



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2019/2020

SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

ECT 3200: ENGINEERING GEOLOGY

DATE: OCTOBER 2020

TIME: 2 HOURS

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE (30 MARKS)

- a) Describe weathering (2 marks)
- b) Explain the following types of weathering
 - i. Mechanical (4 marks)
 - ii. Chemical (4 marks)
 - iii. Biological (4 marks)
- c) List six importance of Geotechnical investigation (6 marks)
- d) Draw and name the cross section of the earth crust (6 marks)
- e) Explain two scopes of engineering geology (4 marks)

QUESTION TWO (20 MARKS)

- a) Describe the following rocks in geology
 - i. Igneous rocks (4 marks)
 - ii. Sedimentary rocks (4 marks)
 - iii. Metamorphic rocks (4 marks)

- b) Explain the following in relation to earth quakes
 - i. Divergent plate boundary (4 marks)
 - ii. Convergent plate boundaries (4 marks)

QUESTION THREE (20 MARKS)

- a) Describe a Dam (2 marks)
- b) Describe the following types of Dams
 - i. Diversion Dam (4 marks)
 - ii. Embankment Dam (4 marks)
 - iii. Detention Dam (4 marks)
 - iv. Cofferdam (4 marks)
- c) Explain grouting in civil engineering (2 marks)

QUESTION FOUR (20 MARKS)

- a) Describe why site investigation is important for Tunnels (4 marks)
- b) Define an earth quake (6 marks)
- c) Explain the following
 - i. Tunnel (3 marks)
 - ii. Stand up time (3 marks)
- d) List four components of investigation program for planning and design of a road tunnel project (4 marks)

QUESTION FIVE (20 MARKS)

- a) Define Geology (2 marks)
- b) List five importance of geology in civil engineering (10 marks)
- c) Explain the following terms
 - i. Physical geology (2 marks)
 - ii. Mineralogy (2 marks)
 - iii. Exogenous geological agents (4 marks)