



# MACHAKOS UNIVERSITY

University Examinations for 2023/2024 Academic Year

SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES

DEPARTMENT OF ENVIRONMENTAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL SCIENCE

ENS 306: GEO-INFORMATICS

DATE:

TIME:

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**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 should be considered in development of a GIS (10 marks)

## QUESTION TWO (20 MARKS)

- a) Explain the main types of data used in GIS (10 marks)
- b) Discuss the different levels of data classification used in designing maps in GIS (10 marks)

## QUESTION THREE (20 MARKS)

Discuss the main barriers in the development and implementation of GIS for natural resources management 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 spatial data management system for natural resources management