



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

BSC IN CIVIL ENGINEERING

ECE 2504 : PUBLIC HEALTH ENGINEERING III

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: 10 May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, Drawing Instruments, Scientific calculator, examination pass and student ID

This paper consists of five questions.

Attempt question ONE (Compulsory) and any other TWO questions.

Question ONE (Compulsory)

- a). Make short notes on the following terms as regards water re-use
- i) Scaling
 - ii) Metallic corrosion
 - iii) Biological growth
 - iv). Fouling (8 Marks).
- b). Define onsite waste water treatment system (OWTS) what are the main challenges facing its implementation (12 marks)
- c). Discuss the Solid Waste Management Chain (SWM) (10 Marks).

Question TWO

- a). What are some of the important land fill-sitting consideration? (8 marks)

- b). Why is salinity important to plants? (6 Marks).
- c). What do you understand by the term vermicomposting? (6 Marks).

Question THREE

- a). A new urban residential estate with 1000 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 = 0.02kg/Capita.day
 - Waste generation for residential homes = 1.8 kg/Capita
 - Park rubbish density = 130 kg/m³
 - Residential rubbish = 400 kg/m³
 - Capacity for the truck = 4.5 – 10 m³ (6 Marks).
- b). Differentiate between Hauled container system (HCS) and the stationary container system (SCS) (4 Marks).
- c). Discuss size reduction and screening methods, citing their objectives (10 Marks).

Question FOUR

- a). Discuss the operations and maintenance of biogas digester citing its advantages and disadvantages (15 Marks).
- b). Discuss factors that affect generation rates of the solid waste (4 Marks).

Question FIVE

- a). Describe combustion process and cite any major concern of this process (11 Marks).
- b). Make short notes under the following terms:
- i). Water demands and Reuse
 - ii). Source substitution
 - iii). Pollution abatement (9 Marks).