



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECE 2504 : PUBLIC HEALTH ENGINEERING - III

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE:

Instructions to Candidates

You should have the following for this examination

-*Answer Booklet, examination pass and student ID*

-*Drawing instruments.*

This paper consists of five questions.

Attempt any THREE questions.

Do not write on the question paper.



Question ONE (Compulsory)

- a). Discuss various collection services as used in solid waste management (10 Marks).
- b). A new urban residential estate with 700 homes averaged occupancy of 4.8 person per residence had a single central pack. Can the estate be served by two trucks once a week? The details for the question are provided as follow:
- Waste generation for parks and recreational areas = 0.03 kg/Capita.day
 - Waste generation for residential homes = 1.8 kg/Capita
 - Park rubbish density = 130 kg/m³
 - Residential rubbish = 450 kg/m³
 - Capacity for the truck = 5 – 9.0 m³ (6 Marks).
- c). Discuss the processes involved in sludge treatment (14 Marks).

Question TWO

- a). Discuss the urban re-use of waste water (11 Marks).
- b). Explain factors that affect the generation of solid waste (4 Marks).
- i). Direct portable re – use
 - ii). Direct re-use
 - iii). Indirect re-use
 - iv). Portable water re-use
 - v). Waste water reclamation (5 Marks).
- b). Explain the four problems associated with water quality in a boiler cooling systems (10 Marks).

Question THREE

- a). Explain the four problems associated with water quality in a boiler cooling systems (10 Marks).
- b). Discuss the process of size reduction, giving its advantages and disadvantages (5 Marks).
- c). What are the advantages of constructed wetlands (5 Marks).

Question FOUR

- a). Discuss Hauled and Stationary Container Systems, giving examples of each method, state the advantages and disadvantages of each method (10 Marks).



- b). Make short notes under the following sub-topics
- i). Water demand and re-use
 - ii). Source substitution
 - iii). Pollution abatement (9 Marks).
- c). What do you understand the term **fouling**? (1 Mark).

Question FIVE

- a). Outline the adverse effects of salinity to plants (5 Marks).
- b). Discuss solid waste management chain (15 Marks).

