



# **MACHAKOS UNIVERSITY**

**University Examinations For 2020/2021 Academic Year**

**SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT**

**DEPARTMENT OF ENVIRONMENTAL SCIENCES**

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR**

**MASTER OF ENVIRONMENTAL SCIENCE**

**ENS 801: APPLIED REMOTE SENSING AND GEOGRAPHIC INFORMATION**

**SYSTEM**

**DATE: 18/6/2021**

**TIME: 8:30 – 11:30 AM**

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**INSTRUCTIONS:** Answer question ONE and any other THREE questions

**QUESTION ONE (15 MARKS)**

- a) Using suitable examples, explain why you would recommend application of remote sensing and GIS in monitoring of natural resources in your county. (10 marks)
- b) Explain how the different levels of measurement influence analysis of attribute data in GIS. (5 marks)

**QUESTION TWO (15 MARKS)**

The Normalized Difference Vegetation Index (NDVI) is used extensively to estimate several biophysical and ecological variables of particular value in landscapes and for global analysis. Discuss this statement using suitable examples.

**QUESTION THREE (15 MARKS)**

Discuss the image pre-processing techniques that are necessary to improve the quality of satellite images.

**QUESTION FOUR (15 MARKS)**

Using appropriate examples, discuss the different operations that can be used in single- and multi-layer geoprocessing of vector data in GIS.

**QUESTION FIVE (15 MARKS)**

Citing relevant examples, discuss the workflow you would adopt in supervised classification of satellite images for mapping of invasive tree species.