UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF GEOGRAPHY
MAY/ JUNE 2014 EXAM
INTRODUCTION TO REMOTE SENSING (ENVS250)

DURATION: 3 HOURS   **TOTAL MARKS: 200**

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NOTE: THIS PAPER CONSISTS OF TWO PAGES

Answer **ALL** questions in section **A** and **ANY TWO** questions from section **B**

SECTION A

1. A compliment between remotely sensed imagery and ground data is critical in geo-information analysis, discuss. **(15)**

2. Image quality relies on the interaction between the electromagnetic radiation and atmospheric components at the time of image acquisition. Briefly describe the causes and different types of scattering in relation to the electromagnetic spectrum that may affect image quality. **(12)**

3. Using appropriate illustration/s, characterise and differentiate between active and passive remote sensing techniques. **(8)**

4. Using appropriate illustrations, identify and explain the two types of scanners commonly used in remote sensing. **(10)**

5. Explain, with relevant illustrations, the implication of senescing leaves on spectral reflectance between 0.4-2.6μm of the electromagnetic spectrum. **(12)**

6. Identify and explain the major steps in an image classification process. **(25)**

7. Identify and explain the types, advantages and disadvantages of the image classification techniques commonly used in remote sensing. **(18)**

[100]

SECTION B

1   The reflectance of objects at different sections of the electromagnetic spectrum forms the basis of remote sensing application. Explain in detail the spectral characteristics of any three surface cover types between 0.4-2.6μm.   **(50)**

2   Image pre-processing, enhancement and visualization are critical processes in deriving information from remotely sensed imagery, discuss   **(50)**

3   With relevant examples identify and explain the value of remote sensing in:

    a) Agriculture   **(25)**

    b) Land-use-land-cover change   **(25)**

[100]

END OF QUESTION PAPER