



# MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION

BACHELOR OF ENVIRONMENTAL STUDIES (COMMUNITY DEVELOPMENT)

ECD 211: INTRODUCTION TO GEO-SPATIAL TECHNIQUES

DATE: 19/01/2021

TIME: 2.00-4.00 PM

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## INSTRUCTIONS:

Answer question ONE and any other TWO questions

### QUESTION ONE (30 MARKS)

- a) Explain the following terms
  - i. Geographic information system (2 marks)
  - ii. Remote sensing (2 marks)
  - iii. Spatial generalization (2 marks)
  - iv. Raster data (2 marks)
  - v. Vector data (2 marks)
- b) Discuss the key elements in the development and implementation of a Geographic Information System (10 marks)
- c) Using appropriate examples, explain the different types of a computer based spatial Database management systems (DBMS) that can be used in environmental management (10 marks)

### QUESTION TWO (20 MARKS)

- a) Discuss the key components of Satellite remote sensing as a source of spatial data (10 marks)
- b) Citing relevant examples, explain how generalization of spatial data can be carried out (10 marks)

**QUESTION THREE (20 MARKS)**

- a) Discuss how you would use geoprocessing operations in GIS to create new spatial datasets from existing data (10 marks)
- b) Discuss how GIS can be used to select a suitable solid waste management site for Machakos county (10 marks)

**QUESTION FOUR (20 MARKS)**

- a) Explain the different approaches that can be used in analysis of geometry and the attributes of spatial features in GIS (10 marks)
- b) Explain how you would address errors in spatial data for a project on mapping of wetlands in Kenya (10 marks)

**QUESTION FIVE (20 MARKS)**

Citing relevant examples, discuss how remote sensing technologies can be effectively used in climate change management in your county