



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
ENVIRONMENTAL STUDIES (ENVIRONMENTAL RESOURCE CONSERVATION)

BACHELOR ENVIRONMENTAL SCIENCE

ENS 331: REMOTE SENSING FOR ENVIRONMENTAL SCIENCES

DATE: 20/1/2021

TIME: 8.30-10.30 AM

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. Atmospheric windows (2 marks)
 - iii. Radiometric resolution (2 marks)
 - iv. Mie scattering (2 marks)
 - v. Supervised classification (2 marks)
- b) Explain the key elements used in visual interpretation of remote sensing images (8 marks)
- c) Discuss how the key characteristics of remotely sensed imagery affect application of the data in mapping land degradation (12 marks)

QUESTION TWO (20 MARKS)

- a) Discuss the major components of Remote Sensing process and their relevance. (10 marks)
- b) Explain the key approaches in the digital image processing (10 marks)

QUESTION THREE (20 MARKS)

Citing relevant examples, discuss the key steps that can be adopted in the supervised classification of satellite images for mapping vegetation cover in a wetland

QUESTION FOUR (20 MARKS)

- a) Discuss the how the interactions between the electromagnetic radiation and atmosphere affect data collected using remote sensing (10 marks)
- b) Explain the different radiometric correction approaches that are applied to remotely sensed data (10 marks)

QUESTION FIVE (20 MARKS)

Discuss the importance of remote sensing in the improvement of forest cover in Kenya