UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

SUPPLEMENTARY EXAMINATION: JULY, 2010
B.Sc. III, HUM III, BAS III, AND B.Sc.ed III

TITLE OF PAPER	:	INTRODUCTION TO REMOTE SENSING
COURSE NUMBER	:	GEP 313
TIME ALLOWED	:	THREE (3) HOURS
INSTRUCTIONS	:	SECTION A IS COMPULSORY ANSWER ANY TWO QUESTIONS FROM SECTION B ILLUSTRATE YOUR ANSWERS WITH APPROPRIATE DIAGRAMS
MARKS ALLOCATED	:	QUESTION 1 CARRIES 40 MARKS THE OTHER QUESTIONS CARRY 30 MARKS EACH

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SECTION A: **COMPULSORY QUESTION**

QUESTION 1

Discuss the key portions of the electromagnetic spectrum with specific reference to remote sensing applications.

(40 marks)

SECTION B: **ANSWER ANY TWO QUESTIONS**

QUESTION 2

a) Compare and contrast supervised and unsupervised image classification.   (12 marks)

b) Discuss the disadvantages of unsupervised classification.   (10 marks)

c) Explain the two models of light.   (8 marks)

(30 marks)

QUESTION 3

a) Briefly explain:

    (i) how LIDAR technology is different from RADAR technology,   (6 marks)

    (ii) one application or type of information that RADAR can provide that LIDAR cannot.   (8 marks)

b) With the aid of an appropriate diagram, differentiate between a diffuse reflector and specular reflector surface as a function of wavelength.   (6 marks)

c) Using examples, describe the characteristics of sensors that are appropriate for classification and mapping of forest fires.   (10 marks)

(30 marks)

QUESTION 4

a) Explain the factors that determine the spatial resolution of radar data.   (14 marks)

b) Discuss the colour additive theory.   (8 marks)

c) Compare and contrast kinetic temperature and radiant temperature.   (8 marks)

(30 marks)

QUESTION 5

a) Describe the ASTER OR MODIS satellite (sensor) in terms of:

   (i)   its orbit,   (3 marks)

   (ii)   its swath,   (3 marks)

   (iii)   its repeat cycle and;   (3 marks)

   (iv)   the wavelength bands it senses.   (12 marks)

b) Give examples of applications of the data from the ASTER or MODIS sensor.

                                                              (9 marks)

                                                         (30 marks)