NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCE

DEPARTMENT OF GEOSPATIAL SCIENCE

LAND SURVEYING

(EGR 2104)

Main Examination Paper

December 2024

This Examination Paper consists of 2 pages

Time Allowed:	3 hours
Total Marks:	100
Special Requirements:	Nil
Internal Examiner:	Mr N Ncube
External Examiner:	Dr M. Shekede

INSTRUCTIONS

1. Answer **QUESTION ONE** and any **THREE** others
2. Each question carries 25 marks

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	25
3.	25
4.	25
5.	25
6.	25
TOTAL	**100**

1. Explain the critical stages followed in the vegetation surveying process highlighting the instruments and tools used in each stage.

2(a) Describe how the electromagnetic distance measurement instruments operate. **(10 marks)**

 (b) With the aid of illustrative diagrams, compare the geodetic and plane surveying.
(15 marks)

3. Explain how pacing is used in direct distance measurement highlighting the advantages and disadvantages of this measurement method.

4. Describe the two types of traversing and cite their applications in surveying.

5(a) Explain how a plannimeter is used in the calculating areas of irregular figures or shapes. **(15 marks)**

(b) A plannimeter was used to calculate areas of two farms on different map scales and registered the following areas: -

 (i) 570cm² on 1:25 000 Map Scale **(5 marks)**

 (ii) 960cm² on 1: 145 000 Map Scale **(5 marks)**

 Calculate the areas of the above farms in Ha.

6(a) What are the differences between forward bearing and backward bearing. **(15 Marks)**

 (b) When a 'Wild' dumpy level was used to measure a distance between two trees, the upper stadia of the level read 2.031m while the lower stadia read 1.472m.
 Calculate the distance between the two trees above in metres. **(5 marks)**

 (c) A Nust student used a bicycle wheel to measure the perimeter of land that was used for the construction of a valley ball court. Upon calibration, the student found that the circumference of the wheel was 1.2m and perimeter of the volleyball court was 1000 revolutions.
 Calculate the perimeter of the above volleyball court in metres and kilometers.
 (5 Marks)