



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL STUDIES (RESOURCE MANAGEMENT)

ENS 331: REMOTE SENSING FOR ENVIRONMENTAL SCIENCES

DATE: 9/11/2020

TIME: 2.00-4.00 PM

INSTRUCTIONS:

Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

- a) Citing relevant examples, explain the following concepts
- i. Remote sensing (2 marks)
 - ii. Electromagnetic Spectrum (2 marks)
 - iii. Atmospheric windows (2 marks)
 - iv. Revisit period (2 marks)
 - v. Instantaneous Field of View (2 marks)
- b) Citing relevant examples, discuss the major characteristics which affect application of remote sensing images in environmental sciences. (8 marks)
- c) Discuss how Remote Sensing can be used in the assessment of forest cover change in Kenya. (12 marks)

QUESTION TWO (20 MARKS)

Discuss the key steps you would adopt to determine different land use/cover types in Machakos county using both supervised and unsupervised classification of remote sensing images.

QUESTION THREE (20 MARKS)

Using suitable examples, discuss the main functions carried out in digital image processing

QUESTION FOUR (20 MARKS)

- a) Citing relevant examples, explain the key elements you would use to visually identify and distinguish objects in an aerial photography. (14 marks)
- b) Discuss the different image enhancement methods you would use to enhance visual interpretability of remotely sensed data. (6 marks)

QUESTION FIVE (20 MARKS)

- a) Using a suitable illustration, discuss the major components in the Remote Sensing process and how they affect quality of the obtained data. (12 marks)
- b) Critically evaluate the applicability of remote sensing in the monitoring of marine resources in Kenya. (8 marks)