method used for displaying colour pictures. In which display system it is commonly used ?
3. When a light pen is used to select a screen position, where does the light come from ? Will it detect screen position correctly if the pen is held on a blank screen ?
4. A graphic display system with a resolution of 1024 × 1024 pixels allows 256 colours. What is the size of RAM (in bytes) required for the frame buffer ?
5. Obtain the transformation matrix for rotation of a point (x, y) through an angle θ degree in counter clockwise direction.
6. Draw the two-dimensional viewing transformation pipeline. What are the steps involved in transforming viewing coordinate frame into world coordinate frame.
7. Distinguish between window and view port. What happens if window is charged when the view port is kept the same ?
8. Give the transformation matrix for rotating an object around Y-axis.
9. It is required to display an image with gray levels ranging from 10 to 50 on a device that has a gray level range of 0 to 255. Obtain the linear transformation that will accomplish this.
10. Explain back face removal algorithm.

P.T.O.

PART – B

Answer **one full** question from **each** module. **Each full** question carries **20** marks.

Module – 1

11. a) Explain the working and composition of a typical plasma display system.

    b) Write and explain Bresenham's line drawing algorithm. What modifications are needed for lines with m > 1 and lines with negative slope ?

OR

12. a) Explain the architecture of Raster graphics system.

    b) Explain boundary fill algorithm. If you are using a recursive algorithm, how will you handle the possibility of stack overflow ? How does flood fill differ from boundary fill ?

Module – 2

13. a) Explain the steps involved in rotating a triangle if the reference point is other than origin.

    b) Write and explain polygon chipping algorithm. Illustrate the steps of the algorithm using an example.

OR

14. Derive the transformation matrix for rotating a 3-D object about an arbitrary line whose direction is given by two points $P_1(x_1, y_1, z_1)$ and $P_2(x_2, y_2, z_2)$.

Module – 3

15. a) Write a general purpose, efficient algorithm for hidden surface elimination.

    b) Write and explain a region labelling algorithm.

OR

16. a) Derive transformation matrix for parallel projection.

    b) Explain issues in measuring perimeter of images and discuss methods used to overcome them.
