



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF TECHNICAL AND ENGINEERING EDUCATION AND TRAINING

PTE6259 Environmental Engineering & Management

Main Examination

December 2024

This examination paper consists of seven (3) printed pages

Time allowed: 3 hours
Total marks: 100
Examiner: Mr. P. P. Makokoro
External Examiner: Dr. Kahanji

INSTRUCTIONS

1. Answer any **FOUR** questions.
2. Sub-division marks are shown in brackets
3. Begin each question on a fresh page and number it.

MARK ALLOCATION

QUESTION	MARKS
1	25 marks
2	25 marks
3	25 marks
4	25 marks
5	25 marks
6	25 marks

Question 1.

- a. Discuss the implications of climate change on water resources. (10 marks)
- b. What adaptive measures can be taken to secure water security in vulnerable regions? (15 marks)

Question 2

A landfill site is experiencing leachate problems. Discuss the potential sources of leachate, its environmental impacts, and possible mitigation strategies.

(25 marks)

Question 3

Describe the role of environmental impact assessments (EIAs) in project planning and development.

(25 marks)

Question 4

- a. Given a wastewater treatment facility designed to treat 500 cubic meters per day, calculate the required size of the primary sedimentation tank if the desired hydraulic retention time is 2 hours. (10 marks)
- b. Define the term "Sustainable Development" and explain its importance in Environmental Engineering. (15 marks)

Question 5

- a. Evaluate the effectiveness of renewable energy sources in reducing greenhouse gas emissions. (15 marks)
- b. Discuss potential barriers to their widespread adoption. (10 marks)

