MACHAKOS UNIVERSITY

University Examinations For 2021/2022 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL STUDIES

(ENVIRONMENTAL RESOURCE CONSERVATION)

BACHELOR OF ENVIRONMENTAL SCIENCE

ENS 331: REMOTE SENSING FOR ENVIRONMENTAL SCIENCES

DATE: 15/12/2021   **TIME: 11.00-1.00 PM**

INSTRUCTIONS: Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

a)   Explain the following concepts

      i.   Remote sensing   (2 marks)

      ii.   Wavelength   (2 marks)

      iii.   Atmospheric windows   (2 marks)

      iv.   Reflectance   (2 marks)

      v.   Supervised classification   (2 marks)

b)   Explain the key mechanisms in the interactions between the electromagnetic radiation and atmosphere.   (10 marks)

c)   Citing relevant examples, explain why remote sensing is suitable for monitoring natural resources in Kenya.   (10 marks)

QUESTION TWO (20 MARKS)

a)   Using appropriate illustrations, discuss how the concept of spectral reflectance signature can be applied in classification of different objects in satellite images.   (10 marks)

b)   Explain the key steps you would adopt in supervised classification of remote sensing data for mapping of land cover types in an urban area.   (10 marks)

QUESTION THREE (20 MARKS)

Citing relevant examples, discuss the techniques you would adopt in pre-processing and enhancement of satellite images

QUESTION FOUR (20 MARKS)

Using suitable examples, discuss the potential applications of remote sensing in development of agricultural sector in Kenya

QUESTION FIVE (20 MARKS)

Discuss the physical principles of the remote sensing process