



MACHAKOS UNIVERSITY

University Examination 2019/2020

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

DIPLOMA IN CIVIL ENGINEERING

BCECD 216: CIVIL ENGINEERING CONSTRUCTION 1.

DATE: 11/12/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

- This paper comprises of five questions.
- Question one is compulsory and carries 30 marks
- Answer any two questions which carry 20 marks.

QUESTION ONE (30 MARKS)

- a) Define the term settlement (2 marks)
- b) State two functional requirements of a good foundation (4 marks)
- c) With a neat sketch describe pad and raft foundation (6 marks)
- d) Outline FIVE reasons as to why underpinning is necessary (10 marks)
- e) Briefly explain the following types caissons and supplement your answer with sketches
 - i. Floating
 - ii. Pneumatics (8 marks)

QUESTION TWO (20 MARKS)

Sketch and briefly explain any FOUR types of retaining walls

QUESTION THREE (20 MARKS)

- a) Outline any FOUR steps to be undertaken before underpinning is commenced (10 marks)
- b) with an aid of sketches describe the following methods of underpinning -:
 - i. Traditional brick
 - ii. jack pile (10 marks)

QUESTION FOUR (20 MARKS)

- a) Explain the term “coffer dam” (2 marks)
- b) Outline FOUR factors to be considered in the design of double- wall coffer dams (8 marks)
- c) State and explain FIVE types of coffer dams (10 marks)

QUESTION FIVE (20 MARKS)

- a) Differentiate between a caisson and a coffer dam (4 marks)
- b) Using a well labeled sketches, explain the following methods of ground water control:-
 - i. Perimeter trench method
 - ii. Well point method (10 marks)
- c) With an aid of sketches describe 3 mode of failure retaining walls (6 marks)