



**THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

(A Constituent College of JKUAT)

# **Faculty of Engineering & Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**BACHELOR OF ENGINEERING IN BUILDING & CIVIL ENGINEERING  
(BSCE)**

**[Institutional Based Programmes]**

EBC 4415: PUBLIC HEALTH ENGINEERING II

**END OF SEMESTER EXAMINATION**

**SERIES: DECEMBER 2012**

**TIME: 2 HOURS**

## **Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

---

## **Question One (30 marks)**

- a) What are the major effects of salinity in plant growth? **(6 marks)**
- b) Define the term adsorption. How is it applied in wastewater treatment? **(14 marks)**
- c) Make short notes on the following:

- (i) Source substitution
- (ii) Pollution abatement
- (iii) Waste water re-use application. **(10 marks)**

**Question Two (20 marks)**

- a) Discuss **FIVE** important processes of sludge treatment. **(10 marks)**
- b) What are the main factors affecting the process of adsorption? **(8 marks)**
- c) Differentiate between adsorbate and adsorbent **(2 marks)**

**Question Three (20 marks)**

- a) Discuss the importance of constructed wetlands in waste water treatment citing their advantages and disadvantages. **(15 marks)**
- b) What are the main potential consideration of reclaimed waste water for agriculture and urban settlement? **(5 marks)**

**Question Four (20 marks)**

- a) Discuss briefly the urban re-use of waste water. **(10 marks)**
- b) Make short notes under the following sub-topics.
  - (i) Metallic corrosion
  - (ii) Biological growth
  - (iii) Scaling concerns
  - (iv) Fouling **(10 marks)**

**Question Five (20 marks)**

- a) Explain briefly the following terms as used in wastewater treatment process.
  - (i) Oxidation ponds
  - (ii) Activated sludge
  - (iii) Trickling fitters
  - (iv) Batch adsorption **(8 marks)**
- b) Define the term onsite waste water treatment (OWTS). Discuss its importance and challenges associated with the system in waste water treatment. **(12 marks)**