TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBC 12M)

EBC 2203: CIVIL ENGINEERING CONSTRUCTION I

END OF SEMESTER EXAMINATION
SERIES: APRIL 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 **TWO** printed pages

Question One

a) State **THREE** functional requirements of foundations. **(6 marks)**

b) With the aid of sketches, describe the process of driving piles using drop hammer at the toe. **(14 marks)**

Question Two

a) Describe the following principles of pipe foundation:
- **(i)** End bearing
- **(ii)** Friction pile
- **(iii)** Combined End-bearing and friction pile **(9 marks)**

b) Using sketches describe the following foundation failures:
- **(i)** Bending failures
- **(ii)** Shear failure
- **(iii)** Settlement by bulging **(12 marks)**

Question Three

a) With the aid of sketches, describe the following types of retaining wall:
- **(i)** Gravity
- **(ii)** Counter-fort
- **(iii)** Cantilever (with toe and heel) **(12 marks)**

b) With the aid of sketches, describe the following failures of retaining wall:
- **(i)** Sliding
- **(ii)** Over-turning **(8 marks)**

Question Four

a) Describe the following types of caisson using sketches:
- **(i)** Open caissons
- **(ii)** Pneumatic caissons **(16 marks)**

b) State **FOUR** methods used to position caisson. **(4 marks)**

Question Five

a) Explain the uses of cofferdams. **(4 marks)**

b) State **SIX** factors considered when selecting a particular type of cofferdam. **(6 marks)**

c) Sketch and label the following types of cofferdam.
- **(i)** Single skin sheet pile cofferdam
- **(ii)** Double skin cofferdam **(10 marks)**