



# MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR  
BACHELOR IN ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION)

ENVIRONMENTAL STUDIES AND COMMUNITY DEVELOPMENT

ECD 211: INTRODUCTION TO GEO-SPATIAL TECHNIQUES

DATE: 26/7/2019

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 key terms as used in geo-spatial techniques
- i. Geographic phenomena (2 marks)
  - ii. Remote sensing (2 marks)
  - iii. Geographic Information System (2 marks)
  - iv. Spatial Database (2 marks)
  - v. Data Generalization (2 marks)
- b) Discuss the significance of geospatial techniques in the sustainable management of natural resources in Kenya (20 marks)

### QUESTION TWO (20 MARKS)

Using appropriate examples, explain the key components in the development and application of Geographic Information System (GIS) in water resources management in Kenya

**QUESTION THREE (20 MARKS)**

- a) Compare and contrast raster and vector data formats (10 marks)
- b) Explain the factors to consider in collection and analysis of spatial data (10 marks)

**QUESTION FOUR (20 MARKS)**

Discuss the applicability of geospatial techniques in management of the following resources in Kenya:

- a) Forest resources (10 marks)
- b) Marine resources (10 marks)

**QUESTION FIVE (20 MARKS)**

- a) Using suitable examples, discuss the spatial data management and analysis procedures appropriate for the monitoring of the Mara ecosystem (10 marks)
- b) Explain the key steps in developing a computer-based spatial database management system (DBMS) (10 marks)