



MACHAKOS UNIVERSITY

University Examinations for 2022/2023 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 (COMPULSORY) (30 MARKS)

- a) Explain the Following:
- i. Geographic information system (2 marks)
 - ii. Topology (2 marks)
 - iii. Database management system (2 marks)
 - iv. Metadata (2 marks)
 - v. Attribute data (2 marks)
- b) Machakos County is planning to implement a Geographic Information System for resource management. Discuss the key organizational factors that may impact the implementation of the system. (10 marks)
- c) Explain the methods you would use to carry out geoprocessing of spatial data in GIS (10 marks)

QUESTION TWO (20 MARKS)

- a) Discuss the general components in the development and implementation of a Geographic Information System (10 marks)
- b) Explain the key factor you would consider in designing a map to communicate spatial information to different stakeholders (10 marks)

QUESTION THREE (20 MARKS)

Using appropriate examples, explain the different generalization methods used in spatial data to create simplified representation of the real world, while reducing complexity of the data

QUESTION FOUR (20 MARKS)

Discuss the importance of a database management system in GIS

QUESTION FIVE (20 MARKS)

Using suitable examples, discuss the functions that can be used to carry out an integrated analysis of spatial and attribute data in GIS