



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (WATER AND ENVIRONMENTAL ENGINEERING)

SET 529: REMOTE SENSING IN NATURAL RESOURCE MANAGEMENT

DATE: Tuesday, 13th December, 2011

TIME: 2.00 p.m. – 4.00 p.m.

INSTRUCTIONS:

- A. The Exam script contains **FOUR** questions in total
 - B. Answer Question **ONE** and any other **TWO** Questions
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QUESTION ONE

- 1.1 Define the following terminologies:
 - (a) Remote sensing
 - (b) Photogrammetry
 - (c) Photo interpretation

(6 marks)
- 1.1 List some of the Softwares available today for image processing

(3 marks)
- 1.2 What are some of the major benefits of Remote Sensing technology?

(4 marks)
- 1.3 Name and explain FOUR types of resolutions as relates to remote sensing data collection.

(8 marks)
- 1.4 Name and Explain the major forms of remote sensing data analysis

(4 marks)

QUESTION TWO

- 2.1 Define the following Remote Sensing terminologies as is applicable in electromagnetic radiation principles
(a) Conduction
(b) Convection
(c) Radiation
(3 marks)
- 2.2 Name and explain the TWO models used in explicating the propagation of electromagnetic radiation through space
(6 marks)
- 2.3 What do you understand about the following energy matter interactions in the atmosphere?
(a) Refraction
(b) Scattering
(c) Absorption
(d) Reflectance
(8 marks)
- 2.4 List some of the important measurements that can be obtained from a single vertical aerial photograph using analogue or digital photogrammetric techniques
(8 marks)

QUESTION THREE

- 3.1 Briefly discuss the following image processing techniques
(a) Geometric correction
(b) Radiometric normalization
(4 marks)
- 3.2 What is scene selection?
(3 marks)
- 3.3 Explain the following digital image classification techniques
(a) Supervised classification
(b) Unsupervised classification
(6marks)
- 3.4 Discuss the development of Landsat satellite technology, giving its characteristics and applications
(12 marks)

QUESTION FOUR

- 4.1.1 Using empirical relationships, explain the following terminologies as applied in accuracy assessment of classification reliabilities
(a) overall accuracy (OA)
(b) Producer's accuracy (PA)
(c) user's accuracy (UA)
(6 marks)

- 4.1.2 Explain the fundamental steps required in data collection using a GPS system
(6 marks)
- 4.1.3 Explain FOUR uses of a GPS
(4 marks)
- 4.1.4 With your present knowledge on remote sensing obtained after studying this course, can you explain in your own words, the important Remote Sensing steps from data acquisition to results presentation?
(9 marks)