



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)

University Examinations 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCE CD 216: CIVIL ENGINEERING CONSTRUCTION 1

Date: 26/4/2016

Time: 8:30 – 10:30 AM

INSTRUCTIONS

This paper consists of FIVE questions

Answer question one and other two questions in this paper

1. a) With the aid of sketches describe the following types of caissons
i) Open caissons (5 marks)
ii) Pneumatic
b) i) Define a cofferdam (2 marks)
ii) With the aid of sketches differentiate between a double wall sheet pile cofferdam and an embankment protected (8 marks)
c) With the aid of sketches describe the following types of foundations
i) Raft foundation (5 marks)
ii) Deep strip foundation (5 marks)
2. a) using labelled sketches explain each of the following methods of ground water control
(i) well point (5 marks)
(ii) perimeter trench method (5 marks)
b) With the aid of sketches show five failure criteria in retaining walls (5marks)
3. Figure 1 shows the plan of a masonry wall which is to be underpinned
a) Outline five surveying and preliminary works to be carried out prior to underpinning (10 marks)
b) Sketch a typical underpinning schedule for the wall (5 marks)

- c) Sketch section A-A to show a typical section detail of the underpinned wall (5 marks)
4. With the aid of labelled sectional sketches describe the following types of foundations
- (i) Pad foundation (5 marks)
 - (ii) Stepped foundation (5 marks)
- b) (i) State four common design principles which must be considered when designing retaining walls (4 marks)
- (ii) With the aid of a well labelled sketch describe a cantilever retaining wall with a large toe (5 marks)
5. a) Define the following terms
- (i) Underpinning (2 marks)
 - (ii) Dewatering (2 marks)
 - (iii) Caissons (2 marks)
 - (iv) Cofferdams (2 marks)
 - (v) Foundations (2 marks)
- b) (i) State four reasons that necessitate underpinning to be carried out (4 marks)
- (ii) Briefly describe the importance of providing drainage behind a retaining wall (3 marks)
- (iii) Briefly describe ground water control by freezing method (3 marks)