



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCE MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

**SECOND YEAR SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION)
BACHELOR OF ENVIRONMENTAL STUDIES AND COMMUNITY DEVELOPMENT**

ECD 211: INTRODUCTION TO GEO-SPATIAL TECHNIQUES

DATE:

TIME:

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) Remote sensing (2 marks)
 - ii) Geographic Information System (2 marks)
 - iii) Spatial data (2 marks)
 - iv) Spatial database management system (2 marks)
 - v) Topology (2 marks)
- b) Discuss the significance of geospatial techniques in the sustainable management of the following resources in Kenya
 - i) Water resources (10 marks)
 - ii) Marine resources (10 marks)

QUESTION TWO (20 MARKS)

- a) Explain the key elements in the remote sensing process as a source of spatial data (10 marks)
- b) Discuss the key factors that determine the suitable sources for spatial data for natural resources management (10 marks)

QUESTION THREE (20 MARKS)

- a) Using appropriate examples, discuss why you would recommend a spatial database management system (DBMS) for natural resource management in your county (10 marks)
- b) Explain the key steps in developing a computer-based spatial database management system (DBMS) (10 marks)

QUESTION FOUR (20 MARKS)

Citing relevant examples, discuss key components required for effective development and application of a Geographic Information System (GIS)

QUESTION FIVE (20 MARKS)

- a) Using suitable examples, discuss the spatial data management and analysis procedures required for effective monitoring of the Nairobi river ecosystem. (10 marks)
- b) Citing relevant examples, explain the methods that can be used to detect errors in spatial data (10 marks)