KZN DEPARTMENT OF EDUCATION
GREENBURY SECONDARY SCHOOL
JUNE EXAMINATION - 2016
GEOGRAPHY P1 - GRADE 11

EXAMINER : F. PARUK
MODERATOR : D. RAMASAMI

DATE : 10/06/2016
DURATION : 3 HOURS
MAX MARKS : 225

NAME : _____ **GRADE/DIV :** _____

INSTRUCTIONS

1. This paper consists of 2 questions. Answer all questions.
2. The question paper consists of 8 pages and an addendum of 7 pages.
3. Use the mark scheme as a guide for the length of your answers.
4. Refer to the correct resources in the addendum when answering the questions.
5. Write neatly and legibly.
6. Use a black or blue pen. No neon colours to be used.
7. Number your answers correctly according to the numbering system used in this paper.

P.T.O Pg 2 ... Q1

QUESTION 1

Choose the term from Column B that matches the description from Column A. Write only the letter of the correct answer from Column B.

COLUMN A	COLUMN B
1.1.1 An example of a feature formed by inclined strata.	A. 22 December
1.1.2 A force causing air to move.	B. Convection
1.1.3 Slowest form of mass movement.	C. Homoclinal Ridge
1.1.4 Heated air travelling upwards.	D. Lopolith
1.1.5 Saucer shaped igneous intrusion.	E. Equinox
1.1.6 When day and night are of equal length.	F. Pressure gradient
1.1.7 Northern Hemispheres Summer Solstice	G. Laccolith
1.1.8 Rainwater flowing on the surface of the earth.	H. Soil creep
1.1.9 A large region with a particular climate and vegetation.	I. Sheet wash
1.1.10 A horizontal igneous intrusion of rocks.	J. 21 June
	K. Scarp
	L. Sill
	M. Biome

[10]

1.2 State whether the following statements are True or False.

1.2.1 Winter Monsoons results in dry drought conditions.

1.2.2 Coriolis force occurs at the equator.

1.2.3 Cold air holds more water vapour than warm air.

1.2.4 Mediterranean climates experience winter rainfall.

1.2.5 The ITCZ is associated with Divergence.

[5]

P.T.O. Pg 3 ... 13 Refe

1.3 Refer to Figure 1 and answer the questions.

1.3.1 What is the name of winds that converge at A? [2]

1.3.2 Is the 0° latitude a low or high pressure belt? [2]

1.3.3 Give the name of the boundary at 60° where 2 air masses meet. [2]

1.3.4 Give a reason for the rising of air at :

1.3.4.1 0° [2]

1.3.4.2 60° [2]

1.3.5 .

1.3.5.1 State the name of pressure belt C. [2]

1.3.5.2 Deserts are common at the 30° N/S. Provide a reason for this occurrence. [2]

1.3.6 The wind label X is the (North East Trades / South East Trades). Choose the correct answer. [1]

[15]

1.4 Read Source (Figure 2) and answer the questions.

1.4.1 What is a Föhn wind? [2]

1.4.2 South Africa's example of Föhn winds are berg winds. Describe what happens to temperatures when the Berg winds occur. [2]

1.4.3 Explain why the temperature changed so much. [2]

1.4.4 Describe the type of weather that usually follows a Berg wind. [2]

1.4.5 State the rate at which air changes temperature during its decent. [1]

1.4.6 .

1.4.6.1 Imagine that you are a farmer living in this area. Why would you be concerned during Berg wind conditions? [2]

1.4.6.2 Suggest 2 ways in which you would prepare for the effects mentioned in (answer to 1.4.6.1). [2X2]

[15]

P.TO Pg 4 1.5. Refer

1.5 Refer to the synoptic map (Figure 3) and answer the question below.

1.5.1 What season is represented on this map? Give a reason for your answer. [1+2]

1.5.2 Provide labels for the following : D, A, B. [2X3]

1.5.3 Give the pressure reading at G. [2]

1.5.4 Will the winds be stronger at E or F? Provide a reason for your answer. [1+2]

1.5.5 What form of precipitation is taking place at H (Port Elizabeth)? [2]

1.5.6 Explain why it will be dangerous for ships in the vicinity of E. (2 points). [2X2]

[20]

1.6 Refer to Figure 4 illustrating the 4 elements of a typical slope and answer the questions that follow.

1.6.1 Name the slopes element labelled A, B, D. [3X2]

1.6.2 Describe the shape of slope element.

A –

B - [2+2]

1.6.3 Name the slope element where rock falls are likely to occur. [1]

1.6.4 Explain why slope C is also known as the scree slope. [2]

1.6.5 Explain the term scarp retreat. [2]

1.6.6 Identify the slope element that would be most suitable for farming and provide 2 reasons to support your answer. [1+2X2]

[20]

1.7 Refer to the Article (Figure 5).

1.7.1 Name the underlying igneous intrusion from which this landform developed. [1]

1.7.2 With reference to Weathering, explain why this landform takes a rounded shape. [2]

1.7.3 Explain how this feature gets its name 'Paarl Rock'. [2]

1.7.4 Give 2 ways in which this feature has benefitted humans. [2X2]

[9]

P.T.O Pg s... 18 Refer.

1.8 Refer to the diagram featuring a Karoo Landscape (Figure 6).

1.8.1 Name the type of Rock strata that the above landscape is associated with. [1]

1.8.2 Name the landforms A, B, C, D. [4]

1.8.3 Describe the main difference between landforms B and D. [2X2]

1.8.4 Explain why the height of the landforms remain the same. [2]

1.8.5 Canyons are found in Karoo landscapes. What is a canyon? [2]

1.8.6 Provide a detailed description of how the features changed, over a million years from A to D. [4X2]

[21]

SUB-TOTAL : [115]

P.T.O. Pg 6 ... Q2.

QUESTION 2

2.1 Choose the correct word / phrase from the list below which matches the description given.

geostrophic wind; desertification; isotherms; coriolis force; monsoon winds; isobars; divergence; convergence

2.1.1 Arable land that cannot be used due to loss of fertility.
2.1.2 Determines the speed of the wind.
2.1.3 Winds that blow parallel to the Isobars.
2.1.4 Lines on a synoptic map that join places of equal pressure.
2.1.5 Movement of air away from a High Pressure zone.

[5]

2.2 Select the correct word within brackets. Write only the answer next to the number.

2.2.1 Exfoliation is a type of (mass movement / weathering).
2.2.2 A vertical intrusion of igneous rock (sill / dyke).
2.2.3 Water passes through rock (permeable / impermeable).
2.2.4 A very steep mountainous region in South Africa which separates the coast plain and the interior (escarpment / plateau).
2.2.5 Resistant rock is termed (cap rock / soft rock).

[5]

2.3 Study the Cartoon on Drought (Figure 7) and answer the questions that follow.

2.3.1 Define the term 'drought'. [2]
2.3.2 State 2 climatic factors that may result in drought conditions. [2X2]
2.3.3 Describe the impacts of drought on the :
2.3.3.1 Economy [2X2]
2.3.3.2 Environment [2X2]

P.T.O. Pg 7 .. 2.3.4 Why

2.3.4 Why are less economically developed countries more vulnerable to drought than more economically developed countries? [2X2]

2.3.5 Write a paragraph in which you explain sustainable strategies that can be implemented to manage the impact of drought effectively. [3X2]

[24]

2.4 Refer to the diagram showing Ocean Currents (Figure 8).

2.4.1 Name 3 ocean currents which are formed when the west wind drift reaches a continent. [3]

2.4.2 Why are these currents (answer 2.4.1) cold? [2]

2.4.3 Name the current that passes the East Coast of Southern Africa. [2]

2.4.4 Outline the importance of the North Atlantic drift to countries such as Scotland & Norway. [2X2]

[11]

2.5 Refer to the diagram on the El Nino Effect (Figure 9).

2.5.1 What is the term given for the normal pattern of air movement where trade winds move from East to West? [2]

2.5.2 Explain your understanding of :

a) El Nino [2]

b) La Nina [2]

2.5.3 Between which years were the wettest season experienced. [2]

2.5.4 Which was the driest year? [2]

2.5.5 Between which years was the greatest normality? [2]

2.5.6 Why do you think it is important for governments of the world to keep records of weather phenomenons and study the graphical representation like the one in Figure 9? [2X2]

[16]

P.T.O Pg 8... 2.6 Read.

2.6 Read the Article (Figure 10) on Mass Movement and answer the questions.

2.6.1 Explain the term Mass Movement. [2]

2.6.2 Mention 2 examples of Mass Movement that occurs along Chapman's Peak Drive. [2]

2.6.3 Suggest 2 reasons why rock falls have been a hazard along Chapman's Peak Drive. [2X2]

2.6.4 Describe 2 strategies which have been adopted to prevent rocks from reaching the road. [2X2]

2.6.5 Discuss the important role the weather bureau plays in rock fall management. [2]

2.6.6 Explain how the closure of the road impacts the Tourism Industry. [2]

2.6.7 Discuss how the following factors affect the stability of the slope.

a) Vegetation cover

b) Rock permeability [2X2]

[20]

2.7 Refer to the Sketch (Figure 11) showing a Landform.

2.7.1 Does this sketch represent a Cuesta dome or a Cuesta basin? Give a reason to support your answer. [3]

2.7.2 Describe the rock structure that has formed this landscape. [2]

2.7.3 Give the correct term for the fold structure at A. [2]

2.7.4 Give 2 possible causes of the upward fold / uplift at A. [2X2]

2.7.5 Name and describe the slope labelled X and Y. [2+2]

2.7.6 Discuss how humans can use Cuestas to benefit them.. [2X2]

[19]

2.8 Refer to Figure 12 showing the formation of a Feature in jointed igneous rock.

2.8.1 Identify the feature being shown. [2]

2.8.2 Briefly explain the formation of this feature. [3X2]

2.8.3 Provide a label for A on the diagram. [2]

[10]

SUB-TOTAL : [110]

GREENBURY SECONDARY SCHOOL
DEPARTMENT OF HSS
H.O.D. MR D RAMASAMI
05/06/16

ADDENDUM

GEOGRAPHY

P1

GRADE 11

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2016

THIS ADDENDUM CONSISTS OF 7 PAGES

FIGURE 1

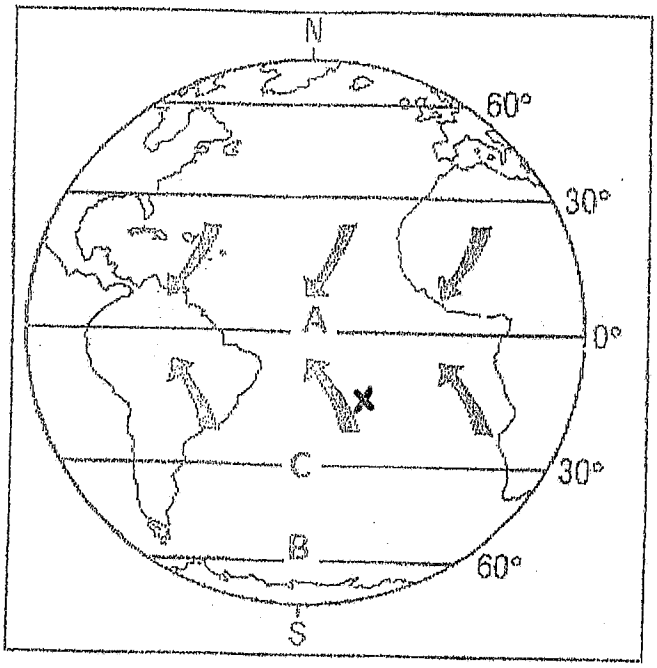


FIGURE 2

Berg winds

Tuesday 23 August 2011

Since Sunday we have experienced Berg wind conditions here in KwaZulu-Natal. Berg winds are mountain winds, known as Föhn winds in Europe and Chinook in North America. These winds are caused by a high pressure system lying over the interior of South Africa, this forces the air over the escarpment and down the lee of the Drakensberg.

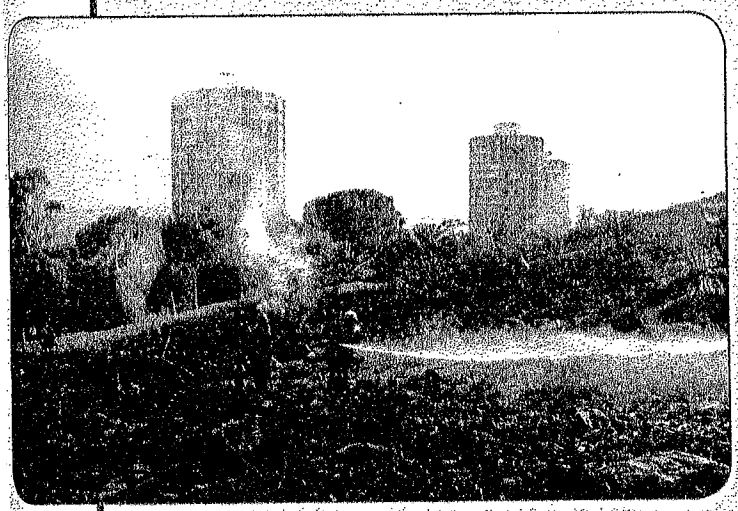


Figure 2.22(a): Berg wind fire being put out in Cape Town

As the air descends it heats up, so called adiabatic heating. The temperature increases 1 ^{0}C for every 100 m descent, or 10 ^{0}C for every 1 000 m. Temperatures rise as much as 30 ^{0}C in a few hours. These winds can have a velocity varying from 10 km per hour to over 100 km per hour and can be very destructive. On Sunday the wind was very strong, but yesterday and today just a breeze. The temperatures here in our district rose from the mid teens last week to the high twenties yesterday and today.

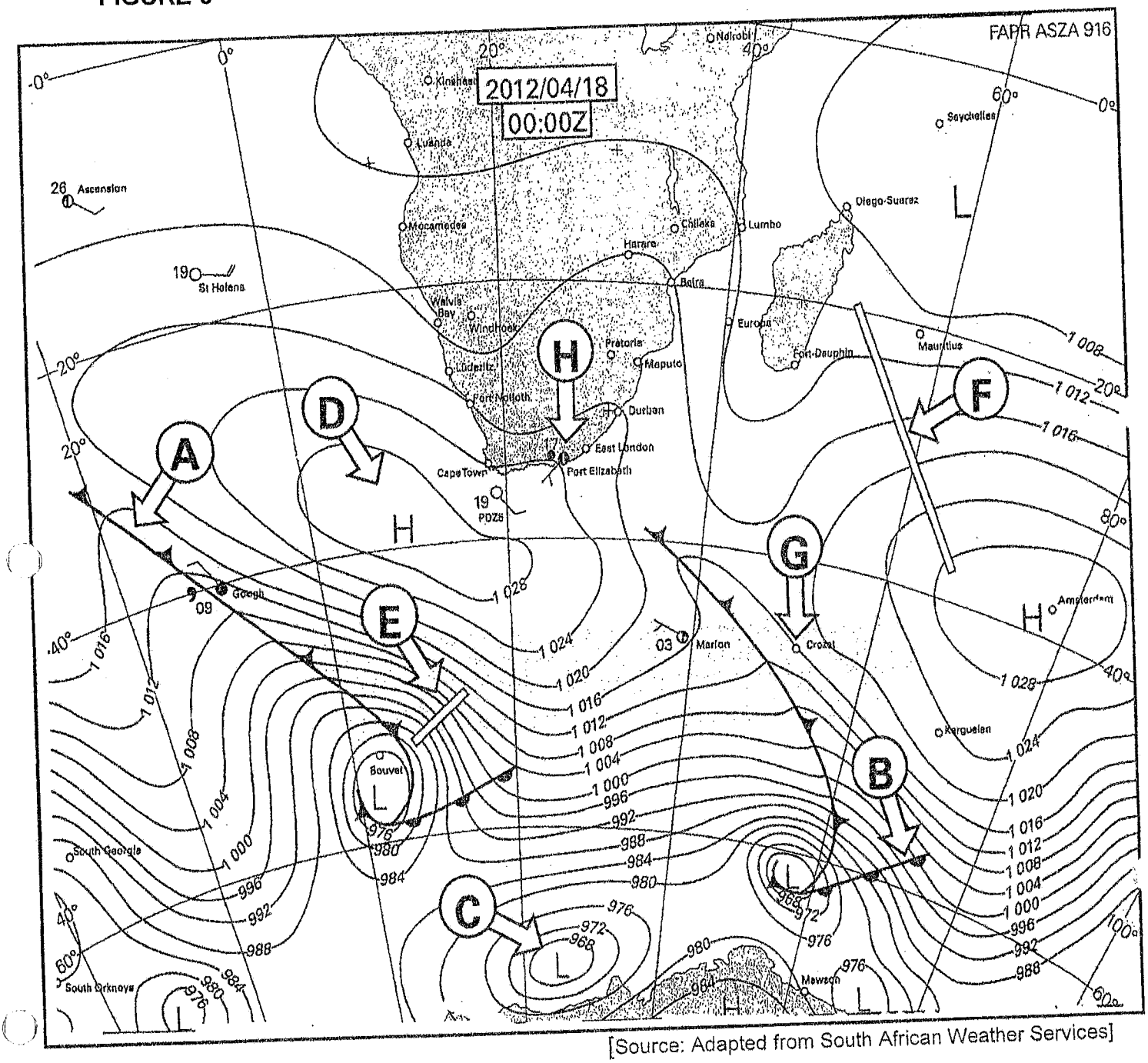
This time of the year is also known as the fire season in Kwa-Zulu Natal as these hot, dry winds are very conducive to fires. A fire driven by a 100 km an hour Berg wind is unstoppable. No farmer dare leave his farm during this time as a fire could wipe out a lifetime of work.

Berg winds eventually put everyone's nerves on edge. It is a hot debilitating wind that wears you down. Research done in Germany has shown that suicide (known as the Fohnkrankheidt or Föhn disease), increases by 10% during the Föhn wind season in Europe.

A cold front has moved in again across the country and by 6 p.m. the weather had turned decidedly chilly. According to the weather forecasters this should last until about Saturday. Tomorrow's temperature will drop to a minimum of about 4 ^{0}C to a high of 17 ^{0}C.

(Source: (Tuesday 23 August 2011). Berg Winds. Available from http://drakensview.blogspot.com/2011/08/berg-winds.html)

FIGURE 3



[Source: Adapted from South African Weather Services]

FIGURE 4

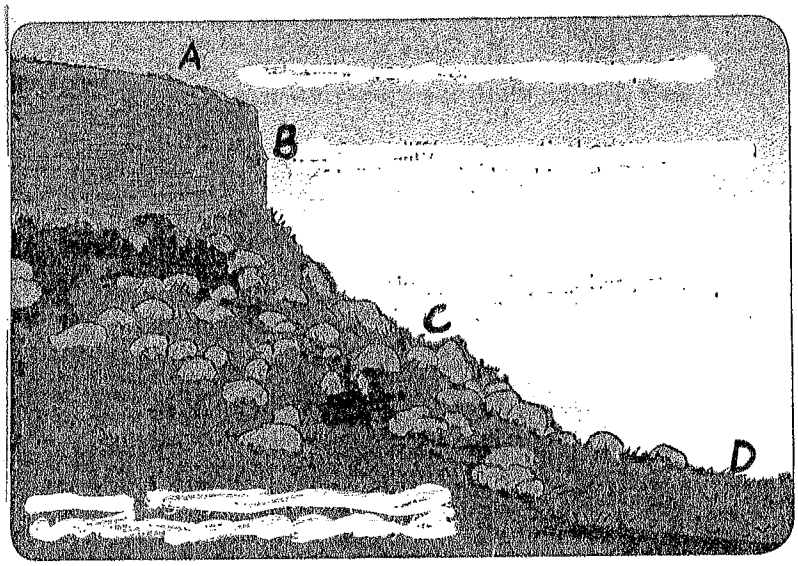
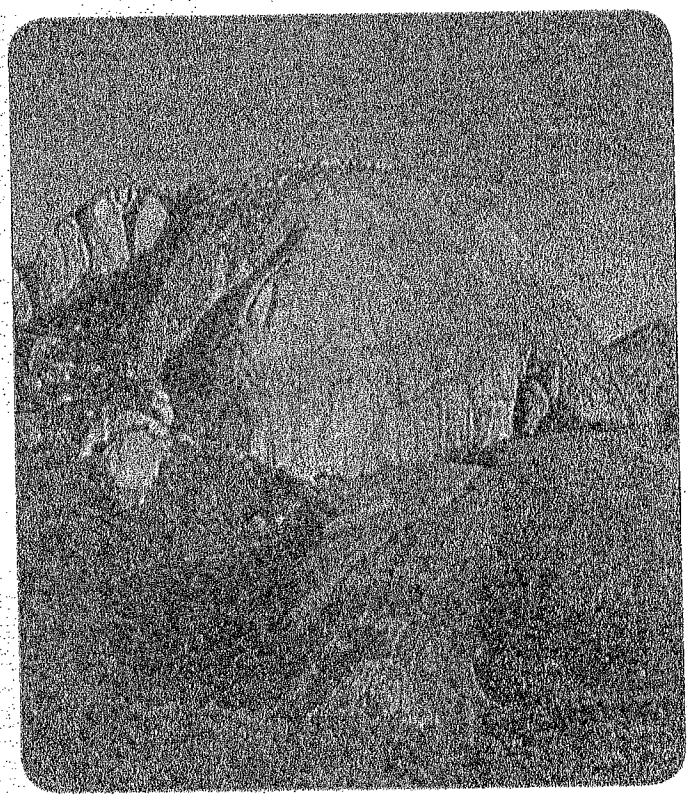


FIGURE 5

The Paarl batholith

Paarlberg in the Western Cape is an excellent example of a granite dome or batholith which has been exposed by weathering. Figure 3.23(a) is a photo of Paarl Rock (*Paarlrots*) – the top of this batholith found near the town of Paarl. Paarl is the Afrikaans word for 'pearl'. Paarl Rock is made up of white granite that reflects sunlight like a pearl. It is possible to walk up this rock with the aid of a hand-held rope. On a clear day, you can see Table Mountain in Cape Town from the top of Paarl Rock. On the lower slopes of the Paarl batholith, vineyards are cultivated; but the upper slopes are difficult to reach and to farm. Dams have been built on the top of this batholith as it is easy to tap water and to release it down the mountain by means of gravity.



: Paarl Rock

FIGURE 6

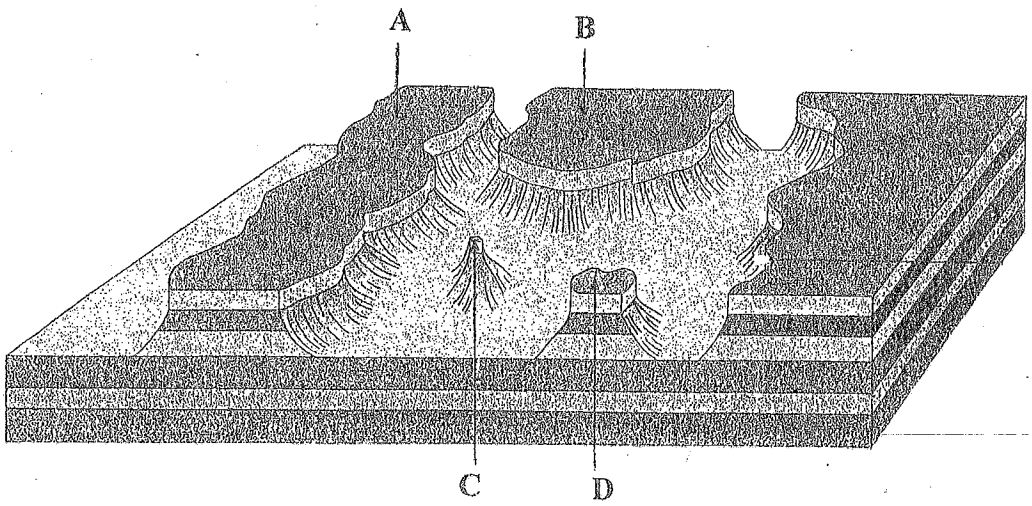


FIGURE 7

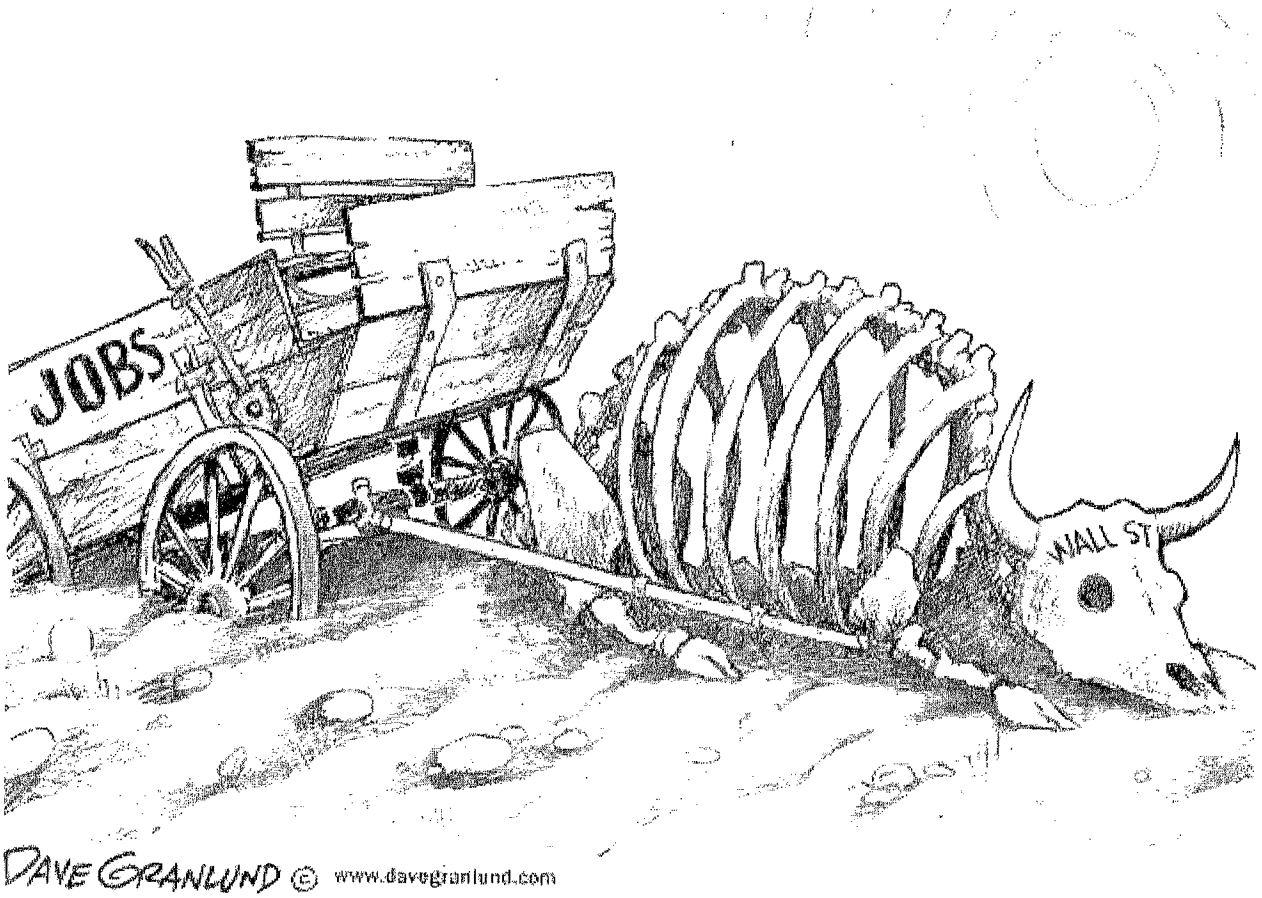


FIGURE 8

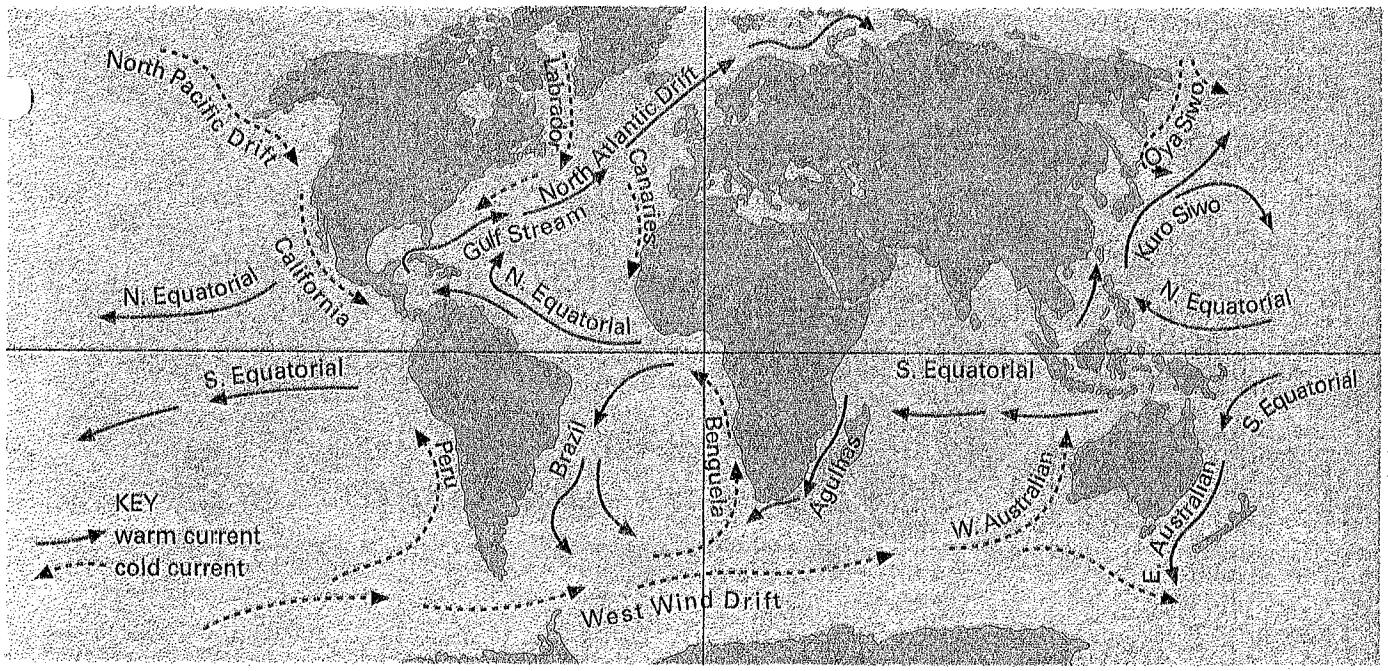
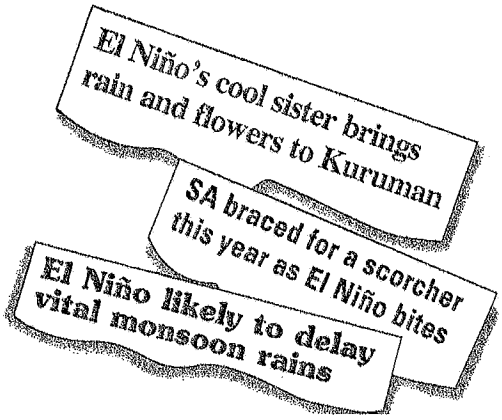
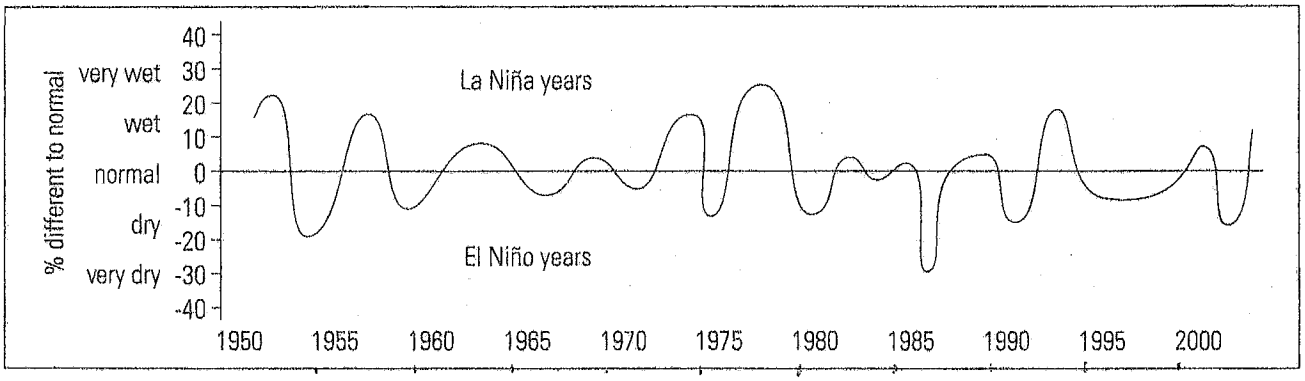


FIGURE 9





Cycle of dry and wet years

FIGURE 11

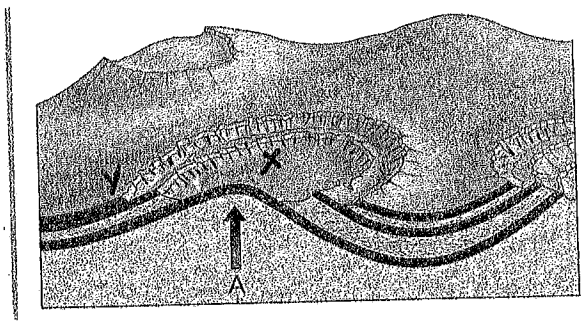


FIGURE 12

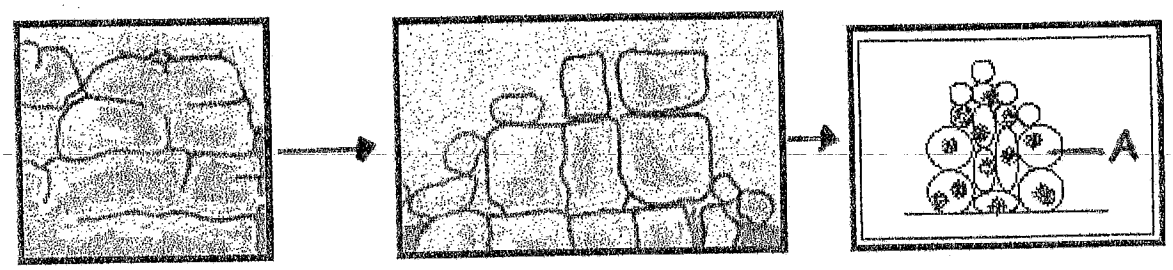


FIGURE 10

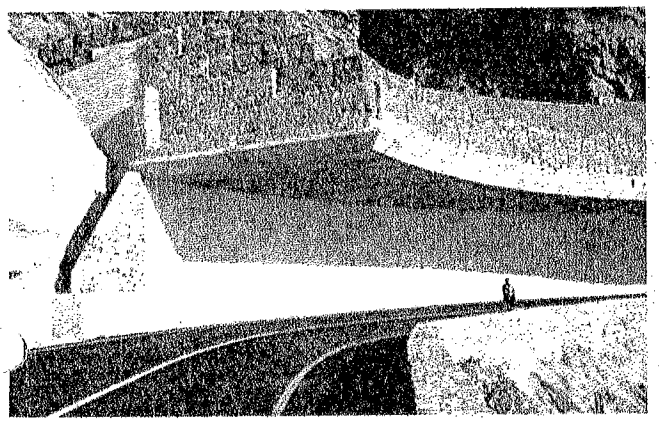
Figure 3.83 Map and view of Chapman's Peak Drive

Chapman's Peak Drive is a popular tourist attraction as it is built into a steep mountainside near Cape Town, high above the coastline. The road requires high maintenance as it lies below a fairly unstable cliff. The road was closed after a passenger in a vehicle was killed by a falling rock in 1999. Rockfalls nd mudslides have always been a hazard in the area, especially during winter when this area receives rain. To add to the instability of the slope, the vegetation on the Chapman's Peak mountainside was destroyed by fires in January 2000.

Chapman's Peak Drive was renovated and reopened in 2003. Measures taken to prevent the movement of material and to catch falling rocks include catch fences and concrete canopies. Cuttings have been made in parts of the mountain and sections of the road have been moved so that they are under the protection of an overhang. CCTV cameras, message signs, radar traffic detectors and a weather station were installed to monitor the risk. Road closure alarms were installed that were activated when specified levels of wind velocity and rainfall intensity were experienced. People using this road now pay a toll to finance the maintenance of the structures.

Full environmental impact studies were conducted prior to the renovation. Studies were made on the effect construction would have on:

- the vegetation and wildlife in the area
- the natural drainage systems
- the quantity and quality of stormwater drainage
- the natural heritage in the area.



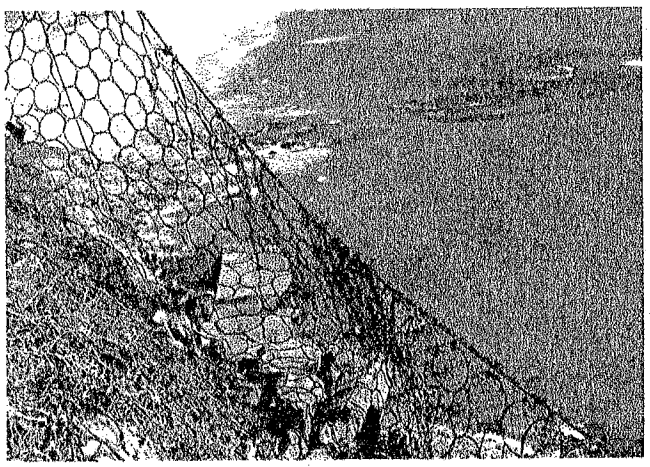


Figure 3.84 Renovation to Chapman's Peak Drive includes catch fences and concrete canopies.

Assurances were given that there would be as little disturbance as possible and that, although alien vegetation would be cleared, the natural fynbos would be conserved. Studies showed that the construction would not interrupt the natural drainage systems, but that the quantity and quality of the storm water runoff would be affected. Surface flow would increase due to the impermeable surfaces and there would be pollution of the water from the petrol and diesel on the road. Increased erosion in areas where the vegetation had been disturbed would lead to more sediment in the water. It was decided to construct drainage routes to direct storm water into channels.

Soon after the road was re-opened, two large boulders fell, but did not reach the road due to the concrete canopy. During July and August 2004, the area experienced heavy rain and poor weather conditions. The intensive rain activated alarms in the central control room and the road was closed to traffic. Although some rockfalls have occurred which have damaged some of the catch fences, thousands of falling rocks have been intercepted which would otherwise have reached the road.

Memo - Gr 11 Geog.

1.1.1 C
1.1.2 F.
1.1.3 H
1.1.4 B
1.1.5 D
1.1.6 E.
1.1.7 J
1.1.8 I
1.1.9 M
1.1.10. L

1.2.1 True
1.2.2 False
1.2.3 False
1.2.4 True
1.2.5 False.

1.3.1 Tropical Easterlies
1.3.2. Low
1.3.3 Polar Front.
1.3.4.1 due to high temp, air heated and Rises.
1.3.4.2. 2 air masses meet, cold air mass undercut. warm air and forces it to rise.

1.3.5.1. Sub-tropical High.
1.3.5.2. Due to stable conditions / High Pressure / descending air currents → clouds do not form resulting in dry conditions / little Rain.
1.3.6 South East Trades.

1.4.1. Warm dry winds.

1.4.2. Increases temperature.

1.4.3. As a mass of air descends it heats up adiabatically/
As a mass of air descends it encounters increasing atmospheric pressure ⇒ resulting in an increase in temperature.

1.4.4. Followed by a Coldfront bringing cold temperatures. / becomes chilly

1.4.5. 1°C/ 100m.

1.4.6.1 Berg winds result in veld fires that may spread quickly ⇒ destroy farm

1.4.6.2. – Create Firebreaks. / watch towers lookouts.
– Fire extinguishers easily accessible.
– Increase Irrigation. Minimise drying out of Crops.

1.5.1. Autumn.
Date shows the season. (April)

1.5.2. D – South Atlantic High
A – Cold Front.
B – Warm Front.

1.5.3 1016 mb.

1.5.4 E. – Steep pressure gradient. / Isobars close. → strong winds.

1.5.5. Rain.

1.5.6. – strong winds. – resulting in choppy sea
– heavy Rain. – Visibility will be poor.

1.6.1. A - Crest.
B - Cliff.
D - Pediment.

1.6.2. A. - Convex.
B - Vertical

1.6.3 Cliff.

1.6.4. Consist of. Weathered Rocks and boulders

1.6.5. Refers to the change in position of the scarp as a result of erosion.

1.6.6 pediment / D.
- Fairly Flat/gentle land-
- consists of fertile soil.

1.7.1. Batholith.

1.7.2. Exposed intrusions - are subject to weathering namely exfoliation and Erosion which gives it its rounded shape.

1.7.3. made up of white granite rock which reflects sunlight like a Pearl (Paarl - in afrikaans)

1.7.4 - lower slopes used for farming (vineyards cultivated)
- Dams built on the top, easy to tap water & release downhill.

1.8.1 Horizontal Sedimentary Rock. ✓

1.8.2. A - plateau. ✓

B - Mesa ✓

C - Conical Hill ✓

D - Butte. ✓

1.8.3. Mesa ~~are~~ - has a wider/large width than its height. ✓✓

Butte. - has smaller/narrower width than its height. ✓✓

1.8.4 Tops are covered by a protective dolerite layer (sill) which is resistant to Erosion - therefore height remain the the same. ✓✓

1.8.5. Canyons are deep, steep-sided valleys with narrow valley Floors ✓✓ 2

1.8.6. - A river caves its course across a plateau and forms a Canyon ✓✓

- Further erosion of the slopes of the plateau results in dev. of a Mesa ✓

- Erosion of the slopes of the Mesa result in the formation of a Butte. ✓

- When the hard dolerite sill (cap rock) has been eroded - A Conical hill remains ✓✓

2.1.1. Desertification.

2.1.2 Coriolis force.

2.1.3 Geostrophic Wind.

2.1.4 Isobars.

2.1.5 Divergence.

2.2.1 Weathering.

2.2.2. dyke.

2.2.3. permeable.

2.2.4 escarpment.

2.2.5. Caprock.

2.3.1. A prolonged period without Rainfall.

2.3.2. - uneven distribution of Rainfall.
- amount and nature of Rainfall
- High evaporation rates in relation to the amount of Rainfall
- Elnino and La Nina conditions.
- periodic changes in ocean temp.

2.3.3.1. Economy - loss of jobs / unemployment / poverty.
- farmers → increased debt.
- food shortages → increased food prices.
- poor comm. suffer malnutrition.
- deterioration of livestock/crops.
- industries suffer. - farm products.
- Decrease in exports

2.3.3.2. Environment - less grazing & water.
- water table is lowered.

- increase in salt content in water.
- more veldfires - dry vegetation
- top soil Eroded by wind
  desertification
- Natural habitats destroyed

2.3.4. - cannot afford to build Reservoirs
- poor preparation & management techniques / lack Long term planning.
- lack of Capital Resources for Dams / transfer schemes - Rely heavily on Rainfall.
- Highly populated - greater demand for water.

2.3.5 - Collection of Rainfall / climatic data → early warning systems.
- Control livestock numbers - prevent overgrazing.
- plant drought Resistant Crops.
- Building dams / Reservoirs for storage
- Water Restrictions
- Fog Collection.
- Desalinations of Sea Water.

2.4.1 Peru Current.
Benguella Current.
W. Australian Current.

2.4.2 - originate from the West Wind drift that comes from the cold South Pole.

2.4.3 Agulhas current.

- North atlantic drift is a warm Ocean Current.

2.4.4. - Has a warming effect on the climate of Western Europe which is normally extremely cold.

- Without the warming effect would be treeless.

- Flowers, vegetables can be grown with the temperatures made higher by the current.

2.5.1 Walker's Circulation.

2.5.2. a) EL Nino - Warmer than Normal sea surface temp / Drier than normal conditions

b) La Nina - Cooler than Normal sea surface temp / Wetter than normal conditions.

2.5.3 1975 - 1980

2.5.4. 1988

2.5.5 1982 - 1984

2.5.6 - study trends. - Early Warning systems

- Put Management plans in place.

2.6.1 Refers to the downward movement of weathered material under the influence of gravity

2.6.2. Rockfalls Mudslides

2.6.4 catch fences, Concrete Canopies

2.6.3 cause road accident / death.
result in road closure.

2.6.5 - Weather bureau can forecast weather. eg. heavy rains, strong winds ---- relevant dept informed. - and, warnings sent out and precautions can be taken.

~~2.6.6.~~

2.6.6 - drop in Tourism - Tourist can't access road - most scenic road in the Cape.

2.6.7. a) Vegetation cover - Vegetation anchors soil sediments & keeps slopes intact.- soil exposed - low vegetation - increase the risk of slope failure.

b) Rock permeability:
Porous rock increases permeability - Soil becomes saturated / heavy - result in risk of mass movement.

2.7.1. Cuesta dome. - scarp slope faces inwards.

2.7.2. inclined Sedimentary rock.

2.7.3 Anticline.

2.7.4 - Tectonic process eg faulting Folding
- magma intrusions between layers of Sedimentary rock.

2.7.5. X - Dip. - gentle slope
Y - Scarp - steep slope.

2.7.6 - Source of petroleum - mining.
- Source of salt - salt domes.
- Source of ground water. - Farmers irrigation settlements established.

2.8.1. Tors.

2.8.2. - ground water seeps into joints and cracks
- ground water dissolves minerals in the granite. - chemical weathering
- more joints & cracks appear. - overlying rocks are removed by weathering and erosion. exposing the stones on the surface.

2.8.3 Core stones.