



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 3201: PUBLIC HEALTH ENGINEERING I

END OF SEMESTER EXAMINATION

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*

This paper consists of **FIVE** questions

Answer question **ONE** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question 1

- a) Define rain water harvesting technology (3 marks)
- b) Make short notes on the following:
 - (i) Catchment areas
 - (ii) Collection devices
 - (iii) Conveyance system (9 marks)
- c) What are the processes involved in sludge treatment (8 marks)
- d) State selection criteria of the choice of sewage treatment technology (10 marks)

SECTION B (Answer any *TWO* questions from this section)

Question 2

- a) State the objective of waste water treatment (2 marks)
- b) Briefly explain the **THREE** major stages of sewage treatment (6 marks)
- c) Make short notes on the following:
 - (i) Surface aerated basins
 - (ii) Constructed wetlands
 - (iii) Activated sludge
 - (iv) Biological aerated filters (12 marks)

Question 3

- a) Describe the process of coagulation/flocculation (5 marks)
- b) Explain the process of chlorination (5 marks)
- c) Explain the contents of a design report of wastewater (10 marks)

Question 4

- a) Discuss the following technologies of wastewater treatment
 - (i) Flow equalization
 - (ii) Screening
 - (iii) Sedimentation
 - (iv) Septic tank (12 marks)

b) What are the advantages and disadvantages of anaerobic digestion (8 marks)

Question 5

a) What are the factors affecting water consumption (6 marks)

b) Thika town has a population of 5000 people where the population density is high; calculate the hypothetical water demand for the local residents. (5 marks)

c) List **THREE** examples of reuse of wastewater (9 marks)