

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF GEOGRAPHY
MAIN EXAMINATION: NOVEMBER 2014
ADVANCED REMOTE SENSING, ENVS 720

DURATION: THREE HOURS

TOTAL MARKS: 300

External Examiner: PROF S GRAB

Internal Examiner: Dr. M GEBRESLASIE

Answer TWO questions from EACH section. Section A questions carry 50 marks each and section B questions carry 100 mark each.

SECTION A: ANSWER TWO QUESTIONS

1. Outline and explain the operation of Active Remote Sensing. Examine certain geographic regions or environments in which Active Remote sensing data might not be effective. [50]
2. Account for the sources of radiometric error on satellite images. Evaluate the techniques that are used for the radiometric correction of remotely sensed data. [50]
3. Even if images have been selected carefully and processed, change detection can be subject to errors. Identify and explain some of the sources of error that are inherent to the process of change detection. [50]

SECTION B: ANSWER TWO QUESTIONS

1. Using any two space borne sensors of your choice, explain how the characteristics of the sensors influence their application. Your answer MUST also address the question: for which applications are the chosen sensors strongly suited? [100]
2. Critically evaluate the role of Hyperspectral Remote sensing in the detection, mapping and monitoring of vegetation biophysical and biochemical characteristics. Elaborate how you would expect this to change if you were to monitor oil spill in a river/ocean instead of vegetation? [100]
3. Using a specific case study, discuss in detail the role of remote sensing in an area of your choice. Your description should include a statement of the problem, how the data would be collected and analysed, and how the results would be presented. [100]