

**UNIVERSITY OF KWAZULU-NATAL**  
**SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES**  
**SUPPLEMENTARY EXAMINATION: JUNE 2013**  
**SUBJECT, COURSE & CODE: BIOPHYSICAL ENVIRONMENTS OF**  
**SOUTHERN AFRICA, ENVS210W1**

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**DURATION: 3 HOURS**

**TOTAL MARKS: 150**

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**INTERNAL MODERATOR: Dr J Odindi**  
**INTERNAL EXAMINER/S: Dr J Finch and Dr L Ramsay**

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**NOTE: THIS PAPER CONSISTS OF THREE (3) PAGES. PLEASE SEE THAT YOU HAVE THEM ALL**

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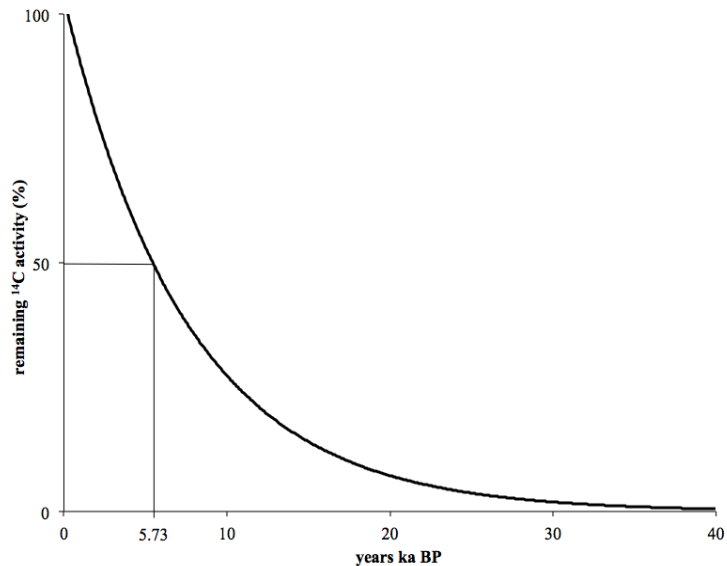
**Instruction to students**

1. This paper consists of three sections
  2. Each section is worth 50 marks
  3. Answer each section in a separate answer book
  4. On the cover of each answer book indicate the section answered (e.g. Section A or Section B or Section C)
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## SECTION A: BIOGEOGRAPHY (50)

Answer ALL questions below:

1. Explain the figure below.



(after Williams et al., 1995)

(10)

2. Describe the role of mapping and classification in understanding biogeographical processes. Provide examples from Southern Africa to justify your response. (15)
3. *Fire can act as an agent of destruction and renewal.* Contrast the role of fire in four South African biomes, including specific fire-adaptations, fire-dependencies and symbiotic relationships. Include in your discussion biome-specific fire management approaches and recommendations. (25)

## SECTION B: ATMOSPHERIC SCIENCE (50)

Answer ONE of the following two questions:

1. With the aid of diagrams, discuss the stages of storm cloud development as well as the weather phenomena associated with large storms. (50)
2. Discuss the four main approaches to weather forecasting, including their observational data requirements, accuracy and temporal ranges. (50)

## **SECTION C: GEOMORPHOLOGY (50)**

**Answer ALL questions:**

1. With the aid of diagrams and examples, explain the concepts of thresholds, dynamic equilibria, regime shifts and complex responses, and how these form the basis of geomorphology. **(20)**
2. You are an environmental practitioner for a Durban-based environmental consultancy and you are tasked with conducting a survey to evaluate the slope dynamics, mass movement processes and weathering processes of a hypothetical development site. Discuss these concepts and their potential implications for infrastructural development. **(30)**