



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCE

DEPARTMENT OF PUBLIC HEALTH

BACHELOR OF ENVIRONMENTAL SCIENCE HONOURS DEGREE IN PUBLIC HEALTH

TOXICOLOGY

EPH 3203

Main Examination Paper

April 2025

This examination paper consists of 2 pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements: None

Examiner's Name: Dr D. T.A Tapfuma

**INSTRUCTIONS**

1. Answer all questions in **SECTION A**
2. Answer any 3 questions from **SECTION B**
3. Each question carries 20 marks

**MARK ALLOCATION**

| QUESTION     | MARKS      |
|--------------|------------|
| 1.           | 20         |
| 2.           | 20         |
| 3.           | 20         |
| 4.           | 20         |
| 5.           | 20         |
| 6.           | 20         |
| 7.           | 20         |
| <b>TOTAL</b> | <b>100</b> |

## SECTION A

### Question 1

- a) With the aid of relevant examples, differentiate between the following:
- i. Toxicokinetics and toxicodynamics (2)
  - ii. Biomarker and bioindicator (2)
  - iii. Pollutant and contaminant (2)
  - iv. Bioaccumulation and biomagnification (2)
- b) Describe three (3) properties of pollutants that may influence their movement and distribution in the environment. (6)
- c) Outline the organisational levels through which toxic responses can be measured. (6)

### Question 2

- a) Describe how pollutant mixtures may affect biochemical responses in humans. (10)
- b) Name 5 classes of pollutants and give an example of each (5)
- c) Describe the mechanism of action of one pesticide class of your choice (5)

## SECTION B

### Question 3

- a) Give an account of the transportation and fate of pollutants in the environment. (14)
- b) Outline the routes by which pollutants enter the environment (6)

### Question 4

- a) Outline 5 pesticide classes and give two (2) examples of each (10)
- b) Describe the mechanism of action of a pesticide class of your choice. (10)

### Question 5

- a) Describe six (6) types of toxic effects of pollutants (10)
- b) Give an account of the basic approaches and principles of toxicity testing. (10)

### Question 6

- a) Give an account of the fate of organic pollutants in individual organisms (10)
- b) Explain five (5) factors determining the movement and distribution of pollutants in the environment. (10)

### Question 7

A lake has experienced significant fish deaths. Describe how you would investigate the possible cause of death and suggest solutions to the local authorities. (20)