NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCE

DEPARTMENT OF ENVIRONMENTAL HEALTH

MASTER OF SCIENCE IN ENVIRONMENTAL HEALTH

OCCUPATIONAL HEALTH AND SAFETY

EEH 5204

Final Examination Paper

April 2025

This examination paper consists of 3 pages

Time Allowed: **3 hours**

Total Marks: 100

Special Requirements: Scientific Calculator

Examiner's Name: Mr N. Gumbo

INSTRUCTIONS
1. Answer **QUESTION 1** and any **other Three** questions
2. Question 1 carries 40 marks and questions 2 to 6 carry 20 marks each.

MARK ALLOCATION

QUESTION	MARKS
1.	40
2.	20
3.	20
4.	20
5.	20
6.	20
TOTAL	100

QUESTION ONE

As a SHEQ consultant you are tasked with assessing the noise exposure levels at a maize popping (maputi) firm at Kelvin light industrial site in Bulawayo. You need to determine whether the noise levels exceed the permissible exposure limit (PEL) of 90 dB(A) for an 8-hour workday.

The noise levels recorded over an 8-hour shift are as follows:

- 2 hours at 85 dB(A)

- 3 hours at 90 dB(A)

- 3 hours at 95 dB(A)

(i) Calculate the noise dose.   **(24 Marks)**

(ii) Draw an empirical evidence-based conclusion and enumerate measures that can be instituted to reduce noise exposure and protect workers' hearing.   **(16 Marks)**

QUESTION TWO

Discuss the key challenges embedded in green washing, suggest milestones that can be engaged for consumers to navigate these and protect the environment and their health

(20 Marks)

QUESTION THREE

Develop an index of Zimbabwe`s Occupational Health and Safety (OHS) and Environmental Legislation.   **(20 Marks)**

QUESTION FOUR

Environmental Social Governance (ESG) is the catch phrase for OHS, dissect the huddles and window for implementing ESG principles on a global scale, and how can companies navigate these to achieve sustainable growth.   **(20 Marks)**

QUESTION FIVE

With particular reference to the field excursion, how can area 700 implement a Total Quality Management (TQM) approach to continuously improve product quality and worker protection while simultaneously managing cost efficiency and environmental protection, particularly in a highly competitive and rapidly changing market.   **(20 Marks)**

QUESTION SIX

You are tasked with assessing the exposure of benthic organisms (benthos) to heavy metals in Ncema river near a gold mining and processing site. The concentrations of heavy metals (in mg/kg) in the sediment samples collected from the river are as follows:

- Lead (Pb): 50 mg/kg

- Cadmium (Cd): 5 mg/kg

- Zinc (Zn): 200 mg/kg

The permissible exposure limits (PEL) for benthic organisms are:

- Lead (Pb): 40 mg/kg

- Cadmium (Cd): 3 mg/kg

- Zinc (Zn): 150 mg/kg

Calculate the exposure and draw a conclusion   **(20 Marks)**