



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

BCE CD 216: CIVIL ENGINEERING CONSTRUCTION I

Date: 1/12/2015

Time: 2:00 – 4:00 PM

INSTRUCTIONS

- This paper consist of five questions
 - Question one is compulsory and carry 30 marks
 - Answer any other two questions
1.
 - (a)
 - (i) State TWO factors that will govern the depth of a foundation (2 marks)
 - (ii) With the aid of labelled sectional sketches describe the following types of foundations
 - Deep strip (5 marks)
 - Pad foundation (5 marks)
 - (b) Using labelled sketches, Explain each of the following methods of ground water control
 - (i) Well point (6 marks)
 - (ii) Perimeter trench method (6 marks)
 - (c)
 - (i) State four modes of failure of retaining walls (2 marks)
 - (ii) Briefly explain the difference between caissons and cofferdams (4 marks)
 2.
 - (a) With the aid of well labelled sketches describe the following types of cofferdams
 - (i) Double wall sheet pile cofferdams (5 marks)
 - (ii) Embankment protected cofferdams (5 marks)

- (b) Briefly describe the following types of caissons and supplement your answer with sketches
 - (i) Pneumatic caissons (5 marks)
 - (ii) Floating caissons (5 marks)
- 3.
 - (a) Define the term underpinning (2 marks)
 - (b) State FOUR reasons that necessitate under pinning to be carried out (4 marks)
 - (c) Briefly describe how wall underpinning is carried out. (6 marks)
 - (d) Briefly explain the following methods of dewatering
 - (i) Electro-osmosis (4 marks)
 - (ii) Freezing (4 marks)
- 4.
 - (a) State the main function of a retaining wall (2 marks)
 - (b) With the aid of well labelled sketches describe the following types of retaining walls
 - (i) Mass retaining wall (5 marks)
 - (ii) Cantilever retaining wall (5 marks)
 - (c)
 - (i) Differentiate between active earth pressure and passive earth pressure (4 marks)
 - (ii) Briefly explain the effects of ground water behind a retaining wall (4 marks)
- (5)
 - (a) With the aid of sketches ,describe the following types of foundations
 - (i) Raft foundation (5 marks)
 - (ii) Stepped Foundation (5 marks)
 - (b)
 - (i) Draw a labelled section through a counterfort retaining wall (5 marks)
 - (ii) With an aid of a well labelled sketch describe the sump hole method of dewatering (5 marks)