NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCE

DEPARTMENT OF ENVIRONMENTAL HEALTH

MASTER OF SCIENCE DEGREE IN ENVIRONMENTAL HEALTH

GEOGRAPHIC INFORMATION SYSTEM FOR ENVIROMENTAL HEALTH

EEH 6201

Final Examination Paper

April 2025

This examination paper consists of ---3----- pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements: None

Examiner's Name: Mr P.L Moyo

INSTRUCTIONS
1. Answer **QUESTION 1** and any **THREE** questions
2. Each question carries 25 marks

MARK ALLOCATION

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

EEH 6201

QUESTION 1 (Compulsory)

Vector-borne diseases, such as malaria, dengue fever, and chikungunya, are a significant public health concern in Zambezi areas. This area is vulnerable to these diseases due to presence of standing water bodies, high temperatures, and high humidity. Critically analyse the public health problem of vector-borne diseases and develop a GIS/RS-based solution to address the identified aspects of the problem. Specify the aim/objectives of your solution, the data needs, the spatial data analysis techniques you will employ, and justify your choices/approach. **(25)**

QUESTION 2

a) Distinguish between Vector data format and the Raster data format (in as far as the advantages and limitations of use to represent geographic phenomena) **(10)**

b) Discuss the advantages of using a geodatabase and cloud storage in a GIS system. **(10)**

c) You have been tasked to set up a GIS system in your workplace. What are the components you would consider? **(5)**

QUESTION 3

The suburb of Makhokhoba has experienced a recent outbreak of foodborne illness, with 20 cases reported in the past month. The cases were suspected to be linked to consumption of contaminated water from boreholes and eating food from unlicensed food outlets. You have been tasked to lead the investigation to determine the spatial extent of the outbreak. Come up with a GIS based solution to this problem. **(25)**

QUESTION 4

a) Outline and explain the measures of data quality in GIS and remote sensing **(10)**

b) A city is experiencing a rise in respiratory illnesses among its residents, particularly in neighbourhoods near industrial zones. Local health officials suspect that air quality may be a contributing factor.

    i.   Identify at least three spatial data sources **(3)**

EEH 6201

ii.   Explain how each source could contribute to understanding the environmental health issues in this scenario (6)

iii. What are the potential limitations or challenges in using the identified spatial data for this analysis? (6)

QUESTION 5

a) Discuss the different data capture devices and equipment used in GIS. Explain how these devices can be used to collect spatial and attribute data. (15)

b) Using appropriate examples discuss the importance of accurate geocoding when dealing with environmental health related problems. (10)

QUESTION 6

a) Explain the concept of geovisualisation and its role in communicating environmental health information. (10)

b) GIS software and applications can either be, proprietary or open-source. Explain the advantages and disadvantages of each type of software. (15)

EEH 6201