

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2020/2021**

**FOURTH YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ENVIRONMENTAL HORTICULTURE AND LANDSCAPING TECHNOLOGY**

**AHL 2402: REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEMS**

**DATE: AUGUST 2021 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE: 30 MARKS**

i. Describe the following terms and give relevant examples:-

a. Geographic Information System. (3 marks)

b. Geographical data. (2 marks)

c. Vector data format. (2 marks)

d. Raster data format. (2 marks)

e. Spectral signature. (2 marks)

f. Projected coordinate system. (2 marks)

g. Attribute data. (2 marks)

ii. a. With the use of illustrations, describe basic components of a remote sensing

 system. (5 marks)

 b. Describe any three applications for remote sensing imagery data. (5 marks)

c. Explain briefly energy target object reactions and how it contributes to remote sensing of the earth. (5 marks)

**QUESTION TWO: 20 MARKS**

a. Describe four resolutions (spectral, Spatial, Temporal and Radiometric) applied in remote sensing and explain their value when selecting data source. (10 marks)

b. Discuss a detailed example of an application of GIS and Remote Sensing in the field of Environmental Management. (10 marks)

**QUESTION THREE: 20 MARKS**

i. Describe the characteristics of the following sensors and for each give examples of where it can be applied and why

 a. AVHRR. (3 marks)

 b. Landsat TM (3 marks)

 c. Landsat ETM + (3 marks)

ii. a. What is map projection in GIS? (4 marks)

 b. Explain why different latitudes use different sets of datum. (4 marks)

 c. Describe the distortions that occur during the process of earth projection. (3 marks)

**QUESTION FOUR: 20 MARKS**

a. Discuss the process of supervised land cover classification/assessment using a Landsat TM as the primary imagery data. (10 marks)

b. From the land cover classification in (a) above , describe how you would assess stress in vegetation due to abiotic or biotic factors. (10 marks)