



# MACHAKOS UNIVERSITY

University Examinations for 2023/2024 Academic Year

**SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES**

**DEPARTMENT OF ENVIRONMENTAL SCIENCES**

**FOURTH YEAR FIRST SEMESTER EXAMINATION FOR  
BACHELOR OF SCIENCE (COMPUTER SCIENCE),  
SCO 417: GEOGRAPHIC INFORMATION SYSTEM**

**DATE:**

**TIME:**

**Instructions: Answer question ONE and any other TWO questions**

## **QUESTION ONE (30 MARKS)**

a) Explain the following:

- i. Geographic Information System (2 marks)
- ii. Topology (2 marks)
- iii. Spatial entities (2 marks)
- iv. Spatial database management system (2 marks)
- v. Attribute data (2 marks)

b) Explain the main data management and analysis procedures relevant in GIS (10 marks)

c) Discuss the main components that you would advise a potential client to consider in development of a GIS (10 marks)

## **QUESTION TWO (20 MARKS)**

- a) Using suitable examples, explain the main types of data used in GIS (10 marks)
- b) Discuss the different levels of data classification that can be used when designing a web-based map (10 marks)

## **QUESTION THREE (20 MARKS)**

Discuss the main barriers in the development and implementation of GIS in any given sector in Kenya

## **QUESTION FOUR (20 MARKS)**

Discuss the main methods you would adopt in pre-processing of spatial data in GIS

## **QUESTION FIVE (20 MARKS)**

Discuss why you would recommend a computer-based database management system for decision-making