



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR IN CIVIL ENGINEERING

ECV 300: ENGINEERING GEOLOGY

DATE: 1/8/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS: Attempt questions ONE and any other TWO questions

QUESTION ONE (30 MARKS) - COMPULSORY

- a) By use of a diagram, explain the terms *dip* and *strike* as they relate to geological maps. (2 Marks)
- b) Differentiate the following terms: (10 Marks)
- Rocks and Minerals
 - Faults and Folds
 - Divergent boundaries and Convergent boundaries
 - Normal and Reverse fault development
 - Tectonism and Denudation
- c) Describe areas in which engineering geology is important in civil engineering (6 Marks)
- d) Give a description of the processes of rock transformation and explain the mode of formation of the rock type mostly preferred for construction purposes. (8 Marks)
- e) Describe four uses of a geological map in a given location (4 Marks)

QUESTION TWO (20 MARKS)

- a) Describe two roles of temperature in the physical weathering of rocks (6 marks)
- b) Discuss at least FOUR types of igneous rocks textures. (8 Marks)
- c) Give the divisions of geological time with respect to era and period. (6 Marks)

QUESTION THREE (20 MARKS)

- a) Describe the THREE types of unconformities (9 Marks)
- b) State any FOUR types of folds (2 Marks)
- c) How minerals identified and what are the symmetry elements of crystal? (6 Marks)
- d) Distinguish between the Richter and Mercalli scales in seismology. (3 Marks)

QUESTION FOUR (20 MARKS)

- a) Outline FOUR rock reinforcement methods undertaken when carrying out underground excavations or mining. (4 Marks)
- b) Discuss the relationship between the Engineering Geologists and Civil Engineers. (2 Marks)
- c) Describe the drift and solid editions of a geological map. (5 Marks)
- d) Outline the following types of chemical weathering, showing the associated chemical reactions. (9 Marks)
 - i. Solution
 - ii. Hydration
 - iii. Oxidation: