



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING  
**DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE)**

ECV 2306: CIVIL ENGINEERING CONSTRUCTION III

**END OF SEMESTER EXAMINATION**

**SERIES: DECEMBER 2014**

**TIME ALLOWED: 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 of the **FIVE** questions

All questions carry equal marks

Maximum marks for each part of a question are as shown

Use neat, large and well labeled diagrams where required.

This paper consists of **TWO** printed pages

### Question One

- a) Describe the purpose of a water distribution system. (2 marks)
- b) List the components of a distribution system (4 marks)
- c) Compare with illustrations the dead end and loop system design giving the advantages of the loop system over the dead end system. (8 marks)
- d) Describe the following drainage system: (6 marks)
  - (i) Separate drainage system
  - (ii) Combined drainage system

### Question Two

A dose of 50mg/l of alum is used in coagulating a turbid surface water:

- a) How much natural alkalinity is consumed
- b) How many milligrams per litre of aluminum hydroxide are produced (20 marks)

### Question Three

Define the following characteristics of waste water:

- a) Biochemical Oxygen Demand (BOD)
- b) Total Suspended Solids (TSS)
- c) Fats, Oils and grease (FOG)
- d) Pathogens (8 marks)

### Question Four

With a clear flow diagram describe the primary process in surface-water treatment to completion. (20 marks)

### Question Five

- a) Describe the following components of a distribution system: (10 marks)
  - (i) Pipe work
  - (ii) Trunk distribution mains
  - (iii) Secondary mains
  - (iv) Service mains
  - (v) Service pipes
- b) With clear diagrams, describe the submerged crib intake works. (5 marks)
- c) Briefly describe the following terms as used in waste water:
  - (i) Domestic waste water
  - (ii) Industrial waste water
  - (iii) Infiltration and inflow

- (iv) Municipal waste water
- (v) Sewers

**(5 marks)**