

1115
M.Sc. (Information Technology)
First Semester
MS-36: Interactive Computer Graphics (Old)

Time allowed: 3 Hours

Max. Marks: 80

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting one question from each Unit

x-x-x

I. Answer the following:-

- a) What is Display Processor memory (Frame Buffer)?
- b) Differentiate between CRT display and Plasma Panel Display.
- c) If the display resolution of a graphics display is $m \times n$ pixels and the true color representation is used, what is the size of the frame buffer in bytes for the display?
- d) What is meant by rubber band line?
- e) What is the difference between a window and a viewport?
- f) Name any TWO image file formats.
- g) What is a wire-frame display in 3d graphics?
- h) Why is 3D Rotation more complicated than 2D rotation? (8x2)

UNIT - I

- II. a) What is meant by Raster scan display system? Describe the architecture of a raster-graphics system with a display processor.
- b) Describe the various techniques for producing color images on a raster display device. (8,8)
- III. Compare and contrast:
 - a) World Coordinates, Normalized Coordinates and Screen (Device) Coordinates.
 - b) 'Stroke method' and the 'bitmap method' for generating characters. (8, 8)

UNIT - II

- IV. a) Explain with suitable examples and diagrams, basic 2-dimensional transformation techniques. Derive their respective matrix representations.
- b) Describe Bresenham's algorithm for the generation of a circle. (8,8)

P.T.O.

(2)

V. Write short notes on:-

- a) Pointing and Positioning Devices
- b) Cohen-Sutherland line-clipping algorithm (8,8)

UNIT – III

VI. What is OpenGL (Open Graphics Library)? List and explain the use of various graphics primitives and Graphical functions in OpenGL. How do you interface OpenGL with C/C++ compiler? Explain with an example. (16)

VII. Write short notes on:-

- a) Mouse Programming
- b) Animated algorithm for Towers of Hanoi (8,8)

UNIT-IV

VIII. a) Why hidden surface algorithms are needed? How does Z-buffer algorithm determine which surfaces are hidden?
b) What is back-face elimination for hidden surface removal? Describe how it works in principle. (8,8)

IX. Write short notes on:-

- a) 3D Transformations
- b) Shading in computer graphics (8,8)

x-x-x