



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)