



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCE

DEPARTMENT OF ENVIRONMENTAL HEALTH

BACHELOR OF ENVIRONMENTAL SCIENCE HONOURS DEGREE IN PUBLIC HEALTH

WATER, SANITATION AND HYGIENE

EPH 2203

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 J. Mutemani

INSTRUCTIONS

1. Answer question **number 1** and **any other 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

Question 1

Critically analyse the intersectionality of gender dynamics and social norms influencing access to sanitation facilities in rural areas. **(25)**

Question 2

(a) Sanitation systems can be classified as on-site or off-site, dry or wet. Briefly explain how **EACH** one works and give an example for each group:

- (i) On-site wet systems **(5 marks)**
- (ii) Off-site wet systems **(5 marks)**
- (iii) On-site dry systems **(5 marks)**
- (iv) Off-site dry systems **(5 marks)**

(b) Briefly explain factors influencing the choice of a technical sanitation system suitable for a particular place. **(5 marks)**

Question 3

(a) Describe and compare traditional domestic methods of water treatment. **(12 marks)**

(b) Discuss the role of these domestic methods in ensuring access to safe drinking water, particularly in rural areas. **(13 marks)**

Question 4

(a) Describe the conventional water treatment process, including the physical, chemical, and biological processes involved. **(13 marks)**

(b) Explain the importance of each step and the parameters that are typically monitored to ensure the effectiveness of the treatment process. **(12 marks)**

Question 5

(a) Explain why you would recommend the use of stabilization ponds in waste water treatment comparing advantages and disadvantages of this method **(15)**

(b) Briefly discuss constructed wetlands. (i) Free water surface system **(5)**
(ii) Sub- surface flows **(5)**

Question 6

- (a) Discuss the importance of hygiene practices in preventing the spread of infectious diseases.
(5)
- (b) Explain the key principles of (i) hand hygiene (5)
(ii) food hygiene (5)
(iii) environmental hygiene (5)
(iv) faecal oral route (5)