

DEPARTMENT OF SURVEYING AND GEOINFORMATICS
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
FIRST SEMESTER EXAMINATION FOR 2019/2020 SESSION
COURSE CODE/TITLE: SVG 414 (DIGITAL MAPPING II)

INSTRUCTION: Answer question 1 and any other two questions

Time allowed: 2 Hours

Q1a. Derive the equation for 2D- rotation in computer graphics

b. Suppose a vector **a** is rotated by an angle of 120° in an anticlockwise direction to get a vector **b**. **a** makes an angle of 45° with the x-axis, calculate the:

- i. length of vector **a**
- ii. rotation matrix
- iii. coordinates of point **b**

(Take the coordinates of point **a** as (1,3))

Q2a. Define computer graphics and state its relevance in Surveying and Geoinformatics

b. Write short note on raster and vector graphic systems

Q3a. With relevant diagrams discuss the following projections used in computer graphics

- i. parallel projection
- ii. orthographic projection

b. Distinguish between the two types of projections in 3a above

Q4a. Explain the following 2D- transformation in computer graphics

- i. translation
- ii. scaling

b. Explain homogeneous coordinates for 2D- transformation

Q5. Discuss the following 3D- transformation as used in computer graphics

- i. rotation
- ii. scaling
- iii. translation