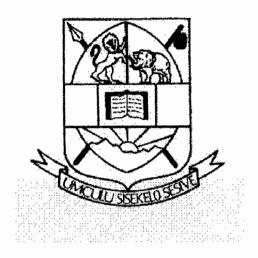UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER

PROGRAMME; BSc. AGRICULTURAL AND BIOSYSTEMS ENGINEERING III

COURSE CODE: ABE 307

TITLE OF PAPER: REMOTE SENSING AND GIS

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO OTHER QUESTIONS

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QUESTION 1: COMPULSORY QUESTION

    a. Discuss how the temperature of a body influences the total energy emitted by the body.   (10 marks)

    b. Discuss four applications of GPS in remote sensing and GIS.   (20 marks)

    c. Discuss three ways in which spatial information is displayed in vector GIS.
              (10 marks)

QUESTION 2

    a. Using examples, illustrate how one can determine the size of a satellite dataset (in bytes) when given the number of rows and columns of the image.
              (10 marks)

    b. Using hypothetical examples, illustrate how an error matrix can be prepared, and how the information in it can be used to determine the overall accuracy of digital image classification.   (20 marks)

QUESTION 3

    a. Define spectral reflectance, and use examples to highlight how spectral reflectance of water would compare with that of green vegetation.
              (15 marks)

    b. Using examples, describe how remotely sensed data can be calibrated and used to determine moisture content of a soil.   (15 marks).

QUESTION 4

    a. Using examples, illustrate the difference between spatial resolution and temporal resolution of a satellite.   (15 marks)

    b. Discuss the process of on-screen digitising, and how the information created from on-screen digitising can be integrated to vector GIS (from IDRISI to ArcView.
              (15 marks)