

**UNIVERSITY OF SWAZILAND**  
**DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING**  
**RE-SIT EXAMINATION, JULY 2017**  
**B.A., B.Ed., B.Sc., BASS (FT/PT)**

**TITLE OF PAPER: INTRODUCTION TO THE NATURAL ENVIRONMENT**

**COURSE NUMBER: GEP111**

**TIME ALLOWED: THREE (3) HOURS**

**INSTRUCTIONS: THIS PAPER IS DIVIDED INTO THREE SECTIONS**

**SECTION A: TECHNIQUES AND SKILLS  
ANSWER IN A SEPARATE ANSWER BOOK.  
1. ANSWER ALL QUESTIONS (COMPULSORY)  
2. THIS SECTION CARRIES 40 MARKS**

**SECTION B: COMPULSORY SHORT QUESTIONS (35 MARKS)**

**SECTION C: ANSWER ONE OF THE QUESTIONS (25 MARKS)**

**ILLUSTRATE YOUR ANSWERS WITH APPROPRIATE  
DIAGRAMS.**

**SPECIAL REQUIREMENTS: Graph paper, Tracing paper, Map of Swaziland 1:50 000  
Sidvokodvo Sheet No. 17**

**THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION IS GRANTED BY  
THE INVIGILATOR**

## GEP111: INTRODUCTION TO THE NATURAL ENVIRONMENT – JULY 2017

SECTION A: TECHNIQUES AND SKILLS (40 MARKS)  
COMPULSORY

## QUESTION 1

(For all questions requiring a map, refer to 1:50 000 Map of Swaziland: Sidvokodvo Sheet No. 12)

- a) What is a dry and wet bulb thermometer? (2 marks)
- b) What is it used for? (2 marks)
- c) Atmospheric pressure decreases with an increase in altitude at an approximate rate of 12.7 millibars (mb) per 100 metres. Given that atmospheric pressure is 1 000 mb at sea level, estimate the atmospheric pressure in millibars at the following locations:
- i) Bulembu Mountain (1600 metres AMSL) (2 marks)
  - ii) Mount Everest (8848 metres AMSL) (2 marks)
  - iii) Qattara Depression (-133 metres BMSL) (2 marks)
- d) Using the map provided give the 6-figure grid reference of the following locations.
- i) Dwaleni Kop Trigonometric station (2 marks)
  - ii) Corporation Dip tank (2 marks)
  - iii) Moti Roads Camp (2 marks)
- e) Using the map provided Calculate the straight line distance and distance along the railway line between Sidvokodvo and Hawini railway station in metres. (4 marks)
- f) Using the map provided, calculate the total surface area for Farm no. R/930 in hectares and square kilometres. (6 marks)
- g) If the time at Greenwich is 11pm, what will the time be at the following locations?
- ii) 67°E (2 marks)
  - iii) 121°W (2 marks)
- h) A camera, with a focal length of 15.0 cm, mounted on an aircraft flying at an altitude of 15 250 metres above sea level was used to take photographs of the western and eastern border points of Swaziland (Ngwenya (1480 metres) and Siteki (560 metres), respectively).
- i) Considering the different altitude of both locations calculate the mean scale of the photographs. (6 marks)
  - ii) If the same camera was used to take photographs of both locations at a scale of about 1:50 000, calculate the respective flying heights of the aircraft. (4 marks)
- (40 Marks)**

**SECTION B: ANSWER QUESTION 2 (35 Marks)**  
**ANSWER IN A SEPARATE ANSWER BOOK**

**QUESTION 2 (COMPULSORY):**

- a) Explain in detail why fold mountains, volcanic activity and earthquakes occur in the same regions of the earth's crust. (15 marks)
- b) Explain why scientists have concluded that there is a heat exchange between the equatorial and polar regions of the Earth. (10 marks)
- c) Explain FIVE of the following terms or concepts BRIEFLY: (5 x 2 = 10 marks)
  - i) Nuclear fission
  - ii) Artesian well
  - iii) Phreatic zone
  - iv) Ecological hot-spot
  - v) Cone of down-draw at a well site
  - vi) Cinder cone
  - vii) Subduction zone
  - viii) Aquiclude

**(35 Marks)**

**SECTION C: ANSWER EITHER QUESTION 3 OR QUESTION 4 (25 Marks)**

**QUESTION 3:**

- a) Explain why the term 'Global Climate Change' is more accurate than 'Global Warming'. (7 marks)
- b) Describe the main features of the planets in our solar system, listing the planets in their correct order. (10 marks)
- c) Explain the beneficial consequences of the Earth having an inclined axis. (8 marks)
- d) Scientists argue that the earth's atmosphere has not been constant in composition over the duration of its history. Explain the manner in which it is believed to have changed, citing the driving forces causing such change, and give the present composition. (10 marks)

**(25 Marks)**

**OR:**

**QUESTION 4:**

- a) Describe the term 'Global Climate Change', and explain how human behaviour has contributed to this. (10 marks)
- a) Explain which of the components of the hydrological cycle are affected by humans, and how. (8 marks)
- a) Draw a simple sketch of the rock cycle and explain its meaning. (7 marks)
- b) Describe the basis for the classification of sedimentary rocks and give appropriate examples to illustrate your answer. (10 marks)

**(25 Marks)**

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