MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS 2022/2023 ACADEMIC YEAR
FOURTH YEAR FIRST SEMESTER

SCHOOL OF NATURAL RESOURCE, ENVIRONMENTAL STUDIES AND AGRICULTURE

BACHELOR OF ARTS IN GEOGRAPHY AND GEOSPATIAL TECHNIQUES

COURSE CODE: GEO 4152-1
COURSE TITLE: SATELLITE IMAGE PROCESSING AND INTERPRETATION

DATE: 4ᵀᴴ DECEMBER, 2023   TIME: 0830-1030 HOURS

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in section **A** and any other **THREE** questions in section **B. Use illustrations where necessary.**

This paper consists of 2 printed pages. Please turn over

SECTION A – 20 MARKS

Q1. Briefly explain the concept of image restoration and discuss specific degradations that may occur in remotely sensed image

(2 marks)

Q2. Given a scenario where you need to compare two satellite images of the same area taken at different times, explain which types of corrections (radiometric or geometric) would be most relevant and why. **(4 marks)**

Q3. Describe the process of digitization in the context of satellite images and why it is important for accurately representing spatial information **(2 marks)**

Q4. Explain the difference between radiometric corrections and geometric corrections in satellite image processing. Provide an example scenario where each type of correction is necessary.

(4 marks)

Q5. With an example illustrate where creating an overlay or a mosaic has been useful in enhancing the utility of satellite imagery

(2 marks)

Q6. With a specific example explain how access to existing computerized databases and the utilization of Geographic Information Systems (GIS) can streamline the decision-making process. **(4 marks)**

SECTION B – 30 MARKS

Q7. Discuss the advantages and disadvantages of different data formats (e.g., BSQ, BIL, BIP) in satellite image processing. Provide examples of scenarios where each format might be preferred. **(10 marks)**

Q8. Imagine you are tasked with analyzing satellite images to monitor changes in a coastal ecosystem over a period of five years. Outline the specific steps you would take, including the preprocessing, image analysis, and interpretation techniques you would employ. Provide reasoning for your chosen approach. **(10 marks)**

Q9. Choose an environmental problem and explain how satellite image processing techniques can be applied to address and analyze this issue. Provide specific examples of the types of analyses that can be performed.. **(10 marks)**

Q10. Discuss the significance of image restoration in the field of image processing **(10 marks)**