



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

THIRD YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

BCECD 315: FOUNDATION ENGINEERING 1

DATE:15/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTIONS ONE (30MARKS)

- a) Define the term “foundation engineering” (2 marks)
- b) State four problems for granular soils (4 marks)
- c) Outline four problems to be encountered in stratified soils (8 marks)
- d) Briefly explain any two earth pressure conditions (4 marks)
- e) Briefly explain the meaning of factor of safety giving a relevant example and an applicable formular (6 marks)
- f) Briefly explain the process of soil consolidation (2 marks)
- g) Differentiate between safe bearing capacity and ultimate bearing capacity (4 marks)

QUESTIONS TWO (20MARKS)

- a) State and explain three factors that affect soil bearing capacities (12 marks)
- b) Make a neat sketch to show general shear failure below footing and explain when it occurs. (8 marks)

QUESTIONS THREE (20MARKS)

- a) Briefly explain the following types of lateral earth pressures
 - i Active pressure
 - ii Passive pressure
 - iii At rest pressure (12 marks)
- b) State and explain the Three types of settlement (8 marks)

QUESTION FOUR (20MARKS)

- a) Outline six factors that affect settlement (12 marks)
- b) Briefly explain the following states of soil
 - i Fully consolidated soil
 - ii Normally consolidated soil
 - iii Over consolidated soil (6 marks)
- c) Differentiate between cohesive and non- cohesive soils (2 marks)

QUESTION FIVE (20 MARKS)

- a) Outline six assumptions made in TERZASHI'S THEORY OF CONSOLIDATION (12 marks)
- b) Make neat sketches to show the interpretation of compressibility using a soil mode (8 marks)