

**RHODES UNIVERSITY
DEPARTMENT OF ENVIRONMENTAL SCIENCE**

EXAMINATION: NOVEMBER 2014

ENVIRONMENTAL SCIENCE 202

PAPER 1

Internal examiners:	Prof James Gambiza	MARKS: 100
	Dr Neil Griffin	DURATION: 3 HOURS
External examiner:	Dr P. O'Farrell	

GENERAL INSTRUCTIONS TO CANDIDATES

1. This paper consists of **TWO** sections.
 2. Answer each section in a **SEPARATE** answer book.
 3. There are **SIX** questions. Answer **ALL** questions.
 4. Time management is very important. The value of the mark for each question should be used as a rough guide to the amount of time allocated to answer the question.
 5. It is in the candidate's interest to write legibly.
 6. The Oxford concise English dictionary may be used during this examination.
 7. At the end of the examination, place all answer books inside the book used to answer **SECTION A**.
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PLEASE DO NOT TURN OVER THIS PAGE UNTIL TOLD TO DO SO.

SECTION A: LAND DEGRADATION (50 marks)

Question A1: Answer BOTH of the following questions for 5 marks each

- (a) List ten examples of degradation syndromes.
- (b) Explain the limitations of the UNCCD (1994) definition of land degradation.

Question A1 Total = 10 marks

Question A2: Answer the following question for 10 marks

Briefly discuss the pathways for attaining sustainable land management in drylands.

Question A2 Total = 10 marks

Question A3: Answer ONE of the following questions for 30 marks

- (a) Write an essay on the consequences of desertification. Use a labelled diagram to illustrate your answer.

OR

- (b) Discuss the conceptual framework underpinning the landscape function analysis technique.

Question A3 Total = 30 marks

SECTION B: WATER RESOURCES (50 marks)

Question B1: Answer BOTH of the following questions for 5 marks each

- (a) Explain what a limiting nutrient is with respect to algal growth in freshwater and outline why this is an important concept for water resource management.
- (b) Dam construction has often been found to be associated with an increase in disease. Outline the major ways that this may occur.

Question B1 Total = 10 marks

Question B2: Answer the following question for 10 marks

Stratification of lentic water is common in temperate parts of the world. Describe how stratification forms and breaks down, and outline the physicochemical consequences of stratification for a water body and for the biota contained within.

Question B2 Total = 10 marks

Question B3: Answer ONE of the following questions for 30 marks

- (a) The Berlin Rules were adopted in 2004 to guide international water resource management. Review the environmental requirements of the Berlin Rules and describe how these improve (or not) on previous frameworks.

OR

- (b) The World Commission on Dams undertook research into the environmental, social and economic consequences of large dam construction and operation. Review the environmental impacts of large dam construction and operation as documented in their report. As part of your answer, identify any potential shortcomings in their environmental review.

Question B3 Total = 30 marks

END OF EXAMINATION PAPER