

Reg. No. :

Name :

Seventh Semester B.Tech. Degree Examination, June 2016
(2008 Scheme)
08.701 : COMPUTER GRAPHICS (R)

Time : 3 Hours

Max. Marks : 100

PART - A

Answer **all** questions.

(10x4=40 Marks)

1. What is meant by aspect ratio and discuss about its significance ?
2. What are random scan systems ?
3. Discuss the drawbacks of DDA line drawing algorithm.
4. What are the functions of a frame buffer ?
5. Derive the rotation matrix for rotating a point from (x, y) to position (x', y') through an angle α relative to the point (x_r, y_r) .
6. A triangle is defined by $(2, 2), (4, 2), (4, 4)$. Find the transformed coordinate after following a reflection about the line $y = -x$.
7. Explain the window to viewport transformation.
8. What are cavalier and cabinet projections ?
9. Compare Robert's and Sobel's edge detector.
10. Discuss about equalization in image processing.



P.T.O.



PART - B

Answer **any one** question from **each** Module.

(3×20=60 Marks)

Module - I

11. a) Explain the DDA line drawing algorithm for positive slope less than 1. 10
- b) Explain the midpoint circle drawing algorithm. Find the pixel location approximating the first octant of a circle having a centre (0, 0) and radius of 10 units using the above algorithm. 10

OR

12. a) Explain the scan line polygon filling algorithm. 10
- b) Explain the working principle of any two graphic input devices. 10

Module - II

13. a) What is the significance of a homogeneous coordinate system ? 8
- b) Derive the 3D transformation matrix for the following operations in homogeneous coordinates. 12
- i) Translation ii) Scaling iii) Rotation

OR

14. a) Explain the Sutherland Hodgeman polygon clipping algorithm. 10
- b) Write notes on the three dimensional rotation and scaling transformations. 10

Module - III

15. a) Explain how a 3D object is presented on a screen using perspective projection. 10
- b) What are the different methods used for back face detection ? Explain. 10

OR

16. a) Perform equalization using cumulative frequency function on the following data. 10
- 1, 3, 4, 6, 7, 9, 10, 12, 14, 15, 16, 18, 20, 23, 24, 26
- b) Explain region labeling algorithm using example. 10