

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

DURATION: 3 HOURS

TOTAL MARKS: 150

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

NOTE: THIS PAPER CONSISTS OF TWO (2) PAGES. PLEASE SEE THAT YOU HAVE THEM ALL

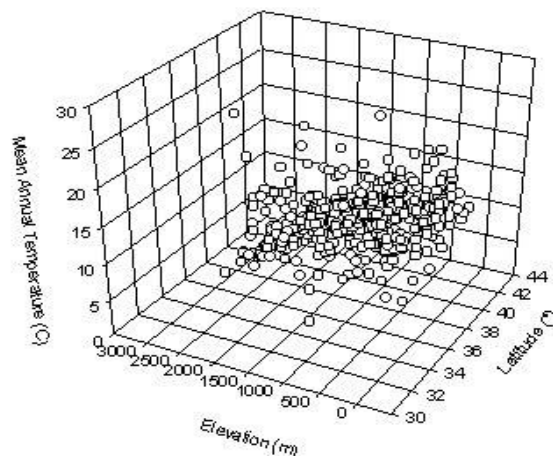
Instruction to students:

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

1. Using the diagram below, explain the concept of climatic suitability. **(10)**



2. Explain the need for a long-term perspective in understanding biogeography. In your response define palaeo-dating and palaeo-reconstruction techniques and provide examples of these. **(15)**
3. How should southern African biodiversity be conserved outside the formal protected area network? Citing examples, discuss conservation initiatives for specific southern African biomes or habitat types. **(25)**

SECTION B: ATMOSPHERIC SCIENCE (50)

Answer ONE of the questions below

1. With the aid of clearly labeled diagrams, present the El Niño-Southern Oscillation, and the implications of its three main phases on weather, sea level and ocean temperatures in the Pacific region and beyond. **(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 ONE of the questions below

1. With the aid of diagrams, present and discuss common models of slope processes, highlighting the role of mass movements in forming and shaping landscapes. **(50)**
2. Nelson Gumede is a research assistant for a project focused on the slope hydrology and stream flow characteristics of the Wellfed River located in a warm and humid region. He notices that even after several rainfall events, very little water flows over the land yet the Wellfed River shows a marked increase in flow several hours after each rainfall event. He knows that in his previous project in the Karoo, rainfall events produced surface overland flow. Describe and explain the reasons for these different flow regimes to Nelson. Use diagrams if necessary. **(50)**