



## DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

### UNIVERSITY EXAMINATION 2019/2020

### EXAMINATION FOR MASTER OF SCIENCE IN GEOTHERMAL ENERGY TECHNOLOGY

GET 3010: Environmental Issues & Sustainable Development of Geothermal  
Energy

DATE: 22<sup>nd</sup> JANUARY 2020

TIME: 9:00-12 Noon

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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 3010. The other 40% will be earned from CATS and assignments
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#### *Question 1 [30 marks] – This question is Compulsory*

- a) What is the environment? It is now the Kenyan government policy that plastic papers/bags should not be used. In your view, why is Environmental degradation of concern to the country? *[5 marks]*
- b) How do the following factors affect the Environment?
  - i) Over-population. *[2 marks]*
  - ii) Technological advancement *[3 marks]*
- c) Briefly discuss what *Sustainable Development* is. *[5 marks]*
- d) Our university is a young institution. Buildings are being put up all the time. How has the development of the university affected the original environment? *[5 marks]*
- e) Name and discuss at least 5 environmental risks associated with geothermal development and exploitation and how these impacts are mitigated against. *[5 marks]*
- f) Briefly discuss at least 5 environmental regulations that could be under an Environmental Management and Coordination Act that are relevant to geothermal development. In your discussion, please give examples on how each can be applied in monitoring of geothermal impacts on environment. *[5 marks]*

#### *Question 2 [15 marks] – This question is Optional*

- a) What, in your view, is environmental degradation? *[5 marks]*
- b) Discuss some of the environmental concerns that our developing countries face as they develop into industrialised nations. *[5 marks]*

- c) Why are Environmental Risk Assessment (ERA) or Environmental Impact Assessment (EIA) activities mandatory for geothermal projects? [5 marks]

*Question 3 [15 marks] – This question is Optional*

- a) What is climate Change? [5 marks]
- b) Name and discuss any TWO factors that suggest that GLOBAL WARMING is happening. [5 marks]
- c) What is Clean Development Mechanism (CDM) and what are its objectives? [5 marks]

*Question 4 [15 marks] – This question is Optional*

- a) Name and discuss any TWO factors that make generation of Electricity from DIESEL powered plants NOT a recommended mode. [5 marks]
- b) Briefly state and discuss direct applications of geothermal fluids other than electricity generation. [5 marks]
- c) Offer a possible explanation why the ice cap on Mt Kenya has been reducing of the years. [5 marks]

*Question 5 [15 marks] – This question is Optional*

- a) What is Pollution? [5 marks]
- b) Economic Development often negatively affects the environment. Give and discuss 2 (two) examples of economic development through *energy projects* and their negative impacts on the environment. [5 marks]
- c) How can Appropriate Technology address some of environmental issues being faced by mankind today? Kindly provide examples from the geothermal industry. [5 marks]