



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR
THIRD YEAR SECOND SEMESTER**

**SCHOOL OF NATURAL RESOURCE,
ENVIRONMENTAL STUDIES AND
AGRICULTURE**

BACHELOR OF ARTS IN EDUCATION

COURSE CODE: GEO 3239-1

COURSE TITLE: ADVANCED REMOTE SENSING

DATE: 14TH DECEMBER, 2023

TIME: 1100-1300 HOURS

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in Section A, and any **THREE** questions in Section B.
use illustrations where appropriate.

This paper consists of 2 printed pages. Please turn over

SECTION A – 20 MARKS

- Q1. Explain the process of radiometric correction in remotely sensed data. Why is it important for accurate analysis? **(4 marks)**
- Q2. What are the key steps involved in atmospheric correction of satellite imagery? Provide an example of how this correction improves data accuracy. **(5 marks)**
- Q3. Explain the importance of data calibration and correction in remote sensing **(2 marks)**
- Q4. Describe the process of feature extraction in remote sensing and provide examples of features that can be extracted from satellite imagery in different applications. **(4 marks)**
- Q5. Define geometric calibration in remote sensing and explain why it is essential for accurate mapping applications and change detection. **(2 marks)**
- Q6. Briefly explain the process of pan-sharpening in remote sensing and why and how it is used to improve the spatial resolution of multispectral images. **(3 marks)**

SECTION B – 30 MARKS

- Q7. Discuss the significance of contrast stretching in image enhancement, situations where it would be beneficial and how it expands the dynamic range of pixel values. **(10 marks)**
- Q8. Discuss the differences between supervised and unsupervised classification methods, and provide examples of scenarios where each would be used. **(10 marks)**
- Q9. Explain the importance of accuracy and error assessment when comparing a classification with ground-truth data. Provide factors that can impact the accuracy of a classification. **(10 marks)**
- Q10. a) Explain the concept of dark object subtraction (DOS) in atmospheric correction. **(5 marks)**
b) Provide an example of a scenario where DOS is an effective correction method. **(5 marks)**

/END/