



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

*Faculty of Engineering and Technology*

**DEPARTMENT OF BUILDING AND CIVIL ENGINEERING**

**UNIVERSITY EXAMINATIONS FOR BACHELOR OF  
ENGINEERING IN BUILDING & CIVIL ENGINEERING**

ECE 2305 : 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 in **TWO** sections **A & B**

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

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

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**SECTION A (COMPULSORY – 30 MARKS)**

**Question 1**

- a) What are the processes involved in sludge treatment (8 marks)
- b) Outline the selection criteria for the selection of the choice of sewage treatment (10 marks)
- c) What are the **THREE** major stages involved in sewage treatment (6 marks)
- d) Wastewater may contain high levels of nutrients nitrogen and phosphorus that can lead to eutrophication, discuss how they are removed (6 marks)

**SECTION B** (Answer any TWO questions from this section. Each question carries 20 marks)

**Question 2**

- a) What are the water associated diseases ( 2 marks)
- b) Describe the process of coagulation/flocculation (6 marks)
- c) Discuss the following technologies of wastewater treatment
  - (i) Flow equalization
  - (ii) Screening
  - (iii) Sedimentation
  - (iv) Septic tank (12 marks)

**Question 3**

- a) With an aid of sketch, discuss the construction of a driven well (10 marks)
- b) Discuss how the above well is protected (10 marks)

**Question 4**

- a) The average annual rainfall of Mombasa town 500mm. Calculate the quantity of rainwater that can be collected over a corrugated iron roof, which has an area of 600m<sup>2</sup> (2 marks)
- b) Discuss the **TWO** main types of water pollution (6 marks)
- c) Compare mechanized and non mechanized aerobic treatment (12 marks)

**Question 5**

- a) Explain the content of a design of wastewater treatment (10 marks)
- b) Discuss the methods of disinfection and odour control in wastewater treatment (10 marks)