

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**FACULTY OF APPLIED SCIENCE**  
**COMPUTER SCIENCE DEPARTMENT**  
**DECEMBER EXAMINATIONS 2001**

**SUBJECT: COMPUTER GRAPHICS**  
**CODE: SCS 4111**

LIBRARY USE ONLY

**Instructions to candidate:**

**Answer any five full questions out of seven.**  
**All questions carry equal marks.**  
**Programs should be written in C++.**

**TIME: 3 HOURS**

**QUESTION ONE**

- a) Discuss the applications of computer graphics with specific examples in the area of CAD, CAM, Simulation & modeling, Computer arts & advertisement and digital image processing. [8]
- b) Compare the beam penetration method with shadow mask system techniques used in color CRT'S. [4]
- c) Explain with necessary figures how the image can be drawn on a Random Scan System monitors? [8]

**QUESTION TWO**

- a) Explain the need for display processor? Explain with a block diagram the operation of a raster scan system? [10]
- b) What are some of the important considerations in designing a standard graphics package.? [10]

**QUESTION THREE**

- a) Write a program using Bresenham's line algorithm to draw a line whose slope is positive and less than 1? [10]
- b) List the comparison between DDA and Bresenham's line algorithms? [5]
- c) Define the terms:
- i) Interactive and Passive computer graphics
  - ii) Aspect Ratio
  - iii) Resolution
  - iv) Firing voltage. [5]

**QUESTION FOUR**

- a) Name the basic transformations? How do you represent these transformations in homogeneous form with respect to two-dimensional transformation? [10]
- b) Explain the terms: Reflection and Shearing with suitable sketches. [10]

**QUESTION FIVE**

- a) Write the procedure for rotation of an object about an arbitrary axis with respect to three-dimensional concept? [10]
- b) Explain with suitable figure the operation of a mouse? [10]

**QUESTION SIX**

- a) What is meant by Windowing and Clipping? Name the different types of clipping methods? Write the procedure for Line intersection and Clipping? [15]
- b) Bring out the comparison between 2D and 3D transformations? [5]

**QUESTION SEVEN**

QUESTION SEVEN

Write short notes on : (Write figures where ever applicable)

- i) Hardcopy devices. [5]
- ii) Direct View Storage Tube (DVST) [5]
- iii) Light pen [5]
- iv) Interactive picture construction techniques [5]

**END OF QUESTION PAPER**

**GOOD LUCK!**