



**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**

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**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)