



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR DECREE IN:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE)

ECE 2313: PUBLIC HEALTH ENGINEERING II

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *Pocket Calculator*

This paper consists of **FIVE** questions. Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

Use neat, large and well labeled diagrams where required

This paper consists of **TWO** printed pages

Question One

- a) What are the main objectives of wastewater treatment? **(3 marks)**
- b) Discuss the following processes as applied in wastewater treatment. **(10 marks)**
(i) Chlorination
(ii) Ozonation
- c) Discuss batch culture (Use a graph to indicate each stage of growth) **(6 marks)**

- d) Describe FOUR major water borne diseases. What factors contribute to their transmission (11 marks)

Question Two

- a) Discuss the importance of manholes in a sewer system. (5 marks)
- b) Outline factors that affect the final choice of a sewage treatment plant (8 marks)
- c) What are the advantages of grit chamber (3 marks)
- d) What are functions of screens in wastewater treatment process (4 marks)

Question Three

- a) Explain the following terms as used in wastewater treatment process:
(i) Theoretical oxygen Demand (Th.OD)
(ii) Centrifugation process
(iii) Sludge stabilization process (6 marks)
- b) Discuss first order Kinetics (4 marks)
- c) What is continuous culture (2 marks)
- d) Outline the wastewater treatment categories (6 marks)

Question Four

- a) What is aerobic digestion process? (6 marks)
- b) Why is primary sedimentation process important in wastewater treatment (8 marks)
- c) Describe the following terms:
(i) Sewer
(ii) Sewerage
(iii) Sewerage system (6 marks)

Question Five

Explain the following processes:

- a) Anaerobic digestion
b) Intermittent sand filters (10 marks)