



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE 12J)

EBC 2311: BUILDING TECHNOLOGY & SERVICES IV

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2013
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

Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One

- a) With the aid of sketches, describe the following types of retaining walls.
- (i) Cantilever
 - (ii) Counterfort
- (8 marks)**
- b) State FOUR functions of a retaining wall **(4 marks)**
- c) With the aid of sketches, describe the following failures in retaining:
- (i) Settlement
 - (ii) Overturning
- (8 marks)**

Question Two

- a) State FOUR functions of basements **(4 marks)**
- b) Describe the construction of basements by the perimeter trench method **(8 marks)**
- c) Outline FOUR uses of basement **(4 marks)**
- d) Define the following:
- (i) Battering
 - (ii) Timber
 - (iii) Wedges
 - (iv) Dumpling
- (4 marks)**

Question Three

- a) With the aid of sketches, explain the need for construction joints in basement construction **(6 marks)**
- b) With the aid of a sketch, explain freezing as a dewatering technique **(8 marks)**
- c) State FOUR requirements of formwork used in basement construction **(4 marks)**
- d) List FOUR materials used in basement construction **(2 marks)**

Question Four

- a) Sketch and label the parts of a cantilever truss (umbrella truss) **(6 marks)**
- b) Sketch and label the details of a lattice roof truss **(8 marks)**
- c) With the aid of a sketch, explain the construction of a multi-span precast concrete north light frame. **(6 marks)**

Question Five

- a) State FOUR factors to consider when designing a type of roof in terms of roof lighting **(4 marks)**
- b) Sketch and label a typical timber opening to skylight **(6 marks)**
- c) Sketch and label the parts of a monitor roof **(6 marks)**
- d) With the aid of sketch, outline the THREE factors to consider in natural ventilation **(4marks)**