

MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING**

BCE CD 216: CIVIL ENGINEERING CONSTRUCTION 1

DATE: 5/6/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

1.
 - a) Using well Labelled sketches Explain each of the following methods of ground water control
 - i. Perimeter trench method (5 marks)
 - ii. Well point method (5 marks)
 - b)
 - i With the aid of a sketch describe a raft foundation (4 marks)
 - ii Briefly explain the difference between caissons and cofferdams (4 marks)
 - c)
 - i Outline Four surveying and preliminary activities to be carried out prior to underpinning (4 marks)
 - ii Differentiate between active earth pressure and passive earth pressure (4 marks)
 - iii With the aid of a sketch describe a cantilever retaining wall with a large toe (4 marks)
2.
 - a) Briefly describe the following types of caissons and supplement your answer with sketches

- i. Floating caissons (5 marks)
 - ii. Pneumatic caissons (5 marks)
 - b) With the aid of well labelled sketches describe the following types of cofferdams
 - i. Embankment protected cofferdam (5 marks)
 - ii. Double wall sheet pile cofferdam (5 marks)
- 3. a) With the aid of sketches describe four modes of failures of retaining walls (8 marks)
- b) With the aid of sketches describe the following types of foundations
 - i. Pad foundation (4 marks)
 - ii. Deep strip foundation (4 marks)
 - c) With aid of a well labelled sketch describe the sump-hole method of dewatering. (4 marks)
- 4. a) State four reasons that necessitate underpinning to be carried out (4 marks)
- b) Briefly describe how traditional wall underpinning is carried out (6 marks)
 - c)
 - i Briefly describe how drainage behind a retaining wall is provided (4 marks)
 - ii With the aid of a sketch describe a wide strip foundation (6 marks)
- 5. a) Briefly explain the following methods of dewatering
 - i. Freezing (3 marks)
 - ii. Electro osmosis (3 marks)
- b) Briefly explain the following terms
 - i. Underpinning
 - ii. Subsoils
 - iii. Foundation
 - iv. Deadloads
 - v. Settlement
 - vi. Retaining wall
 - vii. Dewatering (14 marks)