



TECHNICAL UNIVERSITY OF MOMBASA  
**Faculty of Engineering &  
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING  
**HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING (HDBC 12S)**

EBC 3202: PUBLIC HEALTH ENGINEERING I

**END OF SEMESTER EXAMINATION**  
SERIES: DECEMBER 2013  
**TIME ALLOWED: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Drawing Instruments*
- *Calculator*

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**

- a) Outline **THREE** types of reservoirs **(6 marks)**
- b) Outline **FIVE** factors considered when selecting a dam site. **(10 marks)**
- c) Sketch an intake suitable for a small pond with fluctuating water levels **(4 marks)**

### **Question Two**

- a) Sketch on intake suitable for abstracting water in an impounding reservoir **(8 marks)**
- b) Make a sketch of a typical earth fill dam with a clay core **(8 marks)**
- c) State **FOUR** factors considered in locating and designing intake structures **(4 marks)**

### **Question Three**

- a) Outline the effects of the following in water:
  - (i) Turbidity
  - (ii) Temperature
  - (iii) Hardness
  - (iv) Bacteria
  - (v) Fluorides**(10 marks)**
- b) Define the following terms as used in water analysis:
  - (i) Suspended solids
  - (ii) Total solids**(4 marks)**
- c) Outline the tests performed to determine the solids in b(i) and (ii) **(6 marks)**

### **Question Four**

- a) Explain the reasons of building water supply projects in phases **(6 marks)**
- b) Outline **FOUR** reasons of storing raw water before treatment **(8 marks)**
- c) State:
  - (i) **THREE** objectives of aeration in water treatment
  - (ii) **THREE** factors that influence water disinfection**(6 marks)**

### **Question Five**

- a) Make neat sketches of the following:
  - (i) Horizontal flow sedimentation tank
  - (ii) Multiple tray aerator**(12 marks)**
- b) Briefly describe any **FOUR** processes that occur during filtration of water **(8 marks)**

