



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

*Faculty of Engineering and Technology in Conjunction with Kenya  
Institute of Highways and Building & Technology (KIHBT)*

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING AND CIVIL ENG

**BUILDING CONSTRUCTION**

SEMESTER I EXAMINATIONS

**SERIES:** AUGUST/SEPTEMBER 2011

**TIME:** 2 HOURS

**Instructions to Candidates:**

This paper consists of **TWO** sections **I** and **II**

Section **I** has **30** marks and section **II** has 40 marks

Attempt all questions in section **I** and only **TWO** questions from section **II**

This paper consists of **THREE** printed pages

## **SECTION I (30 MARKS)**

### **Question 1**

- a) With the use of sketches, differentiate between the following groundwater drainage systems (9 marks)
- i) Herringbone
  - ii) Natural
  - iii) Grid
- b) List down **FIVE** Building Regulations required before construction work begins. (5 marks)
- c) With the aid of well labeled diagrams, clearly differentiate between the following types of foundations (16 marks)
- (i) Strip foundation
  - (ii) Wide-strip foundations
  - (iii) Deep-strip/trench fill foundations
  - (iv) Pad foundation

## **SECTION II (Answer any TWO questions – 40 marks)**

### **Question 2**

- a) Using a well labeled diagram, differentiate between the following parts as used in timbering (8 marks)
- i) Poling
  - ii) Waling
  - iii) Struts
  - iv) Vertical timber boards
- b) Define the term sheet piling (2 marks)
- c) Explain any **FIVE** circumstances in which sheet piles are used (10 marks)

### **Question 3**

- a) List down **THREE** functions of retaining walls (3 marks)
- b) Using well labeled diagrams, differentiate between the following types of retaining walls
- i) Mass retaining wall
  - ii) Reinforced concrete retaining wall
  - iii) Cantilever retaining wall (9 marks)
- c) Define the **FOUR** types of failure associated with retaining walls (8 marks)

#### Question 4

- a) Define the term underpinning (2 marks)
- b) List down **FIVE** precautions necessary to prevent damage to an existing building during underpinning (10 marks)
- c) Briefly describe the 'pumping from 'sumps' method of dewatering (8 marks)

#### Question 5

- a) Define pile foundations (2 marks)
- b) Describe with annotated sketches the stages in the formation of a small diameter bored pile (10 marks)
- c) State **FOUR** conditions under which piled foundations are used (8 marks)