



Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain with neat diagram operation of Cathode – Ray tube and shadow mark CRT. (10 Marks)
- b. What is Computer Graphics? Mention the list of applications. How they are classified? (10 Marks)

OR

- 2 a. Develop the code of the Bresenham's Line Drawing Algorithm. Also illustrate the algorithm for the line with end points (20, 10) and (30, 18) (10 Marks)
- b. Write circle drawing algorithm. Given a circle radius $r = 10$, solve the midpoint circle algorithm by determining positions along the circle octant in the first quadrant from $x = 0$ to $x = y$. (10 Marks)

Module-2

- 3 a. Develop the concept of scanfill algorithm for filling polygon with suitable diagrams. (10 Marks)
- b. List and explain different types of polygon in OpenGL. Explain two methods for inside – outside test of a polygon. (10 Marks)

OR

- 4 a. What is concatenation of transformations? Explain rotation about a pivot point for 2D transformation. (10 Marks)
- b. With a neat figure explain two dimensional viewing pipeline. Explain OpenGL 2D viewing functions. (10 Marks)

Module-3

- 5 a. Explain the Cohen Sutherland line clipping algorithm considering all cases. (10 Marks)
- b. Discuss the OpenGL functions for the following 3D dimensional transformations. (10 Marks)
 - i) Translation
 - ii) Scaling
 - iii) Rotation.

OR

- 6 a. Demonstrate 2D normalization and window to viewport transformation using appropriate matrices. (10 Marks)
- b. Explain Basic illustration model and explain Phong's Lighting Model. (10 Marks)

Module-4

- 7 a. Explain with example, Depth buffer algorithm used for visible surface detection. Discuss the advantages and disadvantages. (10 Marks)
- b. What is three dimensional viewing? Explain three dimensional viewing pipeline with neat diagram. (10 Marks)

OR

- 8 a. Explain orthogonal projection in detail. (10 Marks)
- b. Explain OpenGL three dimensional viewing functions, with example for each : (10 Marks)
 - i) gluLookAt
 - ii) glOrtho
 - iii) glPerspective
 - iv) glFrustrum.

Module-5

- 9 a. What are the different logical input devices and explain with an example. (10 marks)
- b. Explain how keyboard, window and mouse events are recognized by GLUT. Give suitable example. (10 Marks)

OR

- 10 a. List the properties of Bezier curve and also explain Bezier technique of generating curves. (10 Marks)
- b. Explain Animating Interactive Program. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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