



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
**UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING
(BSCE – Y3, S2)**

ECE 2313: PUBLIC HEALTH ENGINEERING

END OF SEMESTER EXAMINATION

SERIES: APRIL 2014

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*

This paper consists of **FIVE** questions.

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

All questions carry equal marks

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One

- a) Discuss the role of an Environmental engineer in waste water management practice. **(5 marks)**
- b) Explain the following terms as used in waste water:
(i) Theoretical Oxygen Demand (Th.OD)
(ii) Chemical Oxygen Demand (COD)
(iii) Biochemical Oxygen Demand (BOD) **(7 marks)**
- c) Citing advantages and disadvantages, discuss the use of constructed wetlands as a biological process of waste water treatment process. **(15 marks)**

d) What are the main objectives of wastewater treatment process? **(3 marks)**

Question Two

a) With an aid of a graph, explain the term batch bacteria. **(6 marks)**

b) What factors should one consider in choosing the appropriate technology in wastewater treatment? **(7 marks)**

c) Explain briefly the advantages and disadvantages of anaerobic digestion process. **(7 marks)**

Question Three

a) Explain the term bacteriological water analysis **(2 marks)**

b) Discuss any FOUR major water borne diseases **(8 marks)**

c) Outline the processes followed in the treatment of sludge. **(10 marks)**

Question Four

a) How are the screening disposed off. **(4 marks)**

b) What are the wastewater categories? **(6 marks)**

c) Discuss anaerobic digestion process. **(10 marks)**

Question Five

a) Briefly describe the following:

(i) Rapid sand filtration

(ii) Lime soda softening

(iii) Desalination

(iv) Flow equalization **(8 marks)**

b) How do you dispose off grit **(2 marks)**

c) Discuss physical characteristics of municipal wastewater. **(10 marks)**