DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

GEOTHERMAL TRAINING AND RESEARCH INSTITUTE

6MSc IN GEOTHERMAL ENERGY TECHNOLOGY

END OF SEMESTER EXAMINATIONS

May – August 2020

GET 3006: Geomatics & Geospatial use in Geothermal Energy 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 3006. 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.   Briefly describe the components of a GIS systems.*(5 marks)*
   b.   Describe supervised and unsupervised classification as used in remote sensing.*(5 marks)*
   c.   Briefly describe the three important characteristics of the connections in a GIS system between Graphic (spatial) and tabular (descriptive) data.*(5 marks)*
   d.   Giving examples, discuss the terms "sensors" and "platforms" as used in remote sensing.*(10 marks)*

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

QUESTION 2
   a.   Discuss five data capture methods used to get data into a GIS system applicable to geothermal resource surveys.*(5marks)*
   b.   Differentiate between vector and raster data structures giving the advantages and disadvantages of each.*(10 marks)*

QUESTION 3

You have been assigned the task of identifying potential areas for geothermal resources. Provide a step-by-step process how you can use GIS and Remote Sensing techniques to establish suitable sites.*(15 marks)*

QUESTION 4

    a) Discuss any five multiband operations used to enhance images prior to classification.*(10 marks)*

    b) Briefly describe the GPS technology settings and its applications in the collection of location data.*(5marks)*

QUESTION 5

    a) Explain four types of interactions between EMR and atmosphere.*(8 marks)*

    b) Differentiate between active and passive satellite sensor systems in RS.*(2 marks)*

    c) Discuss the major categories of image classification techniques. *(5 marks)*