TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING

ECV 2203: CIVIL ENGINEERING CONSTRUCTION I

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER/NOVEMBER 2013
TIME ALLOWED: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*
- *Scientific 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) State FOUR reasons for dewatering sub-soil   (4 marks)

b) Explain the information required before dewatering   (6 marks)

c) With the aid of a sketch, describe sump pumping method of dewatering   (10 marks)

Question Two

a) With the aid of sketches, describe the following types of raft foundations:
    (i)   Solid slab
    (ii)   Beam and slab
    (iii)   Cellular raft   (12 marks)

b) Using sketches, describe the following foundation failures
    (i)   Bending failures
    (ii)   Shear failures   (8 marks)

Question Three

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

b) With the aid of sketches, describe the following failures of retaining wall:
    (i)   Sliding
    (ii)   Overturning   (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 cofferdam   (4 marks)

b) State SIX factors considered of 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)