



**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAMME: BSC AGRIC. 4 (LWM)

COURSE CODE: LUM 409

TITLE OF PAPER: REMOTE SENSING

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO
OTHER QUESTIONS.**

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN
GRANTED BY THE CHIEF INVIGILATOR**

Question 1. Compulsory question

- a) Describe the relationship between total emitted radiation and temperature of an object. (10 marks)
- b) Describe the difference in spatial resolution between Land Sat TM data and AVHRR (NOAA) data, specifying the data that would be appropriate for regional-scale survey of vegetation cover at the level of southern Africa region. (20 marks)
- c) Describe the relationship between the wavelength and energy of quanta. (10 marks)

Question 2.

- a) Describe the difference between level slicing and binary masking as used in remote sensing. (15 marks)
- b) Using illustration describe how remote sensing could be used to monitor the moisture content of an irrigated field. (15 marks)

Question 3.

- a) Using examples describe how the error matrix can be used to determine accuracy of the results of an image classification. (15 marks)
- b) Describe how the pigment of vegetation will affect the reflectance of electromagnetic radiation. (15 marks)

Question 4.

- a) Describe how the "signature" is developed for use in supervised image classification. (15 marks).
- b) Using examples illustrate how the spectral reflectances differ with different land features. (15 marks).