



DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY
GEOHERMAL TRAINING AND RESEARCH INSTITUTE
MSc IN GEOHERMAL ENERGY TECHNOLOGY
END OF SEMESTER EXAMINATIONS
May – August 2020

GET 3002: Geology in Geothermal Exploration

DATE:

TIME: 3 HOURS

INSTRUCTIONS

- 1) TIME ALLOCATED – 3 hours
 - 2) There are FIVE QUESTIONS in this paper
 - 3) Attempt only THREE questions
 - 4) Question 1 is compulsory and is worth 30 marks. The other two are 15 marks each
 - 5) This Paper will count for 60% of the total score of GET 3002. The other 40% will be earned from CATS and assignments
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SECTION A (30 MARKS) – *This Question is compulsory!*

QUESTION 1

- a. Give a brief description of indicator volcanic product deposits found in potential geothermal areas.(5 marks)
- b. State the different types of magma found in geothermal settings.(5 marks)
- c. Briefly describe the basic structural geology within the rift valley useful in geothermal resource exploration.(5 marks)
- d. Discuss briefly the use of geology in identification of a geothermal prospect.(5 marks)
- e. Give an outline of the different classes of rocks in geology and their processes of formation.(5 marks)
- f. Describe briefly the major geological plate margins and their importance in geothermal exploration.(5 marks)

SECTION B (30 MARKS) - *Answer any TWO questions from this section*

QUESTION 2

- a. Discuss the various hydrothermal alterations zones and their uses in understanding the behaviour of a geothermal reservoir.(10 marks)
- b. Giving examples describe at least five physical properties of minerals.(5 marks)

QUESTION 3

- a. Discuss the various alteration minerals and rocks occurring in geothermal sites.(10 marks)
- b. Describe the various geothermal fluid types.(5 marks)

QUESTION 4

- a. Discuss the various types of energy and their contribution to earth processes.(10 marks)
- b. Discuss the various sources of heat in the earth and their transfer modes.(5 marks)

QUESTION 5

- a. Describe the natural hazards in volcanic and geothermal areas and their potential environmental impact.(10 marks)
- b. Briefly describe the geological well logging methodologies.(5 marks)