



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)

University Examinations for 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

BCECD 216: CIVIL ENGINEERING CONSTRUCTION I

Date: 9/8/2016

Time: 11:00 – 1:00 pm

Instructions:

- This paper comprises of **five** questions
 - Question **one** is **compulsory** and carry 30 marks
 - Answer any **other two** questions
1. (a) (i) State three factors which determine the depth of foundations (3 marks)
- (ii) Distinguish bearing capacity and bearing pressure. (4 marks)
- (iii) Outline three surveying and preliminary works to be carried prior to underpinning. (3 marks)
- (b) (i) Briefly differentiate between a caisson and a cofferdam (4 marks)
- (ii) Briefly describe how traditional wall underpinning is carried out (6 marks)
- (c) (i) List FOUR types of retaining walls. (4 marks)
- (ii) Define the term dewatering. (2 marks)
- (iii) With the aid of a labelled sketch briefly explain the sump method of dewatering (4 marks)
2. (a) With the aid of sketches describe the following types of foundations
- (i) Isolated pad foundation (5 marks)
- (ii) Raft foundation (5 marks)

- (b)
 - (i) With the aid of sketches show FOUR failure criteria in retaining walls (8 marks)
 - (ii) State FOUR reasons for underpinning. (2 marks)
- 3.
 - (a)
 - (i) With the aid of a labelled sketch explain how a perimeter trench method is used when lowering the water table in basement construction. (8 marks)
 - (ii) State the main function of retaining walls. (2 marks)
 - (b) With the aid of sketches describe the following types of caissons
 - (i) Pneumatic caissons. (5 marks)
 - (ii) Open caissons (5 marks)
- 4.
 - (a) With the aid of sketches describe the following types of cofferdams
 - (i) Embankment protected cofferdam. (5 marks)
 - (ii) Cantilever sheet pile cofferdam (5 marks)
 - (b) With the aid of sketches describe the following types of foundations
 - (i) Deep strip foundation. (5 marks)
 - (ii) Stepped foundation. (5 marks)
- 5.
 - (a)
 - (i) Describe with an aid of a sketch jack pile underpinning method (5 marks)
 - (ii) Briefly describe the electro-osmosis method of dewatering a site. (5 marks)
 - (b) With the aid of well labelled sketches describe the following types of retaining walls
 - (i) Cantilever retaining wall (5 marks)
 - (ii) Mass retaining wall (5 marks)