



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## UNIVERSITY EXAMINATIONS 2023/2024

FOURTH YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR  
OF SCIENCE IN PUBLIC HEALTH

### HPP 3414: ENVIRONMENTAL POLLUTION

DATE: JANUARY 2025

TIME: 2 HOURS

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**INSTRUCTIONS: Answer Question ONE and any other TWO questions.**

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#### QUESTION ONE (30 MARKS)

- a) Define the following terms: (10 Marks)
- i. Environmental Risk Assessment and Biomonitoring
  - ii. Delayed and Immediate Toxicity
  - iii. Point sources and Non-point sources of pollution
  - iv. Local effects and Systemic effects
  - v. Effective Concentration 50% and Lethal Dose 50%
- b) Define bioaccumulation, and why is it an environmental concern (3 Marks)
- c) Explain the different types of Dose-Response Relationships that occur in a community (4 Marks)
- d) Explain the effects of pollution on Terrestrial Ecosystems (4 Marks)
- e) Explain the role than toxicokinetics play in understanding the effects of chemical exposure on human health (6 Marks)



MUST is ISO 9001:2015 and



ISO/IEC 27001:2013 CERTIFIED

- f) Explain how micro-organisms serve as bioindicators of water quality, and what specific types of micro-organisms are commonly used for this purpose (3 Marks)

**QUESTION TWO (20 MARKS)**

Describe the concept of risk assessment in toxicology and describe the steps involved in a quantitative risk assessment process (20 Marks)

**QUESTION THREE (20 MARKS)**

Discuss the factors that influence toxicity of a substance to an organism. (20 Marks)

**QUESTION FOUR (20 MARKS)**

Discuss the primary phases of toxicokinetics of toxicants in an organism's system. (20 Marks)

