MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2023/2024 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: 03/6/ 2024 **TIME: 1100-1300HRS**

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in section **A** and any other **THREE** in section **B.**

This paper consists of 2 printed pages. Please turn over

SECTION A – 20 MARKS
Answer any all questions. Each question carries 5 marks.

1. Explain the concept of noise in remote sensing data and describe two techniques used for noise reduction. **(5 marks)**
2. Define the term "algorithm" in the context of remote sensing. **(2 marks)**
3. Explain the concept of convolution and its application in remote sensing. **(3 marks)**
4. You have a set of multispectral satellite images with radiometric distortions. Outline the steps you would take to perform radiometric calibration on these images. **(5 marks)**
5. Differentiate between supervised and unsupervised classification methods, highlighting their respective advantages and disadvantages. **(5 marks)**

SECTION B (30 MARKS)

6. Outline the remote sensing data, processing techniques and vegetation indices you would use to if you are tasked with monitoring vegetation health in a drought-prone region. Justify your choices. **(10 marks)**
7. Explain the concept of advanced classification methods in remote sensing. Discuss at least two techniques and their applications in environmental monitoring and natural resource management. **(10 marks)**
8. Explain the preprocessing steps required to correct for atmospheric effects when you are studying atmospheric phenomena using remote sensing data and the importance of these corrections. **(10 marks)**
9. Explain the three main categories of image processing algorithms in remote sensing, and provide examples of each. **(10 marks)**
10. Describe the ISODATA algorithm for unsupervised classification, including its key steps and parameters. Discuss its strengths and limitations. **(10 marks)**

//END