



MAASI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR**

SECOND YEAR FIRST SEMESTER

**SCHOOL OF TOURISM AND NATURAL
RESOURCE MANAGEMENT**

**BACHELOR OF ENVIRONMENTAL STUDIES
(EARTH SCIENCES)**

COURSE CODE: EES 2115

COURSE TITLE: REMOTE SENSING

DATE: 26TH APRIL 2018

TIME: 8.30-10.30AM

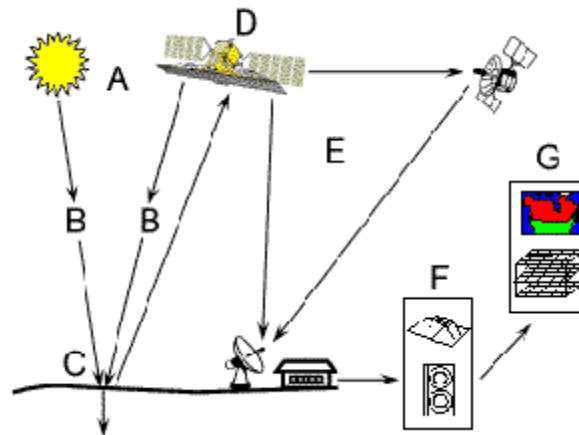
INSTRUCTIONS TO CANDIDATES

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

This paper consists of 3 printed pages. Please turn over

SECTION A : ANSWER ALL QUESTIONS(25 MARKS)

1. Briefly explain the importance of the Landsat satellite program
(1.5 marks)
2. Explain the regions of the electromagnetic spectrum (EMS) that are important for remote sensing
(2 marks)
3. With the help of the diagram below, explain the processes (A - G) involved in remote sensing. Use the diagrammatic representation below
(3.5 marks)

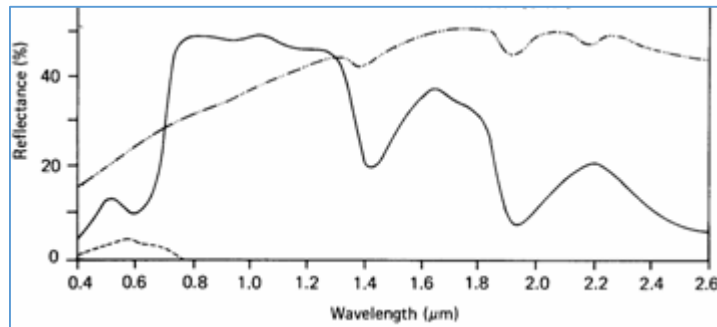


4. Explain three ways in which the atmosphere alters the quality of satellite images
(3 marks)
5. Several approaches exist for the investigation of the earth's systems. The traditional means of collecting data is through manual, field-based observation. With three points, explain why you should discourage an earth scientist from using such traditional method, and instead choose a remote sensing approach
(6 marks)
6. For effective use of remote sensing data and for extracting useful information, the use of hyper-spectral remote sensing data is better than either multi-spectral or panchromatic image data. Explain.
(5 marks)
7. Explain any two applications of thermal remote sensing in geology
(4 marks)

SECTION B: ANSWER ANY THREE QUESTIONS (45 MARKS)

8. (a) Differentiate between active and passive remote sensing systems? Give one example for each system. **(4 marks)**

(b) Below is a spectral curve for some objects on the earth's surface. Identify the spectral signature for (i) water and (ii) vegetation (iii) soil and give reasons for your answer **(6 marks)**



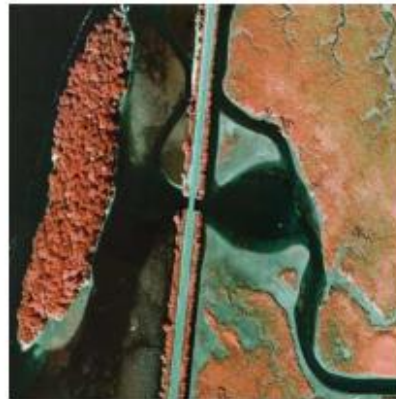
(c) On identification of the spectral curve of vegetation in (b) above and with the help of a sketch, explain the effect of the presence of water in vegetation on the appearance of the curve **(2 marks)**

(d) Explain how the spectral characteristics of water changes due to the presence of phytoplankton **(3 marks)**

9. Given the two-colored photographs (attached) answer the questions that follow



Photograph 1



Photograph 2

(i) Based on RGB display, what are the names given to each of the two photographs **(1 mark)**

- (ii) Explain and interpret their differences using any three elements of image interpretation **(6 marks)**
- (iii) Briefly discuss four applications of remote sensing in forestry **(8 marks)**
- 10. (a) Explain with three points each, the application of remote sensing in the following areas **(6 marks)**
 - i. Disaster management
 - ii. Energy exploration
- (b) Describe three advantages and three disadvantages that remote sensing offers over other methods of data collection **(9 marks)**

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