MACHAKOS UNIVERSITY

University Supplementary Examinations for 2021/2022 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCE MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SECOND YEAR SUPPLEMENTARY EXAMINATION FOR THE DEGREES OF BACHELOR OF ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION) AND 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 concepts

i. Database management systems (2 marks)
ii. Geographic Information System (2 marks)
iii. Spatial data (2 marks)
iv. Topology (2 marks)
v. Data Generalization (2 marks)

b) Explain the key components in development of a Geographic Information System for natural resources management (10 marks)

c) Discuss the key factors to consider when collecting spatial data for natural resources management (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) Explain the key steps you would adopt in developing a computer-based spatial database management system (DBMS) for natural resources management in your county (10 marks)

QUESTION THREE (20 Marks)

a) Explain the analytical functions used in spatial data analysis in a GIS (10 marks)

b) Discuss the key challenges in the adoption of geospatial techniques in natural resources management in your county (10 marks)

QUESTION FOUR (20 Marks)

Using suitable examples, discuss the spatial data management and analysis procedures appropriate for the monitoring of the Tsavo ecosystem

QUESTION FIVE (20 Marks)

Using appropriate examples, discuss the different generalization methods used to reduce complexity of spatial data