# MACHAKOS UNIVERSITY

**University Examinations for 2023/2024 Academic Year**

**SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES**

**DEPARTMENT OF ENVIRONMENTAL SCIENCES**

**SECOND YEAR FIRST SEMESTER EXAMINATION FOR**

**BACHELOR OF SCIENCE (COMMUNITY RESOURCE MANAGEMENT)**

**ESU 211: INTRODUCTION TO REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM**

**DATE:**                                                                                        **TIME:**

**Instructions:  Answer question ONE and any other TWO questions**

**Question One (30 marks)**
a)      Explain the following:
   i.   Remote sensing                                                             (2 marks)
   ii.  Geographic Information System                                     (2 marks)
   iii. Metadata                                                                       (2 marks)
   iv.  Temporal resolution                                                     (2 marks)
   v.   Supervised image classification                                    (2 marks)

b)      Explain the main data management and analysis procedures relevant in GIS      (10 marks)

c)      Using illustrations, discuss the main forms of interactions between electromagnetic radiation and the earth's atmosphere                                                                 (10 marks)

**QUESTION TWO (20 MARKS)**
a)  Explain the main types of data used in GIS                                          (6 marks)

b)  Using an illustration, discuss the main components in the satellite remote sensing process
                                                                                                        (14 marks)

**QUESTION THREE (20 MARKS)**
a)  Discuss the relevance of a computer-based database management systems in GIS      (10 marks)

b)  Explain the main spectral bands within the electromagnetic spectrum                (10 marks)

**QUESTION FOUR (20 MARKS)**
Discuss the main elements you would consider in visual interpretation of remote sensing data

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**QUESTION FIVE (20 MARKS)**

Explain why you would recommend application of remote sensing and GIS in management of community resources in your county