



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING
FIFTH YEAR SECOND SEMESTER EXAMINATION
BACHELOR OF SCIENCE (CIVIL ENGINEERING)

ECV 507: GEOTECHNICAL ENGINEERING

DATE: 20/5/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Discuss types of rocks as used in geotechnical engineering. (10 marks)
- b) Briefly discuss the process of soil formation (5 marks)
- c) Discuss four factors affecting the performance of rock as a construction material (12 marks)
- d) Outline three the index properties of rocks (3 marks)

QUESTION TWO (20 MARKS)

- a) Outline three classification of dams according to the material used (3 marks)
- b) Outline four factors considered in the design of dams (4 marks)
- c) Discuss type of methods of site investigations in geotechnical engineering (10 marks)
- d) List six purposes of tunnels (3 marks)

QUESTION THREE (20 MARKS)

- a) Outline four effects of discontinuities on rock mass (4 marks)
- b) Outline four factors considered during design and construction of tunnels (4 marks)
- c) What is the difference between residual and transported soils? (4 marks)
- d) Discuss in-situ tests as used in geotechnical engineering (8 marks)

QUESTION FOUR (20 MARKS)

- a) With aid of sketch outline the tunnel anatomy (4 marks)
- b) List various types of tunnels (6 marks)
- c) Discuss three site exploration methods for soil (6 marks)
- d) What is the difference between cohesionless soils and cohesive soils? (4 marks)