MACHAKOS UNIVERSITY

University Examinations For 2021/2022 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL SCIENCE

ENS 306: GEO-INFORMATICS

DATE: 10/12/2021   **TIME: 11.00-1.00 PM**

INSTRUCTIONS: Answer question ONE and any other TWO questions

QUESTION ONE (COMPULSORY) (30 MARKS)

a)   Explain the following key terms as used in geo-spatial techniques

    i.   Geographic Information System   (2 marks)

    ii. Topology   (2 marks)

    iii. Attribute data   (2 marks)

    iv. Meta data   (2 marks)

    v.   Database Management System   (2 marks)

b)   Discuss the applicability of GIS in management of natural resources in Kenya. (10 marks)

c)   Explain the factors to consider in collection and analysis of spatial data.   (10 marks)

QUESTION TWO (20 MARKS)

a)   Discuss the key steps you would adopt in developing a computer-based spatial database
     management system (DBMS) for natural resource management in your county. (10 marks)

b)   Explain the key components of a Geographic Information System (GIS).   (10 marks)

QUESTION THREE (20 MARKS)

a)   Compare and contrast raster and vector data formats.   (10 marks)

b)   Discuss the general steps of data abstraction in spatial data modelling process. (10 marks)

QUESTION FOUR (20 MARKS)

Discuss the opportunities and challenges for application of geo-informatics in your county

QUESTION FIVE (20 MARKS)

Discuss the key methods used in generalization of spatial datasets in GIS