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UNIVERSITY EXAMINATIONS 2024/2025

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

HPP 3314: LIQUID WASTE MANAGEMENT

DATE: JANUARY 2025

TIME: 2 HOURS

INSTRUCTIONS: Answer Question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- a) Explain why: -
- i. Gully traps are provided in drainage systems. (3 Marks)
 - ii. Sewers are designed to run partially full. (3 Marks)
- b) Briefly explain the need for pretreatment of industrial wastewater before discharge to a public sewer. (6 Marks)
- c) Describe the following:
- i. Separate system of drainage. (3 Marks)
 - ii. Combined system of drainage. (3 Marks)
- d) Outline any four (4) requirements, necessary in selecting a site for a wastewater treatment plant. (6 Marks)
- e) Indicate any three possible uses of treated wastewater. (6 Marks)



MUST is ISO 9001:2015 and



ISO/IEC 27001:2013 CERTIFIED

QUESTION TWO (20 MARKS)

Explain how the following are removed from wastes stabilization ponds system highlighting the respective essential design parameters that contribute to their removal:

- i. Biochemical Oxygen Demand (BOD) (12 Marks)
- ii. Parasites. (8 Marks)

QUESTION THREE (20 MARKS)

Discuss in detail, how the following components of trickling filter contribute to the wastewater treatment within the filter design:

- i. Distribution system. (4 Marks)
- ii. The filter media. (12 Marks)
- iii. The underdrains. (4 Marks)

QUESTION FOUR (20 MARKS)

Describe the operation of anaerobic digester that treats sewage sludge. (20 Marks)