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 the following terms in relation to remote sensing:
   a. Spectral resolution (7 marks)
   b. Spatial resolution (7 marks)
   c. Temporal resolution (6 marks))

b) Discuss four methods of data entry to vector GIS. (12 marks)

c) Using an examples, illustrate how one can determine the size of a satellite data (in bytes) when given the number of rows and columns of the image. (8 marks)

QUESTION 2

a) Define spectral reflectance, using an example to highlight how spectral reflectance of water would compare with that of green vegetation. (15 marks)

b) Describe how the energy of quantum is influenced by the wavelength of an electromagnetic spectrum. (15 marks)

QUESTION 3

a) Discuss how the temperature of a body influences the total energy emitted by the body. (15 marks)

b) Using an example, discuss how organic matter of a soil would affect its reflectance. (15 marks)

QUESTION 4

a) Discuss how the concept of NDVI can be used to estimate biomass yield. (15 marks)

b) Using an example, describe how binary masking is undertaken, highlighting conditions under which is can be used. (15 marks)