

# **FURTHER EDUCATION & TRAINING PHASE (FET)**

# **GEOGRAPHY**

## **SBA EXEMPLAR BOOKLET**

## **GRADES 10-12**



basic education  
Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA



## FOREWORD



The Department of Basic Education has pleasure in releasing a subject exemplar booklet for School Based Assessment (SBA) to assist and guide teachers with the setting and development of standardised SBA tasks and assessment tools. The SBA booklets have been written by teams of subject specialists to assist teachers to adapt teaching and learning methods to improve learner performance and the quality and management of SBA.

The primary purpose of this SBA exemplar booklet is to improve the quality of teaching and assessment (both formal and informal) as well as the learner's process of learning and understanding of the subject content. Assessment of and for learning is an ongoing process that develops from the interaction of teaching, learning and assessment. To improve learner performance, assessment needs to support and drive focused, effective teaching.

School Based Assessment forms an integral part of teaching and learning, its value as a yardstick of effective quality learning and teaching is firmly recognised. Through assessment, the needs of the learner are not only diagnosed for remediation, but it also assists to improve the quality of teaching and learning. The information provided through quality assessment is therefore valuable for teacher planning as part of improving learning outcomes.

Assessment tasks should be designed with care to cover the prescribed content and skills of the subject as well as include the correct range of cognitive demand and levels of difficulty. For fair assessment practice, the teacher must ensure that the learner understands the content and has been exposed to extensive informal assessment opportunities before doing a formal assessment activity.

The exemplar tasks contained in this booklet, developed to the best standard in the subject, is aimed to illustrate best practices in terms of setting formal and informal assessment. Teachers are encouraged to use the exemplar tasks as models to set their own formal and informal assessment activities.



**MR HM MWELI**

**DIRECTOR-GENERAL**

**DATE:** 13/09/2012

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## **1. Introduction**

The project provides exemplar tasks that are aimed at:

- **Reflecting the depth of Geography curriculum content appropriate for Grades 10 and 11;**
- **Reflecting the desired cognitive demands appropriate for Grades 10 and 11;**
- **Containing questions and sub-questions that reflect appropriate degrees of challenge: easy, medium and difficult; and**
- **Focusing on the content of the Curriculum and Assessment Policy Statement (CAPS).**



# **Grade 10 Data-handling Exemplar 1**

**DURATION: 1hour**

**TOTAL : 75**

## **INSTRUCTIONS AND INFORMATION**

1. Answer ALL questions.
2. Start each question on a new page.
3. Number the answers correctly according to the numbering system used in this task.
4. Diagrams must be fully labelled.
5. Write neatly and legibly.

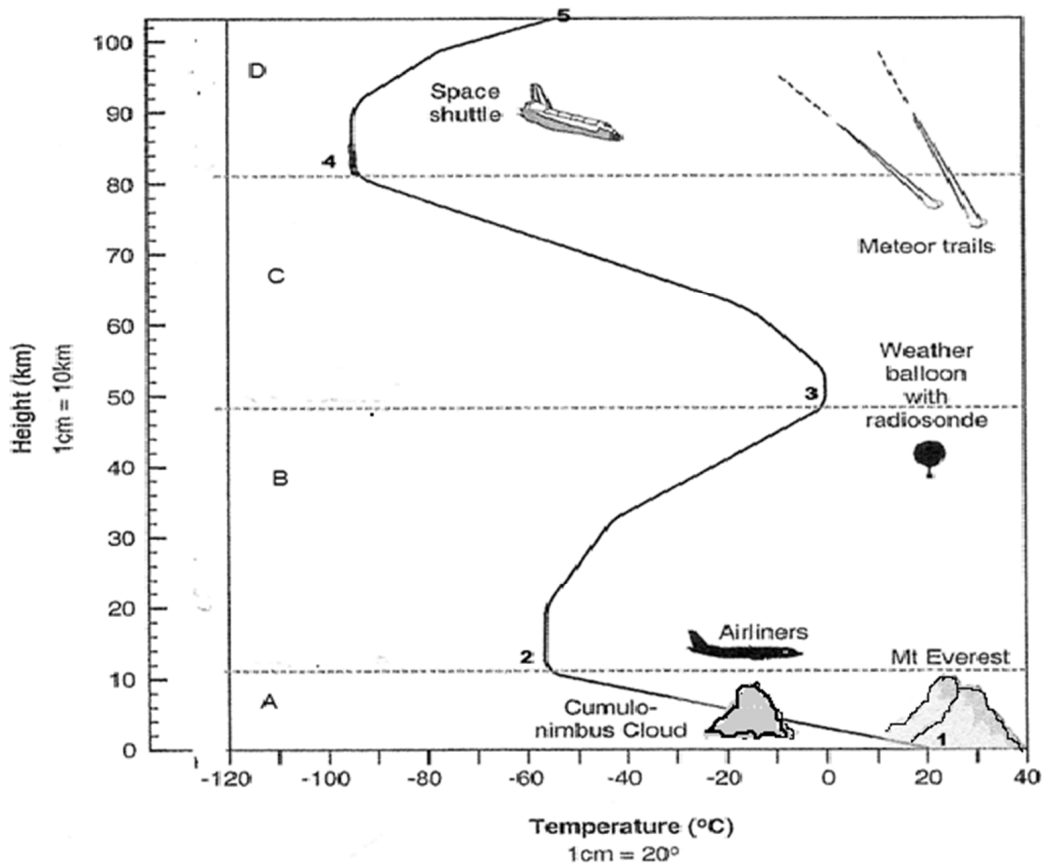
# THE ATMOSPHERE

## Question 1

Study the graph on **Fig. 1** showing the **Structure of the Atmosphere**

Select the correct answer from the alternatives given. Write only the alphabet of your choice next to the number of the question, e.g. 1.1.9 A

**Fig: 1**



1.1. The layer of the atmosphere that sustains life.

- A Mesosphere
- B Troposphere
- C Thermosphere
- D Stratosphere

1.2. The change in temperature with the increase in height in layer B is between:

- A 20°C to -56°C
- B -56°C to 20°C
- C 20°C to 60°C
- D -56°C to 0°C

1.3. O<sub>3</sub> is found in this layer.

- A D
- B C
- C B
- D A

1.4. The range in height of the Mesosphere in kilometres is from...

- A 0 to 10 km
- B 12 to 50 km
- C 50 to 80 km
- D 80 to 100 km

1.5. The TWO layers where temperature decreases with height are...

- A layers A and B
- B layers A and C
- C layers B and C
- D layers B and D

1.6. The layer of the atmosphere where clouds are formed:

- A Thermosphere
- B Mesosphere
- C Stratosphere
- D Troposphere

1.7. Negative lapse rate occurs in...

- A layers B and D
- B layers A and D
- C layers A and C
- D layers B and C

1.8. The Tropopause is the boundary between...

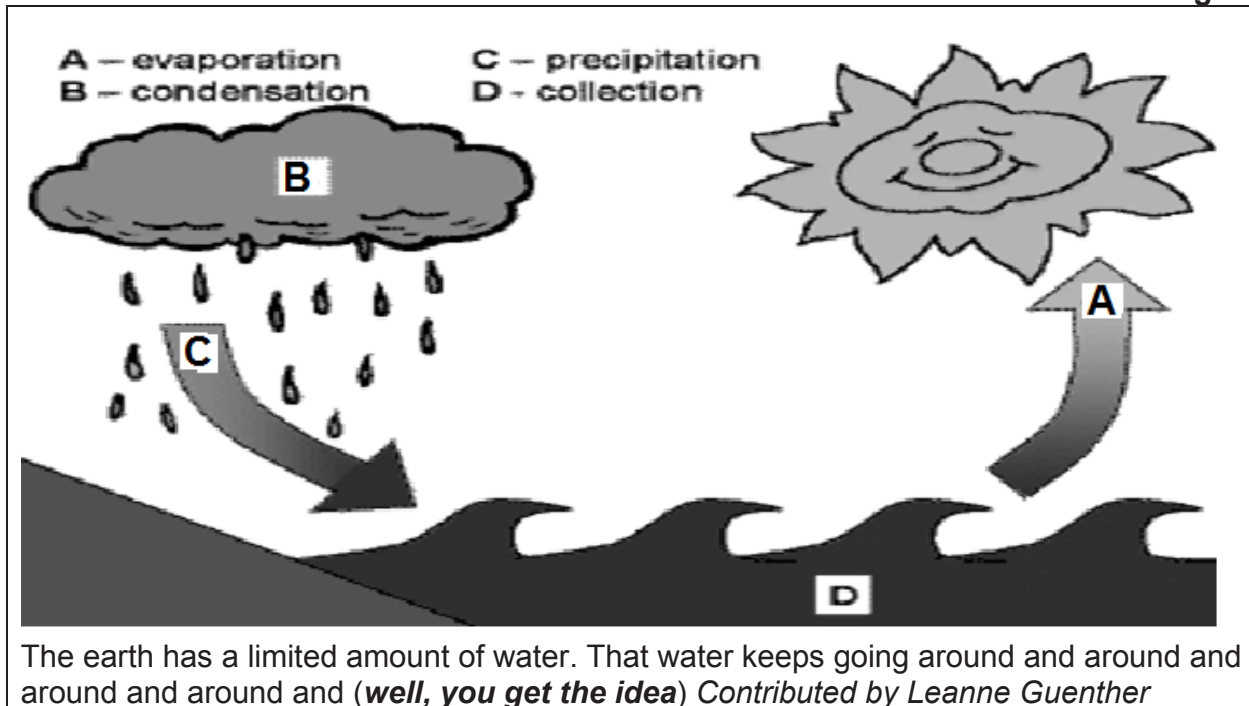
- A the Troposphere and Thermosphere
- B the Troposphere and Mesosphere
- C the Troposphere and Stratopause
- D the Troposphere and Stratosphere

8 x 1 [8]

## Question 2

**Study Fig.2 showing the WATER CYCLE. Give the term that best describes each of the statements below:**

**Fig: 2**



- 2.1 The continuous movement of water from the surface of the earth to the atmosphere and back.
- 2.2 The point at which condensation takes place.
- 2.3 Water from the atmosphere to the ground in the form of a solid or liquid.
- 2.4 The process whereby a liquid changes to a gas.
- 2.5 A fall of water drops from the clouds.
- 2.6 The process where water vapour changes to water due to cooling.
- 2.7 Heat released during condensation

7 x 1 [7]



### Question 3

Read the text, “Climbing Mount Everest in thin air”. Then answer the questions.

#### **Climbing Mount Everest in thin air**

Imagine that you are climbing Mount Everest – the world’s highest mountain.

You are experienced and physically fit.

The peak is 8 850 m above sea level and you have reached 5 500 m, but you are not feeling well. All day you have felt dizzy and once or twice you almost passed out. You have to rest often and you cannot think clearly. You have the symptoms of altitude sickness.

Climbing Mount Everest is a challenge not only because of its steepness, but also because of its height. Altitude sickness is always a problem on high mountain climbs. The higher you climb the thinner the air gets. At the top of Everest, the air is three times thinner than it is at sea level. The percentage of oxygen in the air itself is the same (about 20%), but it is less concentrated. So, with every breath, you get only a third of the oxygen you normally would. The oxygen concentration is so low at this altitude that even paraffin won’t burn.

Source: *Adapted from*

<http://www.thetech.org/exhibits/online/everest/about/physiology.htm>

3.1 What is the height of Mount Everest? (1 x 1) (1)

3.2 How far does Mount Everest extend into the troposphere? Is it ...

(a) quarter of the way,

(b) halfway, or

(c) three quarters of the way? (1 x 1) (1)

3.3 What is the difference in the air at sea level and at the top of Mount Everest? (2 x 1) (2)

3.4 Why does the air get thinner as the altitude increases? (1 x 2) (2)

3.5 A climber takes in 300 000 molecules of oxygen in one breath at sea level.  
How many molecules of oxygen does the climber take in one breath at the top of Mount Everest? (1 x 2) (2)

3.6 Explain why it is necessary for mountain climbers to be physically fit to tackle mountains such as Mount Everest. (3 x 2) (6)

**(14)**

#### Question 4

#### Refer to the extract showing WEATHER CONDITIONS IN JOHANNESBURG

Johannesburg gets warm and humid during summer (average around 25° C) and most of the rainfall comes during this time. Because of the heat, the storms can get quite spectacular. Winters in Johannesburg are moderate, with dry sunny days and chilly nights.

Month	Precipitation	Maximum	Minimum	Average Sunlight
	mm	°C	°C	Hours
January	11.4	26	14	8
February	10.9	25	14	8
March	8.9	24	13	8
April	3.8	22	10	8
May	2.5	19	6	9
June	0.8	17	4	9
July	0.8	17	4	9
August	0.8	20	6	10
September	2.3	23	9	10
October	5.6	25	12	9
November	10.7	25	13	8
December	12.5	26	14	8

4.1 During which season is Johannesburg warm and moist? (1 x 1) (1)

4.2 Give a reason for your answer to question 4.1 (1 x 1) (1)

4.3 Calculate the temperature range for August. (2 x 1) (2)

4.4 Account for the low rainfall in June and July. (2 x 2) (4)

4.5 Draw a line graph showing maximum temperatures of Johannesburg from **April to September**.

Use the following information:

Vertical scale: 1 cm = 5 °c

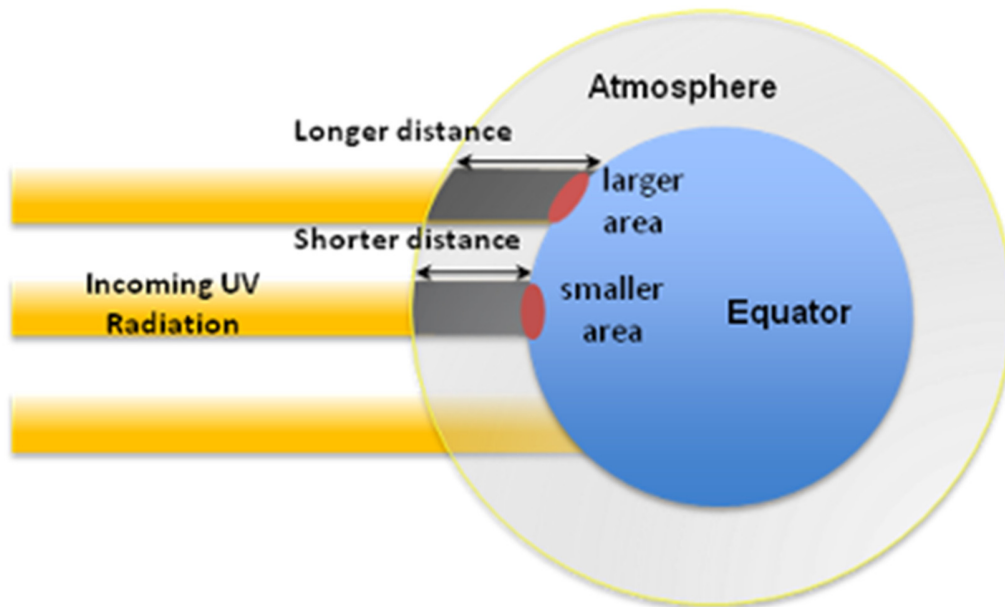
Horizontal scale 1 cm = 1 month

(8x1) (8)

[16]

### Question 5

Study the diagram illustrating the Heating of the Atmosphere



Source from: National Environment Agency of Singapore

- 5.1 Define the term **insolation**. (1 x 1) (1)
- 5.2 Provide an alternative term for the following:
- (a) long-wave radiation
  - (b) short-wave radiation (2 x 1) (2)
- 5.3 Explain why the lower layers of the atmosphere are heated by the process of conduction. (1 x 2) (2)
- 5.4 Explain why places along the equatorial region ( $0^{\circ}$  latitude) record a higher temperature as compared to places more towards the polar regions ( $60^{\circ}$  to  $90^{\circ}$  latitude). (2 x 2) (4)
- 5.5 In a paragraph of not more than 8 lines, explain why only 47% of the sun's energy reaches the surface of the earth. (3 x 2) (6)
- [15]**

## Question 6

### CASE STUDY: Climate change and sub-Saharan Africa

The 2007/2008 Human Development Report argues that the world is drifting towards a tipping point that it would lock the poorest countries and their citizens to a downward spiral, leaving hundreds of millions facing malnutrition, water scarcity, ecological threats and the loss of livelihoods. It stresses that the effects of climate change will hit sub-Saharan Africa disproportionately. According to the report, wealthy countries must live up to their obligations and their historical responsibility for the world's greenhouse gas emissions. The report emphasises the inequality of the situation for Africa, noting that carbon dioxide emissions for the state of Texas in the USA are higher than the total carbon dioxide footprint of sub-Saharan Africa – a region of 720 million people.

The report makes recommendations to wealthy nations to help Africa. These recommendations include the following:

- \* Expanding the continent's meteorological monitoring network, so that farmers can have access to better information about climate patterns in the region.
  - Investing in water storage or "water harvesting" facilities in Kenya, Ethiopia and Tanzania.
  - Improving national social insurance programmes to protect farmers and poor residents from the worst effects of climate-related disasters.
  - Building early warning systems.

Archbishop-Emeritus Desmond Tutu says, "While the citizens of the rich world are protected from harm, the poor, the vulnerable and the hungry are exposed to the harsh reality of climate change in their everyday lives... the poor are being harmed through a problem that is not of their making."

- 6.1 Define the term **climate change**. (1 x 1) (1)
- 6.2 Explain why countries such as Texas in the USA contribute more to the carbon footprint than that of the entire region of sub-Saharan Africa. (1 x 2) (2)
- 6.3 Explain one reason why climate change may cause:  
a. malnutrition (1 x 2) (2)  
b. water scarcity (1 x 2) (2)
- 6.4 Why does Archbishop Tutu believe that wealthy countries have an obligation to assist Africa? (1 x 2) (2)
- 6.5 Provide sustainable ways, mentioned in the Human Development Report, in which wealthy countries can help reduce the harmful effects of climate change on Africa. (3 x 2) (6)

(15)  
[75]



## MEMORANDUM

### QUESTION 1

- |     |   |   |
|-----|---|---|
| 1.1 | B | ✓ |
| 1.2 | D | ✓ |
| 1.3 | C | ✓ |
| 1.4 | C | ✓ |
| 1.5 | B | ✓ |
| 1.6 | D | ✓ |
| 1.7 | A | ✓ |
| 1.8 | D | ✓ |

(8 X 1) (8)

### QUESTION 2

- |     |               |   |
|-----|---------------|---|
| 2.1 | Water cycle   | ✓ |
| 2.2 | Dew point     | ✓ |
| 2.3 | Precipitation | ✓ |
| 2.4 | Evaporation   | ✓ |
| 2.5 | Rain          | ✓ |
| 2.6 | Condensation  | ✓ |
| 2.7 | Latent heat   | ✓ |

(7 x 1) (7)

### QUESTION 3

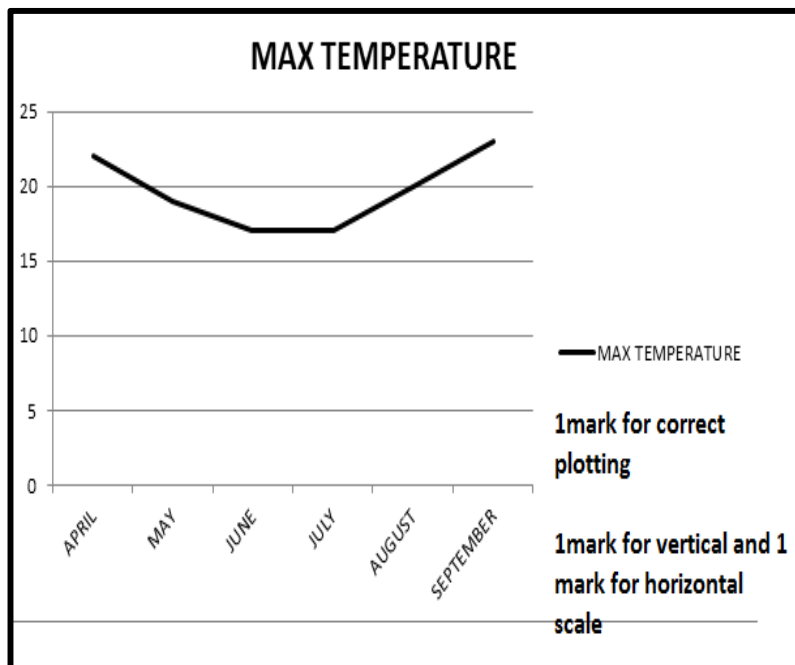
- |     |   |     |                 |
|-----|---|-----|-----------------|
| 3.1 | 8 850 m   | ✓   | (1 x 1) (1)     |
| 3.2 | (c) Three quarters of the way   | ✓   | (1 x 1) (1)     |
| 3.3 | The air is three times thinner than it is at sea level.   | ✓ ✓ | (2 x 1) (2)     |
| 3.4 | Thinner air means there is less oxygen to breathe/ oxygen is less concentrated.   | ✓ ✓ | (1 x 2) (2)     |
| 3.5 | 300 000 molecules   | ✓ ✓ | (1 x 2) (2)     |
| 3.6 | Steepness of the slope ✓ ✓ / Altitude sickness ✓ ✓ / Feel dizzy/out of breath, cannot think/oxygen is less concentrated/nose bleeds ✓ ✓ |     | (any 3 x 2) (6) |

[14]

### QUESTION 4

- |     |        |   |             |
|-----|--------|---|-------------|
| 4.1 | Summer | ✓ | (1 x 1) (1) |
|-----|--------|---|-------------|

- 4.2 26 °C is highest temperature✓ and precipitation is 12.5 mm ✓ /The highest temperature and precipitation are recorded in December which is summer. ✓ (1 x 1) (1)
- 4.3  $20\text{ }^{\circ}\text{C} - 6\text{ }^{\circ}\text{C}\checkmark = 14\text{ }^{\circ}\text{C}\checkmark / 14\text{ }^{\circ}\text{C}\checkmark\checkmark$  (2 x 1) (2)
- 4.4. Winter ✓ ✓cold air sinks ✓ ✓cold air subsides✓✓less evaporation✓✓ (2 x 2) (4)
- 4.5



(8x1) (8)

[16]

## QUESTION 5

- 5.1 Incoming solar radiation ✓ (1 x 1) (1)
- 5.2 (a) terrestrial /ground/earth radiation/ infrared light✓  
(b) solar radiation/ ultraviolet rays/ visible light ✓ (2 x 1) (2)
- 5.3 Conduction transfers heat to lower layers through contact ✓✓ (1 x 2) (2)
- 5.4 Equator receives the direct sun rays✓✓  
Equator is closer to the sun✓✓  
Sun rays travel a shorter distance to the earth surface✓✓  
Small surface area to heat✓✓  
Sun rays pass through a small amount of atmosphere, less scattering reflection and absorption✓✓  
Polar areas receive the oblique sun rays✓✓  
Polar area is further away from the sun✓✓

Sun rays travel a longer distance to the earth surface✓✓

Large surface area to heat✓✓

Sun rays pass through a large amount of atmosphere, more scattering reflection and absorption ✓✓

(any 2 x 2) (4)

- 5.5 Heat is lost through reflection, some of the sun's rays strike a surface and are sent back into the atmosphere without being absorbed. ✓✓ lighter surfaces reflect more heat than darker colours.

Heat is lost through scattering, radiation bounces off dust particles in the atmosphere. ✓✓

Heat is lost through absorption; gases in the atmosphere take in radiation before they reach the earth's surface. Ozone absorbs and filters out harmful ultraviolet rays✓✓

(any 3 x 2) (6)

[15]

## QUESTION 6

- 6.1 Change in the average surface temperatures of the earth /change in weather patterns ✓  
(1 x 1) (1)

- 6.2 Developed countries produce large amounts of pollution/more trees cleared for furniture, paper, settlement/more burning of fossil fuels like coal and oil✓✓ (1 x 2) (2)

- 6.3 a Malnutrition

Majority of subsistence farmers rely on rain for watering their crops; less rainfall will cause a drop in agricultural production and food supply and this will lead to malnutrition, undernourishment and famine. ✓✓ (1 x 2) (2)

- b. Water scarcity

Climate change will result in less rainfall leading to drought and water scarcity. Dams and rivers will run dry. Farmers will have to resort to irrigation systems. Water restrictions will be imposed.✓✓ (1 x 2) (2)

- 6.4 They are responsible for the world's greenhouse gas emissions/global warming . Wealthy countries are the ones contributing to high carbon emissions. ✓✓ (1 x 2) (2)

- 6.5 Expanding the continent's meteorological monitoring network, so that farmers can have access to better information about climate patterns in the region. ✓✓Investing in water storage or "water harvesting" facilities in Kenya, Ethiopia and Tanzania. ✓✓ Improving national social insurance programmes ✓✓to protect farmers and poor residents from the worst effects of climate-related disasters. Building early warning systems. ✓✓ (any 3 x 2)

(6) [15]

## Exemplar 2

MARKS: 75

TIME: 1 hour

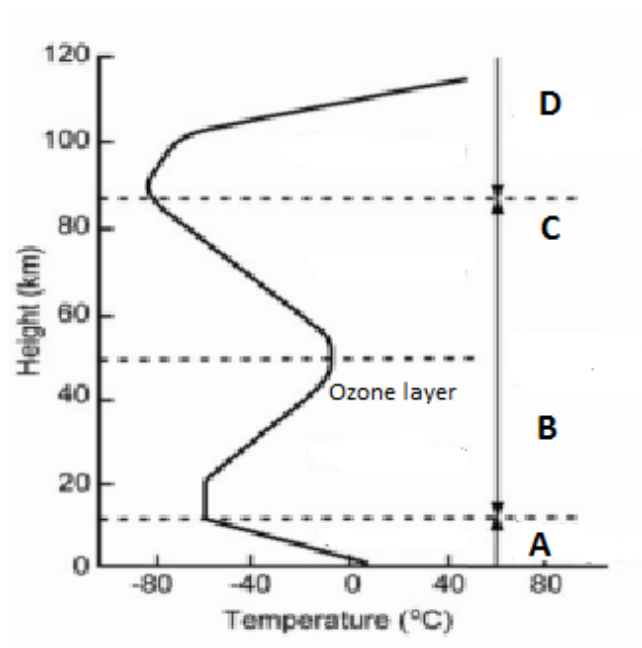
### INSTRUCTIONS AND INFORMATION

1. Write neatly and legibly
2. Number questions according to the numbering in the question paper

### QUESTION 1

- 1.1. Refer to FIGURE 1.1 which illustrates the **STRUCTURE AND COMPOSITION OF THE ATMOSPHERE** and answer the following questions.

Fig: 1.1



- 1.1.1. Name the atmospheric layers marked **A** and **B** (2x1) (2)
- 1.1.2. Write only the letter of the atmospheric layer in which temperature inversion takes place. (1x2) (2)
- 1.1.3. Define the term *temperature inversion*. (1x1) (1)
- 1.1.4. The ozone layer is shown on the figure. What is meant by *ozone depletion*? (1x1) (1)
- 1.1.5. Write a paragraph of approximately EIGHT lines in which you explain how the ozone depletion affects people and the environment. (4x2) (8)
- 1.2. Read the case study on global warming in Africa and answer the following questions.

#### KILIMANJARO AND MOUNT KENYA IN AFRICA

Mount Kilimanjaro is an impressive, snow-capped volcano peak lying above the Serengeti Plain, close to the equator. At 5 895 m, it is Africa's highest mountain.



Scientists believe that the ice fields on Mount Kilimanjaro have shrunk by 80% in the past century, and that the snow-cap could be gone by 2020. There have been reports that for the first time in 1100 years there is a dry, exposed ground on the parts of the peak. One of the glaciers near the peak of the mountain has developed a hole as a result of the thinning of ice. Eventually the glacier will probably split into two parts. Only 25% of the glacial ice on Mount Kenya (at 5 199 m the second highest mountain in Africa) is still there. Scientists claim that the melting of ice on these and other mountains and the exposing of bare ground will allow for the absorption of more solar radiation because there is less ice to reflect the sun's energy. This will contribute to further global warming and even more ice will melt.

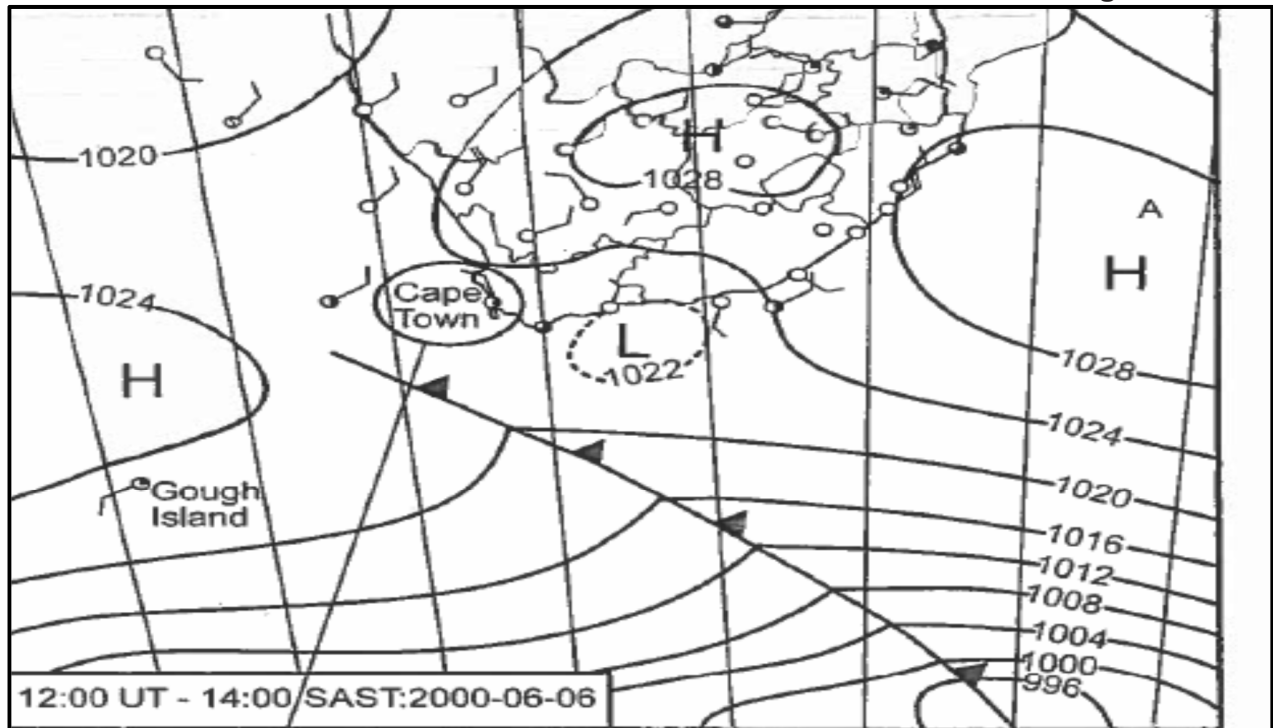
(Unknown source)

- 1.2.1 Define the concept *global warming*. (1x1) (1)
- 1.2.2. What do scientists predict would happen to Mount Kilimanjaro by 2020? (1x2) (2)
- 1.2.3 Explain how global warming has affected Mount Kilimanjaro and Mount Kenya. (2x2) (4)
- 1.2.4 Analyse the impact of global warming on Mount Kenya. (2x2) (4)

## QUESTION 2

2.1. Study the FIGURE 2.1 showing the synoptic weather map, and then answer the following questions.

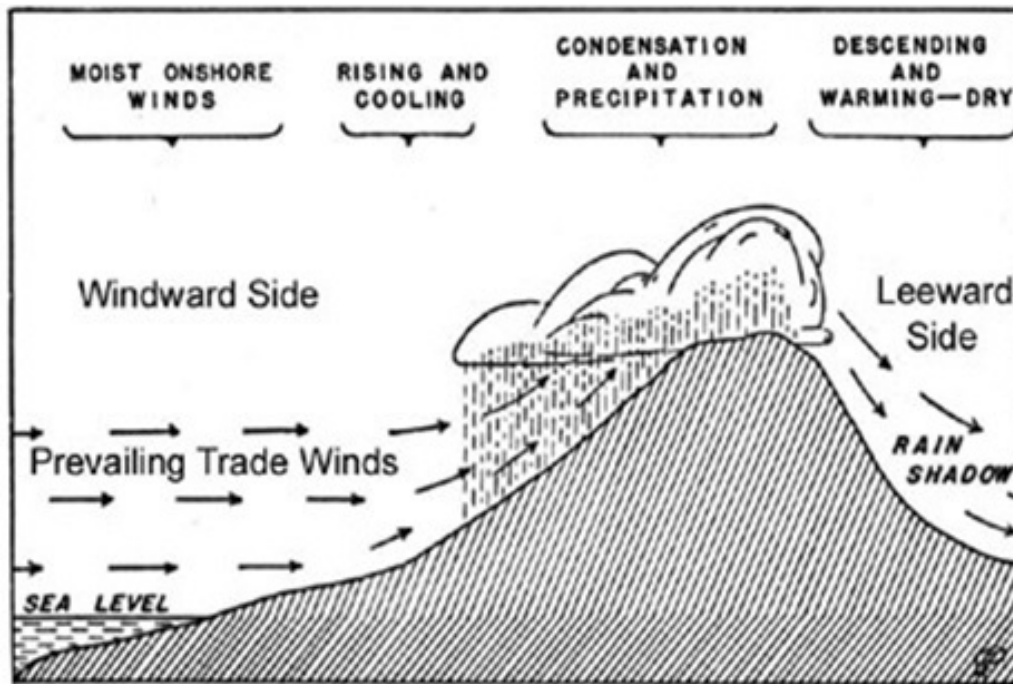
Figure 2.1



- |   |           |
|---|-----------|
| 2.1.1. Name the season represented by the synoptic map.   | (1x2) (2) |
| 2.1.2. Give TWO reasons for your answer in 2.1.1.   | (2x2) (4) |
| 2.1.3. Identify the pressure system at A.   | (1x1) (1) |
| 2.1.4. Interpret the weather at Gough Island referring to cloud cover, wind direction and wind speed. | (3x2) (6) |

2.2. Refer to FIGURE 2.2 and answer the following questions

Figure 2.2



2.2.1. Identify the type of rainfall illustrated by the diagram.

(1x1) (1)

2.2.2. Write a paragraph of no more than EIGHT lines in which you describe how the type of rain named in question 2.2.1 is formed.

(4x2) (8)

2.3. Refer to the “Springfontein farm” climatic table and map below and answer the questions that follow.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Rainfall (mm)	15	10	15	20	30	80	90	100	80	30	20	10
Temperature (°C)	20	30	25	24	18	15	12	14	18	20	21	26

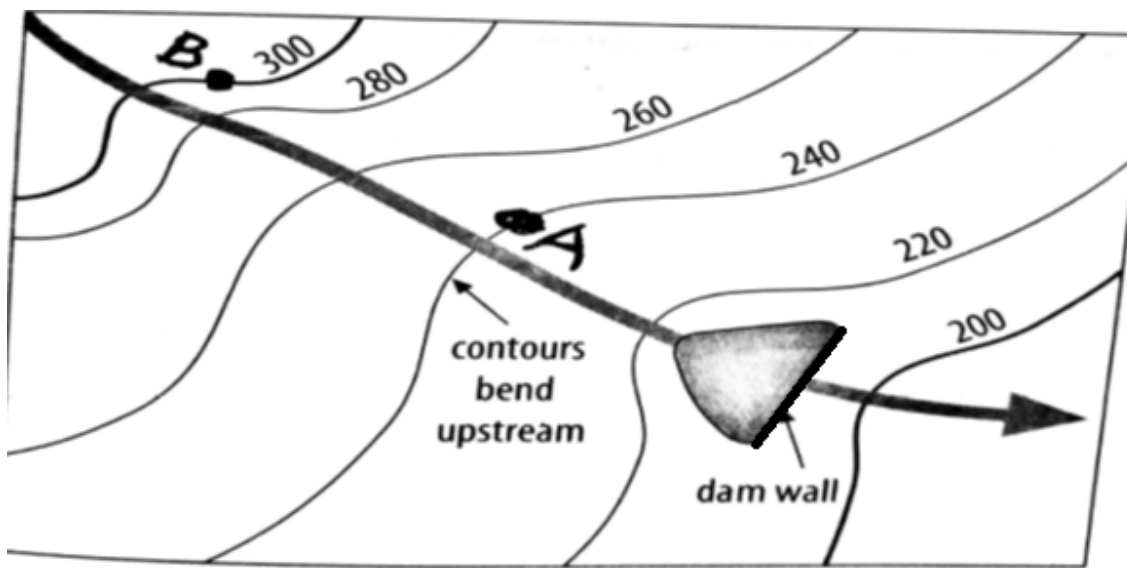


- 2.3.1. State whether Springfontein is in a winter or a summer rainfall region. (1x1) (1)
- 2.3.2. Explain your answer given in 2.3.1 (1x2) (2)
- 2.3.3. Looking at the rainfall pattern, deduce which province is the farm likely to be situated in. (1x1) (1)
- 2.3.4 Explain your answer given in 2.3.3. (1x2) (2)
- 2.3.5 Use the information in the table above to draw a bar graph depicting rainfall and a line graph depicting temperature on the same set of axes. (7x1) (7)

### QUESTION 3

3.1 FIGURE 3.1 illustrates a contour map with a scale of 1:50 000 showing drainage patterns.

Figure: 3.1



- 3.1.1 Give the correct term for the line marked **A**. (1x1) (1)
- 3.1.2. Define the term given in 3.1.1. (1x1) (1)
- 3.1.3. Give the contour interval of the contour sketch map in metres. (1x1) (1)
- 3.1.4. Identify the shape of slope **A – B**. (1x2) (2)
- 3.1.5 In which direction does the main stream flow? (1x2) (2)
- 3.1.6. Identify ONE cultural phenomenon on the contour map. (1x1) (1)
- 3.1.7. Calculate the difference in height in metres between **A** and **B**. (3x1) (3)
- 3.1.8. Calculate the distance between **A** and **B** on the map if the scale of the map is 1:50 000. Show all calculations and your answer should be in km. (4x1) (4)

**TOTAL: 75**



## MEMORANDUM

### MARKS: 75

#### QUESTION 1

- 1.1.1. A – Troposphere (1)  
B. – Stratosphere (1) (2x1) (2)
- 1.1.2. B (2) / D (2) (1x2) (2)
- 1.1.3 An increase in temperature with an increase in altitude (1x1) (1)
- 1.1.4. A decline of the total amount of ozone in Earth's stratosphere (1x1) (1)
- 1.1.5 EFFECTS ON PEOPLE
- Cataracts may develop (2)
  - It can cause faster ageing of the skin (2)
  - Can cause blindness (2)
  - Can lead to skin cancer (2)
  - Can weaken the body immune system
- EFFECTS ON THE ENVIRONMENT
- Disrupts photosynthesis (2)
  - Lower crop yield (2)
  - Decrease in phytoplankton (2)
  - Decrease in marine life (2)
- [AT LEAST TWO FACTS FROM EACH: ACCEPT OTHER] (4x2) (8)
- 1.2.1. The increase in the Earth's overall temperatures as a result of the greenhouse effect (1) (1x1) (1)
- 1.2.2. Ice fields on Kilimanjaro have shrunk by 80% (2)
- The snow-cap could be gone by 2020 (2)
  - Dry exposed ground is found on the parts of the peak (2)
  - One of the glaciers developed a hole as a result of the thinning of ice (2)
- [ANY ONE] (1x2) (2)
- 1.2.3. Dry exposed ground is found on the parts of the peak (2)
- One of the glaciers developed a hole as a result of the thinning of ice (2)
  - Melting of ice and ice caps, for example, on Mount Kilimanjaro (2)
- [ANY TWO] (2x2) (4)
- 1.2.4. Melting of ice will expose bare ground allowing more solar radiation (2)
- As a result of this there will be further global warming (2x2) (4)

#### QUESTION 2

- 2.1.1 Winter (2) (1x2) (2)
- 2.1.2. Kalahari high pressure cell present over the interior (2)
- The date on the map (2)
  - Cold front is approaching the land (2)
  - No precipitation over the interior (2)
- [ANY TWO: ACCEPT OTHER] (2x2) (4)
- 2.1.3. South Indian high pressure cell (1) (1x1) (1)

2.1.4. Cloud cover:  $\frac{1}{4}$  (2)

Wind direction: south-west (2)

Wind speed: 10 knots (2)

(3x2) (6)

2.2.1. Orographic/ relief rainfall (1)

(1x1) (1)

2.2.2. Forms when warm, moist wind blows off the ocean onto a (2)  
mountain which then (2)

forces air to rise(2)

The rising air cools and the water vapour it contains condenses (2)

Clouds form (2)

This results in rain falling on the windward side of the mountain. (2)

[ANY FOUR]

(4x2) (8)

2.3.1. Winter (1)

(1x1) (1)

2.3.2. Highest rainfall is experienced in winter (2)

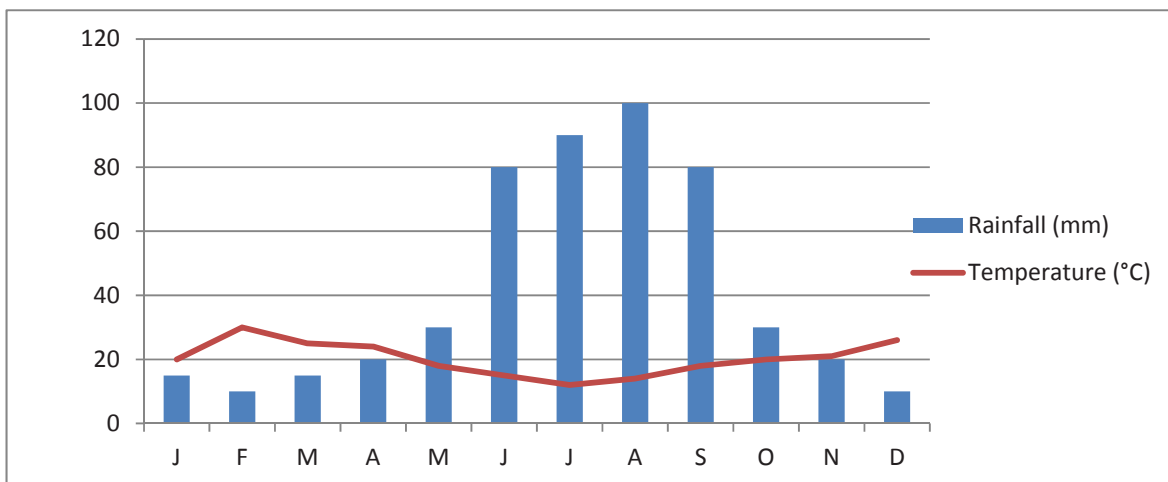
(1x2) (2)

2.3.3. Western Cape (1)

(1x1) (1)

2.3.4. The Western Cape experiences winter rainfall

(1x2) (2)



2.3.5.

- ✓ For heading
  - ✓ For axis ( one for each side)
- 4 marks for the graph

3.1.1.	Contour line (1)	(1x1) (1)
3.1.2	Lines on a map joining places with the same height above sea level together (1)	(1x1) (1)
3.1.3.	20 m (1)	(1x1) (1)
3.1.4.	Concave slope (2)	(1x2) (2)
3.1.5.	South-east direction (2)	(1x2) (2)
3.1.6.	Dam wall (1)	(1x1) (1)
3.1.7.	Difference at B 300 m (1)	
	Difference <u>at A</u> 240 m (1)	
	<u>        </u> 60 m (1)	(3x1) (3)
3.1.8.	Distance = <u>distance x scale of the map</u> 100 000 (1)	

$$\begin{aligned} &= \frac{5,1 \times 50\,000}{100\,000 (1)} \\ &= \frac{255\,000}{100\,000 (1)} \\ &= 2,55 \text{ km (1)} \end{aligned} \quad (4 \times 1) (4)$$

OR

**TOTAL 75**

## Exemplar 3

### DATA HANDLING

MARKS: 75

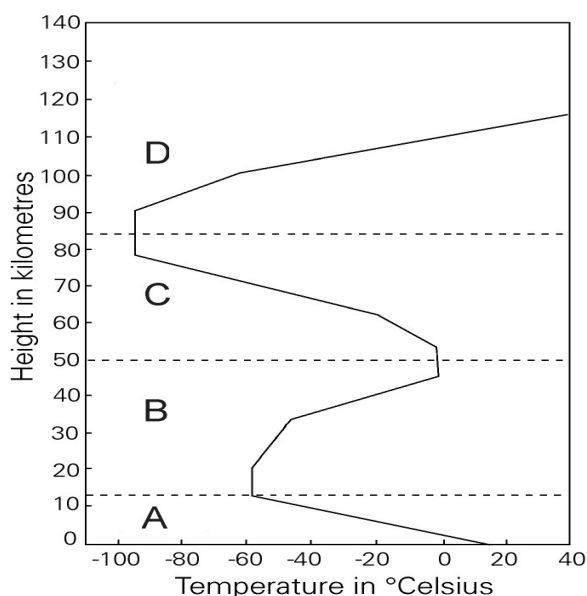
TIME: 1 hour

### INSTRUCTIONS

- Answer ALL questions.
- Number your answers exactly as the questions are numbered.
- This paper consists of **6 questions**.
- Start each question on a new page.
- Write neatly and legibly.

### QUESTION 1

Refer to the diagram below showing the structure of the atmosphere and answer the questions that follow.



- |   |          |
|---|----------|
| 1.1 Name the layers labelled A, B, C and D.   | (4x1)(4) |
| 1.2 In which layer would you find the highest density of gases?                       | (1x1)(1) |
| 1.3 Give the TWO layers of the atmosphere where you would find a positive lapse rate. | (2x1)(2) |
| 1.4 Identify TWO layers that illustrate temperature inversion conditions.             | (2x1)(2) |
| 1.5 Provide ONE reason why layer A is important to all life forms on earth.           | (2x1)(2) |
| 1.6 Name the boundary between A and B where the temperature is constant.              | (1x2)(2) |
| 1.7 Why do long-distance aircrafts choose to fly in the lower part of layer B?        | (1x2)(2) |
| 1.8 In which layer is the ozone formed?   | (1x1)(1) |
| 1.9 Predict what will happen to climate on Earth if the layer in 1.8 is destroyed.    | (1x2)(2) |

**QUESTION 2**

The data provided shows the average total ozone in Dobson Units (DU) for each month of the year. Study the table and answer the questions.

City and latitude	J	F	M	A	M	J	J	A	S	O	N	D
Irene, South Africa (26°S)	267	256	259	257	256	273	270	275	286	298	285	281
Springbok, South Africa (29°S)	305	309	303	306	311	309	312	350	379	392	343	321
London, England (51°N)	339	331	358	374	375	360	351	337	303	291	278	315
Brisbane, Australia (27°S)	277	273	271	271	271	275	282	290	300	303	295	284
San Francisco, USA (37°N)	309	324	335	340	337	323	310	303	293	283	281	292
Halley Bay, Antarctica (76°S)	286	261	251	245	250	239	220	179	151	137	267	299

(Source: Geography solutions for all. Learner's Book Grade 10)

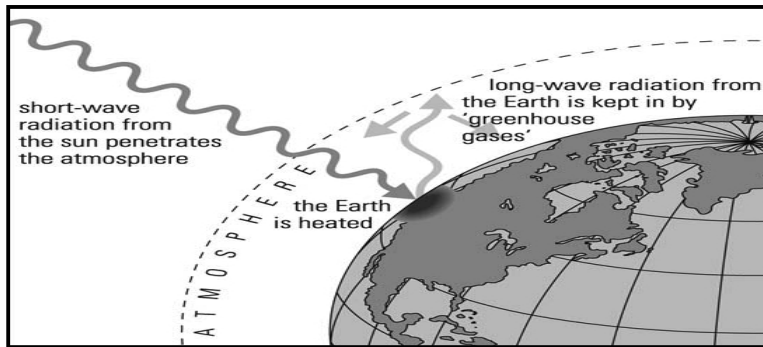
**NB! Note that the ozone hole is 220 DU or less. (The lower the number, the higher the ozone damage.**

- 2.1 Which units are used to measure ozone? (1x1)(1)
- 2.2 During which season (spring, autumn, winter or summer) do the highest values of ozone occur over Brisbane? (1x1)(1)
- 2.3 In which city is the damage to the ozone layer the most? Provide a reason for your answer. (1+2)(3)
- 2.4 Which country has the least ozone damage? (1x1)(1)
- 2.5 List TWO positive effects of the greenhouse on life forms on the Earth's surface. (2x1)(2)
- 2.6 Suggest TWO possible solutions to prevent damage to the ozone layer. (2x2)(4)

[12]

**QUESTION 3**

Study the diagram illustrating long and short wave radiation and answer the following questions:



3.1 Which term from the source means the same as the following:

3.1.1 solar radiation

(1x1)(1)

3.2.2 terrestrial radiation

(1x1)(1)

3.2 The earth is heated through two processes, conduction and convection.

Define the two terms.

(2x1)(2)

3.3 Describe TWO ways by which solar radiation is lost in the atmosphere.

(2x2)(4)

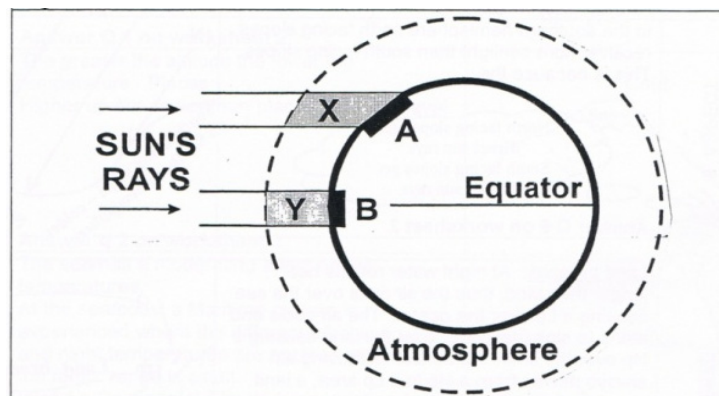
3.4 The atmosphere is heated by the Earth, not the Sun. Explain this statement.

(1x2)(2)

**[10]**

#### QUESTION 4

Study the diagram illustrating one of the factors that influence temperature and answer the following questions:



4.1 Identify the factor affecting temperature as illustrated on the diagram.

(1X1)(1)

4.2 Which place will be warmer – A or B?

(1x1)(1)

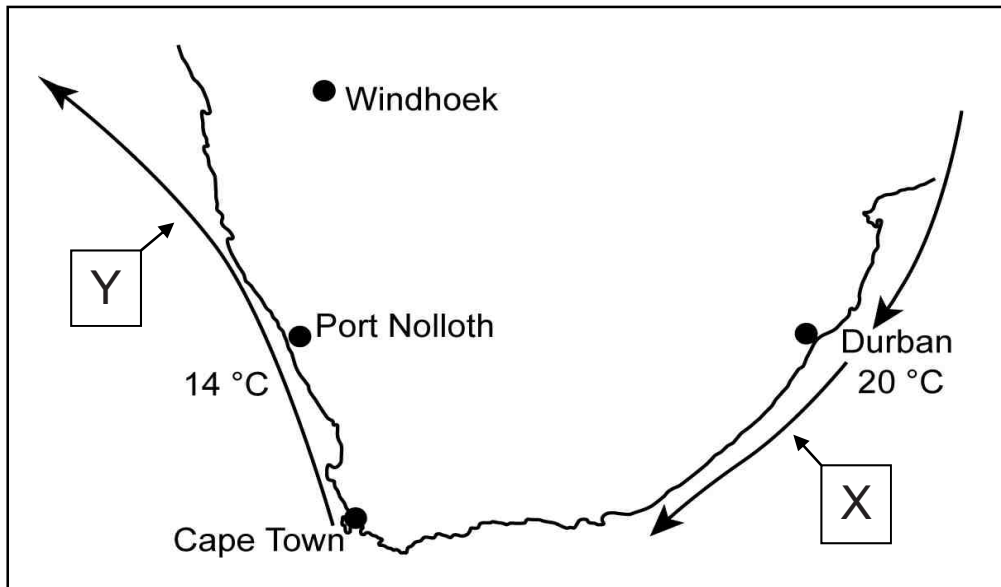
4.3. Provide TWO reasons evident on the diagram to support your answer in 4.2.

(2x2)(4)

**[6]**

## QUESTION 5

Study the sketch map showing the role of oceans and the distance from the sea on temperatures and answer the questions that follow.



- 5.1 Name the ocean currents labelled X and Y. (2x1)(2)
- 5.2 Where does the current labelled X originate (flow) from? (1x1)(1)
- 5.3 Where does the current labelled Y originate from? (1x1)(1)
- 5.4 What effect will the ocean current labelled X have on coastal temperatures around Durban? (1x2)(2)
- 5.5 Windhoek is found inland and has a continental climate. Explain what you understand by “continental” climate. (1x2)(2)
- 5.6 Durban has a maritime climate. Explain the concept maritime climate. (1x2)(2)
- 5.7 Calculate the temperature difference between Durban and Port Nolloth. (1x2)(2)
- 5.8 Durban and Port Nolloth lie more or less on the same latitudinal line, but there is a difference in temperatures between these two places. Account for the temperature difference. (2x2)(4)

[16]



## QUESTION 6

Study and analyse the article below before answering the questions.

### Forget the wet, our future is dry

Global warming is already here – and as it gains momentum, Southern Africa can expect to get less rain in the years ahead. University of Pretoria meteorology scientist François Engelbrecht says: "Industrialised countries are not doing enough to cut back on greenhouse gases and the effects on the Southern African regions will be devastating. Even if industrialised countries stopped greenhouse gases, it would take many years to turn around the effects of global warming."

The Cape is getting reduced rainfall as the cold fronts are pushed further and further south by the development of a high-pressure belt over the country. This has been fed by air that is heated by greenhouse gases over the equator and pushed north and south when it can rise no further. This is the cause of climate change in South Africa.

In fact, in the future the Cape may have to look at changing its agricultural products to handle the drier weather. But other regions are also suffering from less rainfall, including the Free State, Gauteng and Mpumalanga. The Northern Cape and parts of the Eastern Cape, however, have been getting wetter. "Unless greenhouse gas emissions can be radically cut, we don't see this scenario changing. It is going to get worse and the southern African sub-continent is going to be very dry," says Engelbrecht.

South Africa no longer has a normal climate and the severe weather events in other parts of the world suggest that this is a global phenomenon. The United Kingdom and the United States experienced severe flooding in 2004; Europe experienced severe heat waves; and North America was hit by a number of exceptionally strong hurricanes.

(Source: Adapted from The Star, 10/12/2004)

- 6.1 Define the term global warming. (1x1)(1)
  - 6.2 Name TWO of the most important greenhouse gases in the atmosphere. (2x1)(2)
  - 6.3 According to the source, what can the Cape people do to handle the drier weather? (1x2)(2)
  - 6.4 What is the main cause of global warming as highlighted in this article? (1x2)(2)
  - 6.5 Give a suggestion from the text that implies that global warming has become a world issue. (1x2)(2)
  - 6.6 You are the minister of Environmental Affairs in South Africa. In a paragraph of not more than eight lines provide THREE strategies to reduce the effects of global warming. (3x2)(6)
- [15]**

## MEMORANDUM

- 1.1. A Troposphere ✓  
 B Stratosphere ✓  
 C Mesosphere ✓  
 D Thermosphere ✓ (4 X 1) (4)
- 1.2. Troposphere ✓ (1 X 1) (1)
- 1.3. Troposphere✓ and Mesosphere✓ (2 X 1) (2)
- 1.4. Stratosphere✓ and Thermosphere✓ (2 X 1) (2)
- 1.5. It has warmer temperatures,✓✓ It has oxygen molecules to sustain life. ✓✓  
 Any 1 (1 X 2) (2)
- 1.6. Tropopause✓ (1 X 2) (2)
- 1.7. They will be above any bad weather and optimise fuel burn, ✓✓  
 there is no drag on the aircraft. ✓✓ (1 X 2) (2)
- 1.8. Stratosphere✓ (1 X 1) (1)
- 1.9. Global warming will occur as there will be higher levels of CO<sub>2</sub>.✓✓ (1 X 2) (2)

## QUESTION 2

- 2.1 Dobson Units✓ (1 X 1) (1)
- 2.2 Spring ✓ (1 X 1) (1)
- 2.3 Irene✓ (1 X 1) (1)  
 The number is of a lower value ✓✓ (1 X 2) (2)
- 2.4 England✓ (1 X 1) (1)
- 2.5 It keeps the earth warmer. ✓✓  
 Exotic plants are able to grow. ✓✓  
 It absorbs/ traps the long-wave radiation. ✓✓ Any ONE (1 X 2) (2)
- 2.6 Making people aware/spreading awareness✓✓  
 Legislate the emission and production of CFCs✓✓  
 Reduce and control industrial emission✓✓  
 Use of public transport ✓✓  
 Buying recycled and recycling✓✓ Any TWO (2 X 2) (4)

## QUESTION 3

- 3.1 3.1.1 Short-wave radiation ✓ (1 X 1) (1)
- 3.1.2 Long-wave radiation ✓ (1 X 1) (1)

3.2 Conduction is the transfer of heat through the air that is in contact with the earth surface ✓

Convection is where heat moves through the atmosphere by means of vertical air currents. ✓

3.3 Reflection of sunlight by surface of the earth, clouds, smoke, dust, salt particles. ✓✓

Scattering of the insolation when they strike other atmospheric gases, molecules and tiny particles. ✓✓

Absorption of the insolation by gases in the atmosphere. ✓✓

3.4 The ground and oceans receive about 45% of the insolation. ✓✓

This insolation is radiated back into the atmosphere as energy. ✓✓

The long-wave radiation continues during the night after the sun has set. ✓✓

(1 X 2) (2)

#### QUESTION 4

4.1 Latitude ✓

(1 X 1) (1)

4.2 B ✓

(1 X 1) (1)

4.3 Equator receives the direct sun rays ✓✓

Equator is closer to the sun ✓✓

Sun rays travel a shorter distance to the earth surface ✓✓

Small surface area to heat ✓✓

Sun rays pass through a small amount of atmosphere, less scattering reflection and absorption ✓✓

Any TWO

(2 X 2) (4)

#### QUESTION 5

5.1 X Mozambique ✓

Y Benguela ✓

(2 X 1) (2)

5.2 Equator ✓

(1 X 1) (1)

5.3 Poles ✓

(1 X 1) (1)

5.4 Temperatures will be moderate ✓✓✓ with cool summers and warmer winters, ✓✓✓ they have a fairly larger amount of precipitation, ✓✓ they have a smaller annual temperature range. ✓✓✓

Any ONE

(1 X 2) (2)

5.5 Climate which has properties of a large land mass ✓✓

(1 X 2) (2)

- 5.6 Climate influenced by the ocean. ✓✓ (1 X 2) (2)
- 5.7  $20^{\circ}\text{C} - 14^{\circ}\text{C} = 6^{\circ}\text{C}$  ✓✓ (1 X 2) (2)
- 5.8 Port Nolloth is found on the Western side of the continent. ✓✓  
 Its temperature is influenced by the Benguela current, which is cold. ✓✓  
 Port Nolloth experiences cooler and drier conditions. ✓✓  
  
 Durban is influenced by the warm current, which carries with it moisture. ✓✓  
 The Mozambique current will bring moisture into Durban, increasing the precipitation  
 cooling and warmer temperatures. ✓✓ (2 X 2) (4)

## QUESTION 6

- 6.1 Global warming is the change in the world climate caused by the rising temperatures. ✓  
 (1 X 1) (1)
- 6.2 Water vapour, ✓ methane ✓, nitrous oxide ✓ and carbon dioxide. ✓ Any TWO (2 X 1) (2)
- 6.3 They may change their agricultural products to handle colder weather ✓✓. (1 X 2) (2)
- 6.4 Greenhouse gas emissions. ✓✓ (1 X 2) (2)
- 6.5 It strikes all continents/ South Africa, United Kingdom, United States, Europe and  
 North America are affected. ✓✓ (1 X 2) (2)
- 6.6 Reducing the greenhouse gas emissions ✓✓  
 Increasing the capacity of carbon sinks. ✓✓  
 Using public transport ✓✓  
 Revegetation/ afforestation ✓✓  
 Reduce, re-use, recycle ✓✓  
 Use less electricity ✓✓ Any THREE (3 X 2) (6)

## Exemplar 4

### DATA HANDLING

MARKS: 70

#### QUESTION 1

##### Instructions:

Study the temperature and rainfall data of Bloemfontein provided in the figure below and answer the questions that follow:

FIGURE 1.1

BLOEMFONTEIN												
Months	J	F	M	A	M	J	J	A	S	O	N	D
Temperature in °C	22	23	20	17	12	9	7	10	13	15	19	21
Rainfall in mm	90	84	82	55	23	8	10	12	16	46	65	68

- 1.1. Draw a bar graph showing the annual rainfall distribution for Bloemfontein.

12x1 (12)

Use the following scale.

**Vertical axis:** 1 cm = 10 mm rain  
**Horizontal axis:** 1 cm = 1 month

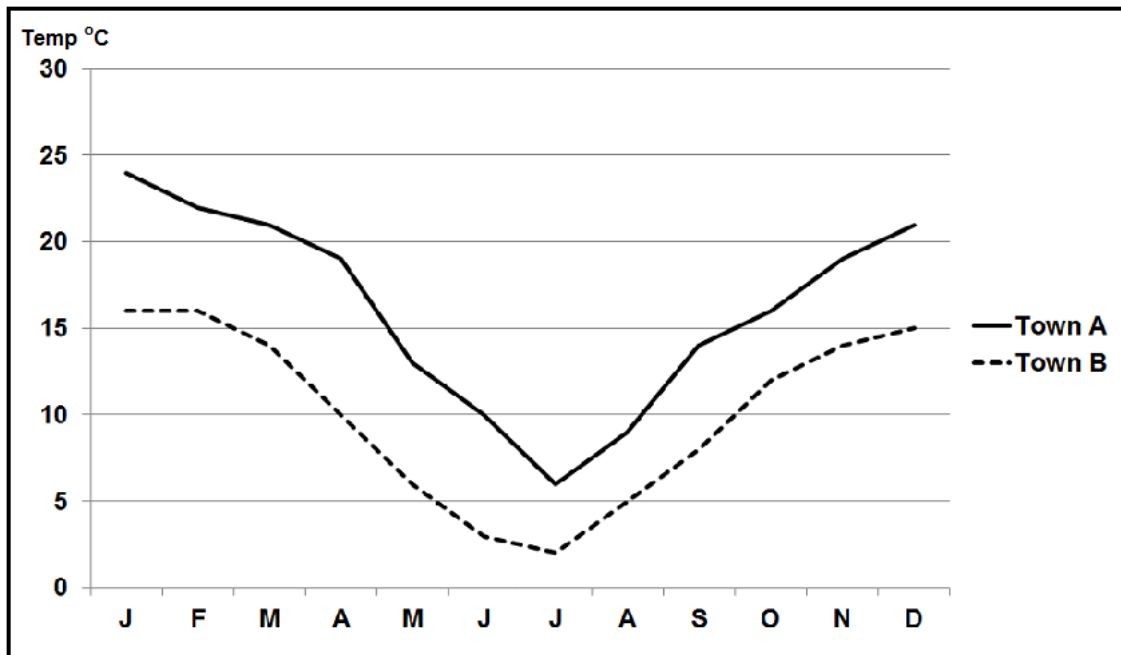
- 1.2. Refer to FIGURE 1.1 and the bar graph drawn in question 1.1 and answer the following questions. Show all calculations.

- 1.2.1 During which month was the highest rainfall recorded? 1x1 (1)
- 1.2.2 During which month was the lowest temperature recorded? 1x1 (1)
- 1.2.3 Calculate the average rainfall of Bloemfontein. 2x2 (4)

[18]

## QUESTION 2

The graphs below show the influence of latitude on monthly average air temperatures of towns A and B. Study the graphs and answer the questions that follow.

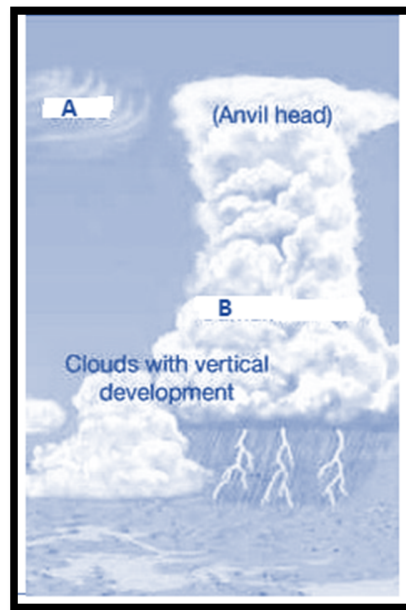


- 2.1 (a) Indicate which of the towns experienced:
- (i) the lowest air temperature 1x1 (1)
- (b) Which of the towns A or B is located further from the Equator? 1x1 (1)
- (c) Give TWO reasons for your answer in b 2x2 (4)
- 2.2 (a) In which hemisphere would both towns be found? 1x1 (1)
- (b) Give TWO reasons for your answer. 2x2 (4)
- 2.3 Discuss how latitudes affect temperature of the world. 2x4 (8)

[19]

### QUESTION 3

Refer to FIGURE 3.1 and answer the questions that follow.



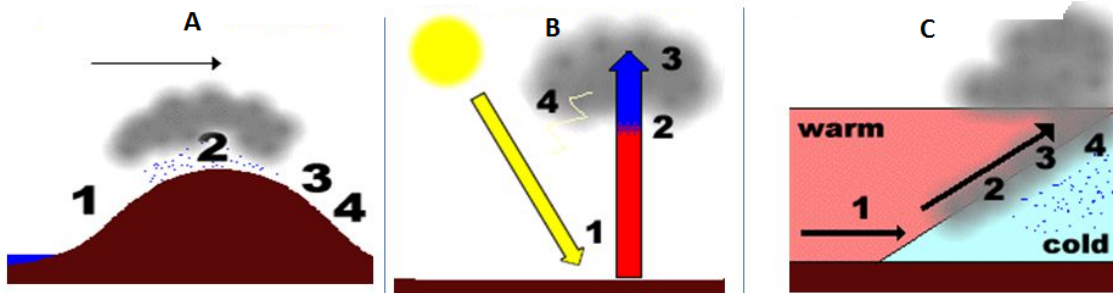
3.1.1 Name the cloud types A and B. (2x1) (2)

3.1.2 Distinguish between clouds A and B in terms of:

- a. Composition (2x2) (4)
- b. Weather conditions (2x2) (4)

3.2 Study FIGURE 3.2 indicating the types of rainfall and answer the following questions.

## Types of Rainfall



3.2.1 Label the letters A, B and C from FIGURE 3.2. (1x3) (3)

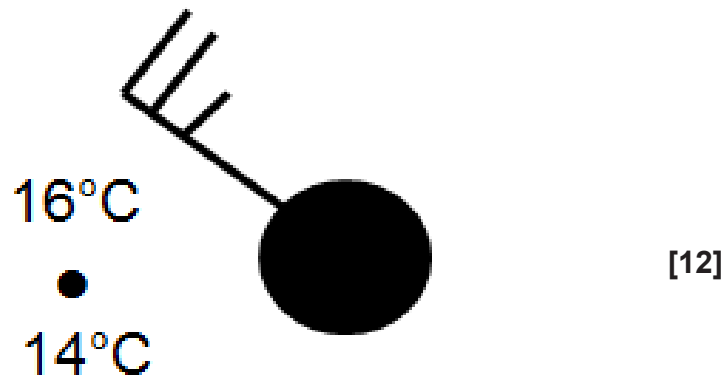
3.2.2 In a paragraph of about 8 lines, discuss the formation of the types of rain shown in A and B on FIGURE 3.2. (2x4) (8)

[21]



**QUESTION 4**

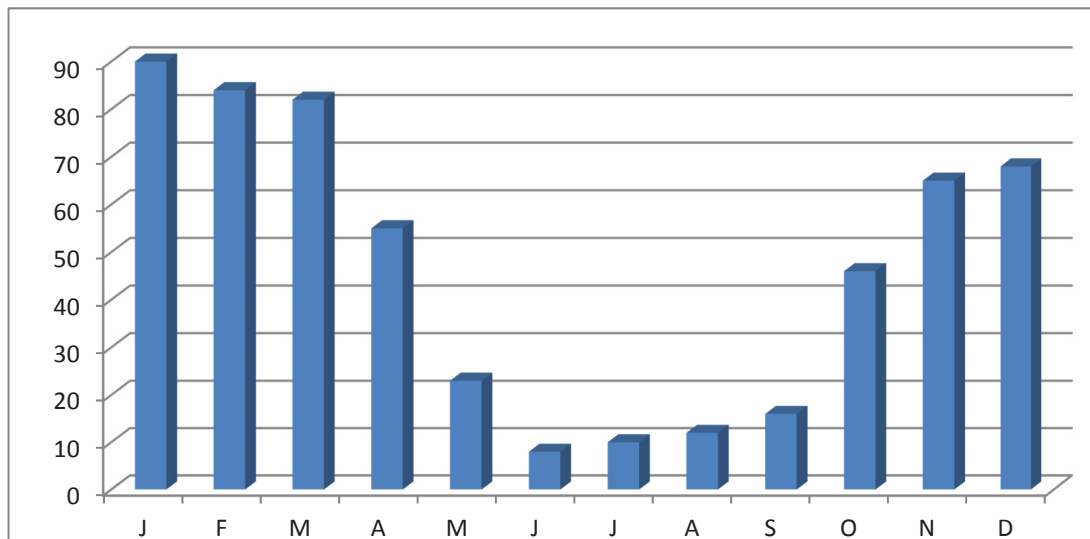
Read and interpret the weather conditions recorded at Cape Town weather station on 28 June 2016.



## MEMORANDUM

### QUESTION 1

1.1.



12x1 = (12)

1.2.1 January (1)

1x1 (1)

1.2.2 July (1)

1x1 (1)

1.2.3  $90+84+82+55+23+8+10+12+16+46+65+68 = 559$  mm

2x2 (4)

[18]

### QUESTION 2

2.1 (a)

(i) Town B (2)

1x1 (1)

(b) Town B (1)

1x1 (1)

(c)

- Latitudinal position (in lower latitudes temperatures are higher than higher latitudes)
- The angle at which the sun strikes the earth surface (lower latitudes at an acute angle, whereas at an higher latitude is at an oblique angle)
- The thickness of the atmosphere (closer to the equator the atmosphere is thinner than the higher latitudes)

2x2 (4)

2.2 (a) Southern Hemisphere (1)

1x1 (1)

(b) Lowest temperature in June  
Highest temperature in January

2x2 (4)

2.3 The equator is an imaginary line that horizontally divides the earth in half. Regions near the equator receive the most sun because of the shape of the Earth. The further away a place is from the equator, the more indirect the sunlight is because of the shape of the Earth angling away from the sunlight's direct path. The light also has to penetrate through less of the atmosphere to reach Earth's surface. The more direct sunlight is, the warmer the climate will be from the heat of the sun. That is why temperatures at the equator are considerably high compared to the rest of the world. In fact, the further a place is from the equator, the colder the temperatures get. When the sunlight strikes the Earth at farther angles, the rays are travelling a longer distance through the atmosphere. That is why temperatures at the North and South Poles are among the coldest places on the surface of the Earth.

2x4 (8)

[19]

### QUESTION 3

3.1.1. A: Cirrus

B: Cumulonimbus

1x2 (2)

3.1.2.

	A	B
Composition	Thin and wispy	Anvil-shaped and heavy
Weather conditions	No rainfall, only visible ice crystals	Heavy rainfall

2x2 (4)

2x2 (4)

3.2.

3.2.1. A. Orographic rainfall

B. Convectional rainfall

C. Cyclonic rainfall

1x3 (3)

### 3.2.2 A.

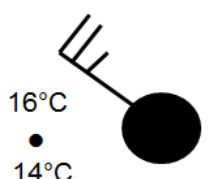
Orographic rainfall is rain that is produced from the lifting of moist air over a mountain. The moist air rises and cools, producing orographic clouds, which are the source of the rain. Most orographic rain falls upwind of the mountain range, with some also falling a short distance downwind. This process can produce any type of precipitation, including snow, sleet, hail or freezing drizzle

### B.

This process often causes clouds to develop. As the clouds become heavy, the weight of the clouds can cause precipitation, or convection rainfall. Convectional storms occur in many different geographic locations, but are more severe in tropical areas where water sources are abundant and climates are warmer.

2x4 (8)  
[17]

### QUESTION 4

Cloud cover	Overcast	(2)	
Air temperature	16° C	(2)	
Dew-point temperature	14° C	(2)	
Wind direction	North West	(2)	
Wind speed	25 knots	(2)	
Weather conditions	Rain	(2)	

2x6 (12)  
[12]

## Grade 10 Research/Essay

### Exemplar 1 ESSAY

MARKS: 100

#### INSTRUCTIONS TO LEARNERS

- Write a geographical based essay of about two to three pages (A4) on earthquakes/ volcanoes. These pages exclude the cover page and the reference page.
- Remember! This is an essay; it should have an
  - a. Introduction
  - b. Body
  - c. Conclusion in the form of paragraphs.
- N.B. Marks will also be allocated for language, structure and neatness of the work.
- Your essay should include the following:
  1. Definitions and explanation of concepts related to the geographical phenomenon **(Answering the geographical question: what is it?)**.
  2. State the origin/location and discuss conditions under which the geographical phenomenon occurs. (Answering the geographical question: **(Where does it occur and analysis and explanations of its causes?)**).
  3. Discuss the impact of the geographical phenomenon on the physical landscape/ environment and provide examples where possible. **(Answering the geographical question: what is the environmental impact?)**.
  4. Discuss the socio-economic impact of this geographical phenomenon on places where they have occurred by providing relevant examples. **(Answering the geographical question: what is the social and economic impact?)**.
  5. Discuss the strategies that governments can implement to manage the impact of this phenomenon. Provide relevant examples where some of these have been implemented successfully. **(Answering the geographical question: how should it be managed?)**.
  6. Conclude by providing a summary of the main key points of your essay and your personal view on this geographical phenomenon.

TOTAL (100)

## Rubric

	10-8	7-6	5-3	2-1
<b>Quality of information on definition and explanation of concepts</b>	Information on definitions and explanation of concepts are adequate and have several supporting details and/or examples.	Information on definitions and explanation of concepts are adequate but have one to two supporting details and/or examples.	Information on definitions and explanation of concepts are adequate but have no supporting details and/or examples.	Information on definitions and explanation of concepts are inadequate and have no supporting details and/or examples.
<b>Origin/location and conditions of occurrences</b>	Origin/location and conditions of occurrences are mentioned with several examples.	Origin/location and conditions of occurrences are least mentioned with one to two examples.	Origin/location and conditions of occurrences are mentioned with no examples.	Origin/location and conditions of occurrences are not mentioned.
<b>Environment/physical landscape impact with relevant examples</b>	Environment/physical landscape impact with relevant examples are specified.	Environment/physical landscape impact with relevant examples are scantily specified.	Environment/physical landscape impact with relevant examples not clearly specified.	Environment/physical landscape impact with no relevant examples are specified.
<b>Social and economic impact with relevant examples</b>	Social and economic impacts with relevant examples are specified.	Social and economic impacts with relevant examples are scantily specified.	Social and economic impacts with relevant examples not specified.	Social and economic impacts with no relevant examples are specified.
<b>Successful strategies to manage the impact and relevant examples.</b>	Successful strategies to manage the impact and relevant examples are specified.	Successful strategies to manage the impact and relevant examples are scantily specified.	Successful strategies to manage the impact and relevant examples are not specified.	Successful strategies to manage the impact and no relevant examples are specified.
<b>Summary of key points and personal view on the issue</b>	Summary of key points and personal view on the issue is comprehensively given.	Summary of key points and personal view on the issue is barely given.	Only summary of key points on the issue is given.	No summary of key points and personal view on the issue is given.
<b>Language, structure and neatness</b>	No grammatical, spelling or punctuation errors.	Almost no grammatical, spelling or punctuation errors	A few grammatical spelling, or punctuation errors.	Many grammatical, spelling, or punctuation errors.
<b>Paragraph construction</b>	All paragraphs include introductory sentence, explanations or details, and concluding sentence.	Most paragraphs include introductory sentence, explanations or details, and concluding sentence.	Paragraphs included related information but are typically not constructed well.	Paragraphing structure is not clear and sentences are not typically related within the paragraphs.
<b>Sources</b>	All sources (information) are accurately documented in the desired format.	All sources (information) are accurately documented, but a few are not in the desired format.	All sources (information) are accurately documented, but many are not in the desired format.	Some sources are not accurately documented.
<b>Organisation</b>	Information is very organised with well-constructed paragraphs and subheadings.	Information is organised with well-constructed paragraphs.	Information is organised, but paragraphs are not well-constructed.	The information appears to be disorganised.
<b>TOTAL</b>	<b>100</b>			

NAME: \_\_\_\_\_

Content	MARK	EDUCATOR's mark	MODERATED mark
Quality of information on definition and explanation of concepts	10		
Origin/location and conditions of occurrences	10		
Environment/physical landscape impact with relevant examples	10		
Social and economic impact with relevant examples	10		
Successful strategies to manage the impact and relevant examples	10		
Summary of key points and personal view on the issue	10		
Language, structure and neatness	10		
Paragraph construction	10		
Sources	10		
Organisation	10		
Total	100		

COMMENT:

Educator's signature: \_\_\_\_\_

Moderator's signature: \_\_\_\_\_



## Exemplar 2

### Research

- The task should not be less than four written A4 pages (excluding labeled pictures, diagrams and graphs).
- No plagiarism (copying work directly from any source) is allowed.
- It must be written in your own words.

### COLLECTION OF DATA/INFORMATION:

- Gather information on your topic from newspapers, magazines, the internet and watch TV or use the media centre/library.
- Interview people – ask them what they think causes the problem, how it affects them and what they think the possible solutions to the problem is. Use this in your research. It is important to know what people think.

### CHOOSE ONE OF THE FOLLOWING TOPICS FOR INVESTIGATION.

1. Global warming is a growing problem worldwide.
2. Pollution in my community poses a threat to the environment.
3. An earthquake is one of the most devastating disasters that can occur.
4. Impact of volcanoes on people and the environment; positive and negative.

### YOUR RESEARCH TOPIC:

Number **all steps** as you do this project from 1 – 9 (as each step counts marks)

- Step 1: Write down the heading of your topic.  
Find an **article** in a local or other newspaper/magazine/internet that highlights the topic of your choice. (Only original articles will be accepted) (6)
- Step 2: (Directly below your article) write the name of the topic you have chosen and give a **summary** of not more than THREE lines of what the article is about. (6)
- Step 3: **Give** the causes or reasons for the problem you investigated. ( $\pm \frac{3}{4}$  page) (6)
- Step 4: **Discuss** the effects or results of the problem you have researched. ( $\pm \frac{3}{4}$  page) (6)
- Step 5: **Suggest** possible solutions to the problem you have investigated. ( $\frac{1}{2}$  page) (6)
- Step 6: **Bibliography** (sources). List all the resources you have used accurately. (6)
- Step 7: **Plagiarism** (use of own words) – teacher's discretion. (6)
- Step 8: **Submission**: It is important to ensure that you hand it in on time. (6)
- Step 9: **Presentation**: Give your project a cover page and ensure that your name and topic are visible. (2)

[50]

TOTAL: 50 X 2 = 100

TOPIC:

\_\_\_\_\_

NAME:

\_\_\_\_\_

SCHOOL:

\_\_\_\_\_

GRADE: 10

STEPS		MAXIMUM MARKS	LEARNER'S MARKS	COMMENTS
1.	Article	6		
2.	Summary	6		
3.	Give causes or reasons for problems	6		
4.	Discuss effects of results	6		
5.	Suggest possible solutions	6		
6.	Bibliography	6		
7.	Plagiarism (use of own words)	6		
8.	Submission	6		
9.	Presentation	2		
	TOTAL:	$\frac{50}{100} \times 2 =$ 50 100	$\frac{\quad}{50} \times 2 =$ 100	

EDUCATOR: \_\_\_\_\_

MODERATOR: \_\_\_\_\_

**RUBRIC: RESEARCH PROJECT: GRADE 10: GIVE THIS RUBRIC TO EACH LEARNER PLEASE**

Drawn up by: M. Cronje, moderated by P. Delport and translated by C. Avenant

**TOTAL: 50 x 2 = 100**

	<b>1 / 2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>1. Article</b>	No article	Poor article	Satisfactory article	Good, relevant article	Excellent, relevant article
<b>2. Summary</b>	Poor THREE line summary/ less than three lines	Summary not very accurate/ relevant	Satisfactory summary	General summary well presented	General summary excellently presented
<b>3. Give causes / reasons</b>	Causes/ reasons poorly presented or incomplete	Causes/ reasons not very good	Satisfactorily presented	Well presented	Excellently presented
<b>4. Discuss effects / results</b>	Irrelevant discussion	Poor discussion	Fair discussion	Good to very good discussion	Excellent/ outstanding/ in-depth discussion
<b>5 Suggest solutions</b>	No clear solutions suggested to the problem	Poor/some fairly vague solutions suggested	Satisfactory solutions suggested	Good to very good solutions to the problem suggested	Excellent understanding of the relevance of research with sound suggestions
<b>6. Bibliography</b>	No sources used	One source used	Two sources used	Three different sources used	Three and more sources used with accurate references
<b>7. Plagiarism</b>	Copied from sources. Not own words	Copied mostly from sources	Fair amount of own words used	Generally/mostly own words used	Original work / own words used / Referenced sources
<b>8. Submission</b>	More than three days late	Two days late	One day late	On time	Earlier than submission date
<b>9. Presentation</b>	Untidy. No pictures used <b>ONE MARK</b>	Neat cover page with pictures <b>TWO MARKS</b>			
				<b>TOTAL: _____ X 2</b> <b>_____ 50 100</b>	

## Exemplar 3

### ESSAY

TOTAL: 100

*(Read the following before beginning the task)*

### BACKGROUND INFORMATION

#### EARTHQUAKES

JOHANNESBURG - At least five insurers will not pay for damages to houses caused by the recent earthquake that hit the country, according to a study released on Wednesday. "We approached some of the major building insurance providers in SA and found that five out of 17 providers could reject claims relating to the Orkney incident if it was found to be linked to mining activities," Justmoney editor Angelique Ruzicka said. The five are three of the four major banks – Standard Bank, Absa and Nedbank – and two specialist insurers, MUA and Addsure.

"Nedbank provides cover for mining-related damage but not if earthquakes result from acid mine drainage (AMD)," she said. "Specialist insurer MUA Insurance Acceptances offers standard earthquake cover, but if it's mining-related it won't uphold the claim," she said. Ruzicka said Standard Bank's policy stated that "You must prove that the damage was not caused by mining operations; and you must pay the first R2,500 or one percent of the loss or damage (whichever is higher) if it was caused by mining operations."

Justmoney is a website offering financial advice to consumers. Other companies surveyed included Telesure, Santam, and Hollard. A 5.5 magnitude earthquake struck the North West province on August 5, with the epicentre the mining town of Orkney. A 31-year-old man was killed and at least 34 miners were injured and more than 600 houses damaged.

According to the water and sanitation department, AMD is generated when sulphide-bearing minerals, often in the form of pyrite (found in reefs mined for gold), are exposed to oxygen and water. This process, termed pyrite oxidation, is characterised by the generation of sulphuric acid and dissolved iron.

Mandy Barrett of Aon SA pointed out that many South Africans were under-insured. "Financial times are tough and many households have reduced their sums insured in a bid to try and cope with skyrocketing living costs.

"What most forget to factor into their decision is the fact that you will most likely have to replace all your household content and possibly even the entire structure of your home in the event of a catastrophic event," said Barrett. Poor workmanship could also contribute to claims being rejected. **Source from Sapa**

1. Use these questions and ideas to find out more about earthquakes.
  - 1.1. Investigate how earthquakes occur. Use text and diagrams to explain the phenomenon.
  - 1.2. Research the way earthquakes are measured.  
Define terms such as:
    - a. Seismographs
    - b. Richter scale
    - c. Aftershock
    - d. Epicentre
    - e. Earth tremor
2. Research the San Andreas Fault. Find its location and size and answer the following questions:
  - a. Why is it an important fault?
  - b. Was the 2014 Orkney earthquake related to the San Andreas Fault?
  - c. What were some features of this quake (Orkney) that caused it to make it into the history books?
3. Refer to a map (**Tip: Use an Atlas to find soil and rock types of your area or neighbourhood**) to discover which rock and soil types your house / school / township / suburb is built on. How might this affect the building's chance of withstanding an earthquake?
4. Describe the damage caused the Orkney quake.
5. Suggest strategies that countries can implement to manage earthquakes.

**RUBRIC: ESSAY WRITING: GRADE 10: GIVETHIS RUBRIC TO EACH LEARNER**

<b>CRITERIA</b>	<b>8-10</b>	<b>6-7</b>	<b>3-5</b>	<b>1-2</b>
<b>How earthquakes occur</b>	Earthquakes are well described. Diagrams and illustrations are neat, accurate and add to the reader's understanding of the topic.	Earthquakes are well described. Diagrams and illustrations are accurate and add to the reader's understanding of the topic, but lack neatness.	Earthquakes are superficially defined. Diagrams and illustrations accurate and sometimes add to the reader's understanding of the topic.	Information has little or nothing to do with the earthquakes.
<b>Definitions: Seismograph Richter Scale Aftershock Epicentre Earth Tremor</b>	All five terms are addressed and with at least 2 sentences about each.	Four terms are addressed with at least 2 sentences about each.	Three or less terms are addressed with at least 2 sentences about each.	One or two topics were addressed with at least 1 sentence.
<b>San Andreas Importance</b>	Information clearly relates to the main topic. It includes several supporting details and/or examples.	Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.	Information clearly relates to the main topic. No details and/or examples are given.	Information has little or nothing to do with the main topic.
<b>Relationship between Orkney and San Andreas</b>	The relationship was adequate indicating all the possibilities.	The relationship was adequate indicating few possibilities.	The relationship was not adequate.	No relationship made.
<b>Features of the quake</b>	At least 5 relevant features were discussed with additional information.	At least 3 features were discussed with minimum information.	At least 2 features were discussed with little information.	No features were discussed.
<b>Rock and soil types</b>	Rock and soil types were mentioned and effects elaborated.	Rock and soil types were mentioned and effects not elaborated.	Only soil type was mentioned.	No soil and rock types mentioned.
<b>Damage caused</b>	At least more than 5 damages were mentioned.	Only 3 damages mentioned.	Only two damages mentioned.	No damages mentioned.
<b>Management strategies</b>	Strategies mentioned are adequate and acceptable.	Strategies mentioned are few and acceptable.	Strategies mentioned are not acceptable.	No strategies mentioned.
<b>Plagiarism</b>	Generally/mostly own words used.	Original work / own words used / (Referenced sources).	Copied mostly from sources.	Copied from sources. Not own words.
<b>Bibliography</b>	Three and more sources used with accurate references.	Three different sources used.	One source used.	No sources used.
<b>TOTAL</b>	<b>100</b>			

## Exemplar 4

### ESSAY

MARKS: 75

### INSTRUCTIONS AND INFORMATION

#### Notes to the learner

- Your essay must have an introduction, body, conclusion and list of references.
- Use the guidelines provided as subheadings for the body of your research.
- You are expected to refer to different sources when answering the questions. You may use relevant websites to help you get the relevant information. You may also use your textbooks and other relevant sources.
- You are expected to write the essay in your own words. Marks will be deducted for copying directly from references without acknowledging the source.
- *Your research or essay must consist of 4 – 5 typed or 5 – 6 written pages.* (Use Arial 12 ; 1,5 spacing if you type your essay).

#### TOPIC: POPULATION MOVEMENTS

“... Population of many species are not completely isolated and are connected by movements of individuals (immigration and emigration) among them. Consequently, the dynamics are determined by both population’s life history and the patterns of movement of individuals between populations.”

(Source: **Article by Jill Mackechnie**)

Write an essay about population movements and refer to the following as your guide:

Definition of migration  
Kinds of population movement  
Cause and effects of population movements  
Temporary and permanent movements  
Attitudes to migrants  
Solutions and mitigation to population movements.  
Make use of *sources*.

***Your essay must consists of 4 – 5 typed or 5 – 6 written pages.***

(Use Arial 12 ; 1,5 Spacing if you type your essay).

#### ***Technical appearance must include:***

- a) Front page with all the relevant information (your name; school; topic; etc.)
- b) Index
- c) Introduction
- d) Content
- e) Conclusion
- f) Bibliography (at least 3 sources)



Research Task Assessment Rubric					
	1 – 2	3 - 5	6 - 7	8 - 10	
<b>Summarise information from another source</b>	The report is not in the learner's own words.	At least 40% of the report is in the learner's own words	At least 60% of the report is in the learner's own words.	All of the report is in the learner's own words.	10
<b>Content</b>	Content is minimal OR there are several factual errors.	Includes essential information about the topic but there are 1-2 factual errors.	Includes essential knowledge about the topic. Subject knowledge appears to be good.	Covers topic in-depth with details and examples. Subject knowledge is excellent.	10
<b>Relevant Information</b>	Information not relevant or accurate. Learner does not express his/her own view.	At least 40% of information is relevant and accurate. Learner does express some of his/her own views, but limited	At least 60% of information is relevant and accurate. Learner expresses own views, but cannot substantiate	All information is relevant and accurate. Learner able to provide their own views clearly and support their views	10
<b>Originality</b>	Uses other people's ideas, but does not give them credit.	Uses other people's ideas (giving them credit), but there is little evidence of original thinking.	Product shows some original thought. Work shows new ideas and insights.	Product shows a large amount of original thought. Ideas are creative and inventive.	10
<b>Number and variety of resources</b>	Learner used information from one resource only.	Learner used information from 2 resources	Learner has used 3 different and a variety of resources.	Learner has used 4 or more resources of different types.	10
<b>Requirements</b>	More than one requirement was not completely met.	One requirement was not completely met.	All requirements are met.	All requirements are met and exceeded.	10
<b>Timeframes</b>	Learner has not kept to time-frames. Task handed in three weeks or more after due date.	Learner has handed in task two weeks after due date	Learner has handed in task one week after due date	Learner is able to keep all timeframes. Task handed in on time	10
<b>Organisation</b>	There was no clear or logical organisational structure, just lots of facts.	Content is logically organised for the most part.	Uses headings or bulleted lists to organise, but the overall organisation of topics appears flawed.	Content is well organised using headings or bulleted lists to group related material.	10
<b>Use of paragraphs</b>	No paragraphs used	Paragraphs are used. Information in the paragraph does not fit the heading of the paragraph	Paragraphs are clearly outlined. Ideas are not well- structured but ideas could still be understood	Effective use of paragraphs, ideas well-structured and clearly developed	10

<b>References and referencing technique</b>	No references used/ no indication to references/ parts of text are plagiarised	References are done but referencing list is missing some elements.	Referencing technique is correct. The following sequence was used: Authors, date of publication and title of books, and publishers.	Referencing technique is correct. Sources are listed alphabetically at end of the essay. The following sequence was used: Authors, date of publication and title of books, and publishers.	10
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**75 marks**

## Exemplar 5

### RESEARCH

#### Instructions:

- Plan and carry out a research on a problem/issue that is being experienced in your local community
- The problem/issue may have been reported in a news bulletin on television/radio/ print/electronic/social media and that is either local to your area (community news) / province or national.
- Once you have gathered the required information through your research, you will write a report in which you will discuss your findings.
- When choosing a problem/issue to investigate, ensure that:
  - It has a strong geographical link to Grade 10 content
  - You will not be put into a dangerous situation while doing your investigation.
  - Your gathered information is not entirely from the internet
  - Ensure that all resources, extracts, quotations are referenced (declared/acknowledged) where required in a bibliography
  - Strictly stick to the timeframes that your teacher gives to you.

#### Note to learner:

1. You are required to do a research and write a report in your own words. Learners who merely 'cut and paste' articles and pictures or copy information directly from the source will be penalised
2. You will be given two weeks to complete this task
3. You may hand in a typed or handwritten report
4. Failure to hand in the research task on the due date (determined by the educator) will result in you receiving a penalised/reduced mark for this task

#### Note to the teacher:

1. Teachers must give the assessment rubrics to the learners before they start with the research/essay task
2. This task is due in term 3 and teachers must give the learners a clear management plan with due dates and deadlines
3. Teachers must check the articles that the learners have chosen before they begin the task to ensure that the article has a link to the Geography syllabus
4. You may choose from the examples below

## Research Proposal

### Step 1: Formulating a hypothesis/problem statement

As geographers we seek to understand and explain the interactions amongst humans, and between humans and the environment in space and time.

This is achieved by asking questions or making informed geographical decisions. This entails the development of a *hypothesis* or a *problem statement* to be tested.

- You have to choose a specific area of study where a geographical problem exists.
- During this stage, a geographical question showing a problem is asked.
- Identify the problem from a local area.
- Formulate a hypothesis or a problem statement. (Hypothesis research is used to prove that certain variables are dependent on or independent of each other. Problem statement research is only to highlight that a specific problem exists in a specific community.)
- You should then follow the steps of research to ensure that geographical questions are answered.

A hypothesis is from Population Geography: Population distribution, density, movements and, HIV and Aids:

You may choose from the following hypothesis research topics:

- Employment opportunities or lack thereof affect distribution and density of population in **YOUR AREA**
  - or*
  - Population movements from rural to urban areas in **YOUR AREA** have positive/negative implications for people leaving/coming to your province / district / municipality. (You may focus on regional migration, rural-urban migration, urbanisation, voluntary and forced migration)
  - or*
  - HIV and Aids have negative social and economic effects on population structure in your province/ district /local municipality / town/ village
- (4)

**Step 2: Background information about an area of study**

- You must explain where in South Africa the study area is located. For example indicate the province, district and /or municipality

(6)

**Step 3: Mapping**

- You must provide a Google or freehand map of the area in question.
- During this stage you must create a buffer zone around the area where the geographical problem exists.
- The map should have a clear legend/key.

(5)

**Step 4: Methods of data collection**

**(Choose the method of data collection that is relevant to you).**

**(a) PRIMARY DATA SOURCES**

- The use of questionnaires
- Interviews
- Observations
- Field trips

**OR**

**(b) SECONDARY DATA SOURCES**

- Newspaper articles
- Government department statistics
- Books
- Internet

(5)

**Step 5: Analysis and synthesis of data**

- Use collected data now to formulate a discussion around the existing geographical problem.
- At this stage you should represent some of the information graphically where necessary, for example graphs and sketches.
- Analyse graphic information during this stage

(14)

**Step 6: Recommendations and possible solutions**

- You should now make recommendations to solve the geographical problem in question.
- You should present your original and realistic opinions as far as you possibly can.

(5)

### **Step 7: Conclusion – accept or reject the hypothesis**

- You should now take a decision to either ACCEPT or REJECT the hypothesis.
  - Give reasons for either ACCEPTING or REJECTING the hypothesis.
- (4)

### **Step 8: Bibliography**

- You must include a comprehensive bibliography.
  - List websites in full.
- (3)

### **Step 9: Submission**

- On submission, ensure that a suitable cover page is included with relevant information.

(4)

**TOTAL : 50**

# MARKING RUBRIC FOR A RESEARCH TASK

NAME OF LEARNER: \_\_\_\_\_

GRADE: 10

RESEARCH TOPIC: \_\_\_\_\_

Mark	1	2 - 3	4			Teacher Mark	Moderator Mark
Formulation of hypothesis/ problem statement	Learner has not understood the formulation of a hypothesis/ problem statement and has merely stated a topic.	Learner has formulated a hypothesis/ problem statement for a research topic and is specific about an area, but not about a geographical problem or impact of the problem	Learner has formulated a hypothesis/ problem statement that accurately describes a specific geographical problem and its impact in a specific area.				
MARK	1	2 - 3	4	5 - 6		Teacher Mark	Moderator Mark
Step 2 Background information	Unable to give a description or background information of the area being studied.	Some description of an area is provided with limited background information given	Relevant description of an area of study with most of the background information provided.	Learner has fully described the study area and has provided the appropriate background information			
Mark	1	2	3	4	5	Teacher Mark	Moderator Mark
Step 3 Mapping	Irrelevant map included with no information	Relevant map of area included with limited information and no legend.	Relevant map of research area included with appropriate legend and limited detail.	Relevant research area identified on a map with an appropriate legend, appropriate labels and use of scale.	Accurate map used with appropriate detail showing accurate details of buffering and delineation of research areas with appropriate information, including a legend and a scale.		
MARK	1	2	3 - 4	5		Teacher Mark	Moderator Mark
Step 4 Data collection	Only one primary or one secondary source of data is used.	Primary and secondary sources of data collected which inadequately informs	Primary and secondary data sources that mostly enable an understanding of the research area	A variety of primary and secondary data sources collected, that accurately describe the			

		research methodology.	studied.	hypothesis			
<b>MARK</b>	<b>1 - 3</b>	<b>4 - 6</b>	<b>7 - 9</b>	<b>10 - 12</b>	<b>13 - 14</b>	<b>Teacher Mark</b>	<b>Moderator Mark</b>
Step 5 Analysis and synthesis of data .	The learner shows little understanding of the topic and is unable to identify, interpret or show the effects from the sources used.	The learner is able to identify some of the problems from the sources but shows limited understanding of interpretation and effects	The learner is able to identify and interpret the sources in most cases, but shows limited ability to show the effects.	The learner is able to identify the problems and interpret all the sources and is able to show some insight into the effects.	The learner is able to identify the problems and interpret all the sources and is able to provide clear insight into the effects.		
<b>MARK</b>	<b>1</b>	<b>2 - 3</b>	<b>4</b>	<b>5</b>		<b>Teacher Mark</b>	<b>Moderator Mark</b>
Step 6 Recommendations and solutions	The learner is unable to provide relevant recommendations and solutions to the problem.	The learner could only provide some recommendations and solutions to the problem	The learner is able to provide most of the recommendations and solutions to the problem.	The learner provides clear insight into all relevant recommendations and possible solutions to the problem.			
<b>MARK</b>	<b>0</b>	<b>1 - 2</b>	<b>3 - 4</b>			<b>Teacher Mark</b>	<b>Moderator Mark</b>
Step 7 Conclusion	No conclusion provided.	Conclusion provided but the learner does not accept or reject the hypothesis/ problem statement.	Conclusion provided with an acceptance or rejection of the hypothesis/ problem statement				
<b>MARK</b>	<b>0</b>	<b>1</b>	<b>2 - 3</b>			<b>Teacher Mark</b>	<b>Moderator Mark</b>
Step 8 Bibliography	No bibliography provided.	Bibliography provided is incomplete.	Bibliography provided is correct.				
<b>MARK</b>	<b>0</b>	<b>1 - 2</b>	<b>3 - 4</b>			<b>Teacher Mark</b>	<b>Moderator Mark</b>
Step 9 Cover page details.	No cover page is provided.	Cover page is provided with incomplete	Cover page contains all the required details.				

**TOTAL : 50**



# Grade 11

## Data-handling

### Exemplar 1

#### DATA HANDLING

MARKS 75

TIME: 1 hour

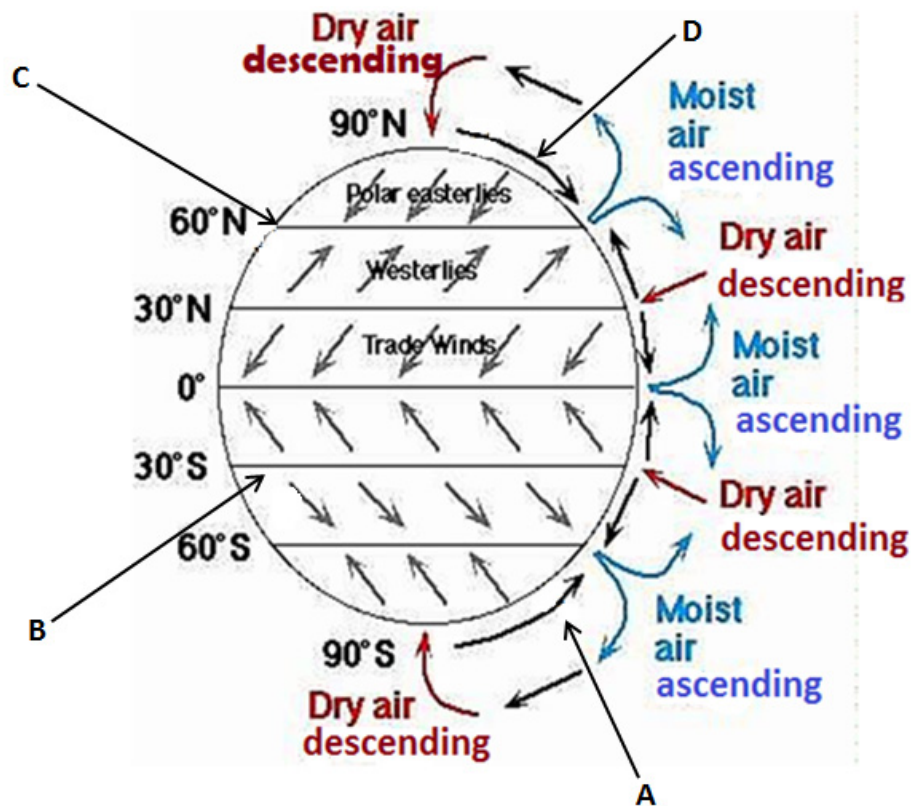
#### INSTRUCTIONS AND INFORMATION:

- Read the questions carefully before answering the questions.
- Answer ALL the question.
- Number the answers exactly as the questions have been numbered.
- This task must be done under test conditions in class.
- This is not an open book or homework task.

#### QUESTION ONE:

Refer to **FIGURE 1.1** to answer the following questions. Choose the correct answer and write only the letter (A – D) next to the question number (1.1.1 – 1.1.7) on the answer script, for example 1.1.8 E

Figure: 1.1

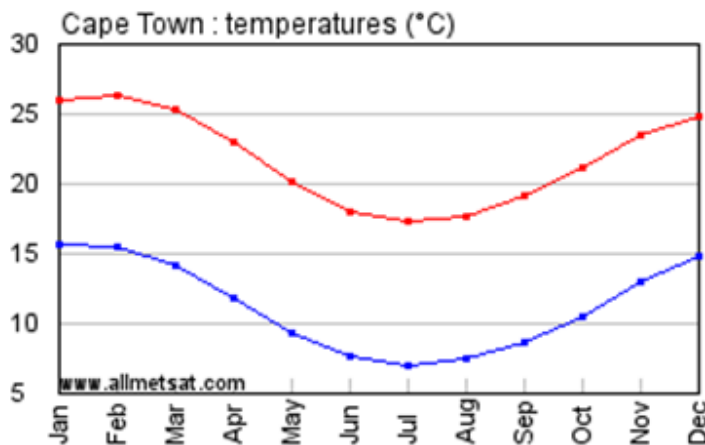


- 1.1.1 The ..... front is usually found at **A**  
A equatorial  
B mid latitude  
C sub-tropical  
D polar
- 1.1.2 The air pressure belt at **B** is the ...  
A sub-polar LP belt  
B sub-tropical HP belt  
C equatorial LP belt  
D polar HP belt
- 1.1.3 The air pressure belt at **C** is the ...  
A sub-polar LP belt  
B sub-tropical HP belt  
C equatorial LP belt  
D polar HP belt
- 1.1.4 The cell at **D** is the .....  
A Ferrell cell  
B Hadley cell  
C polar cell  
D divergence cell
- 1.1.5 The countries that lie 30° North and South of the equator are dry because of ...  
A Tropical cyclones  
B Mid latitude cyclones  
C Anticyclones  
D Hurricanes
- 1.1.6 The ITCZ is ...  
A Inter Tropical Convection Zone  
B Inner-wind Transport Convergence Zone  
C Inter Tropical Connection Zone  
D Inter Tropical Convergence Zone
- 1.1.7 A force that influences the speed of winds is called the ...  
A Pressure gradient force  
B Coriolis force  
C Geostrophic force  
D Primary force

(7x1)(7)

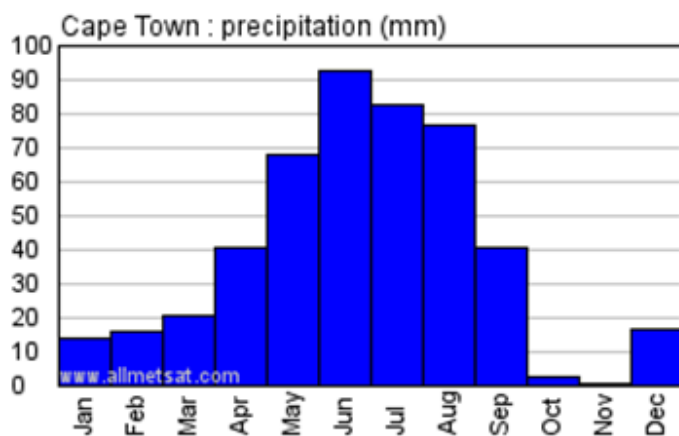
## Cape Town's Temperature and Precipitation:

1.2 Refer to FIGURE 1.2 A and 1.2 B and answer the questions.



Monthly average of the minimum and maximum daily temperatures.

°C



Precipitation is any kind of water that falls from the sky as part of the weather. This includes drizzle, rain, hail, sleet, or snow.

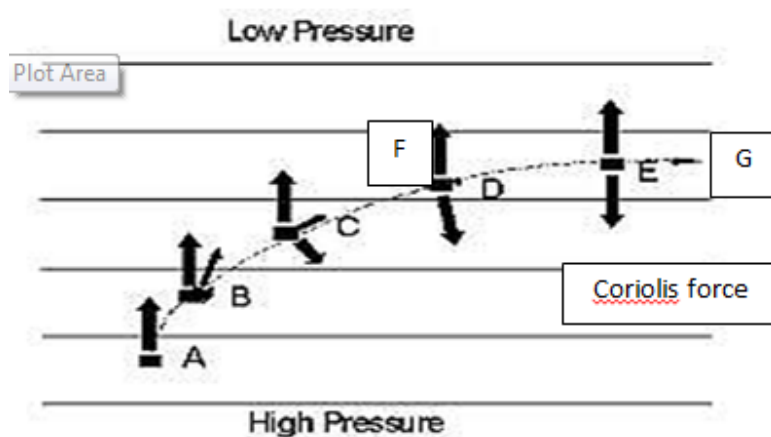
mm

- 1.2.1 State the maximum monthly average temperature experienced by Cape Town. 1x1 (1)
- 1.2.2 Calculate the temperature range of Cape Town. 2x1 (2)
- 1.2.3 Describe Cape Town's summer months. 1x1 (1)
- 1.2.4 State the maximum precipitation for Cape Town. 1x1 (1)
- 1.2.5 Calculate the average precipitation for the months of May to July. 1x2 (2)
- 1.2.6 Cape Town is known as a ... climatic region. 1x1(1)

(8)

### 1.3 PRESSURE GRADIENT, CORIOLIS FORCE AND GEOSTROPHIC WIND

Refer to **FIGURE 1.3** illustrating **Coriolis Effect**.

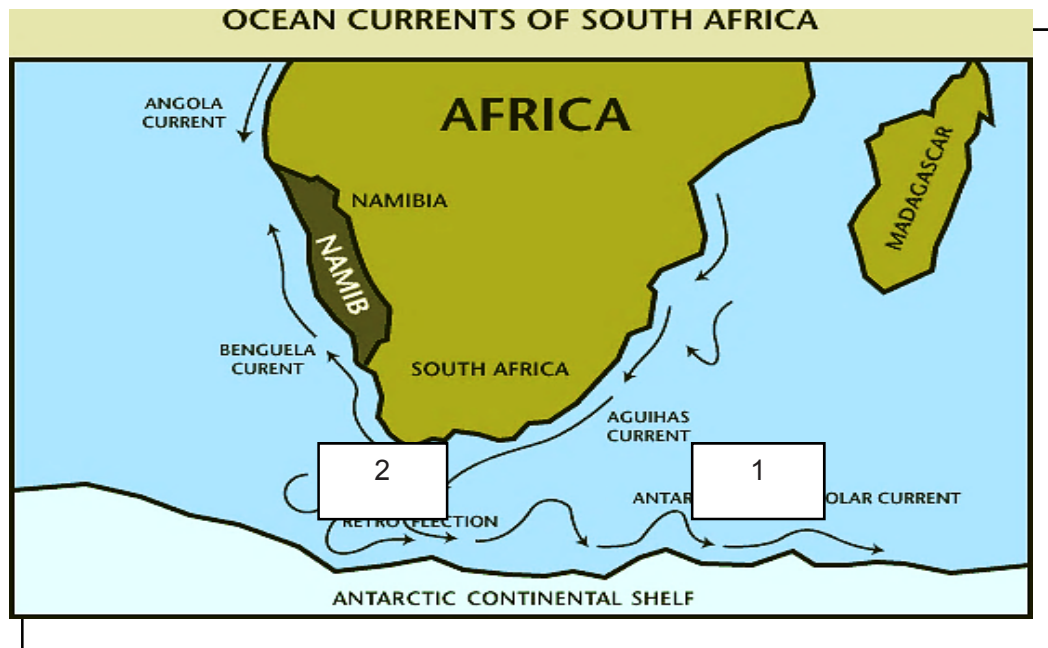


- 1.3.1 Define Coriolis force. (1x1)(1)
- 1.3.2 Describe the force that is responsible for the formation of Coriolis force. (1x2)(2)
- 1.3.3 Differentiate between the Coriolis effect in the northern hemisphere and the Coriolis effect in the southern hemisphere. (2x1) (2)
- 1.3.4 How does the strength of the Coriolis force change from the equator to the poles? (1x 2)(2)
- 1.3.5 Name the force at **F** where the wind blows from high pressure to low pressure. (1x1) (1)

[8]

## OCEAN CURRENTS:

Study **FIGURE 1.4** showing South Africa's **ocean currents**.

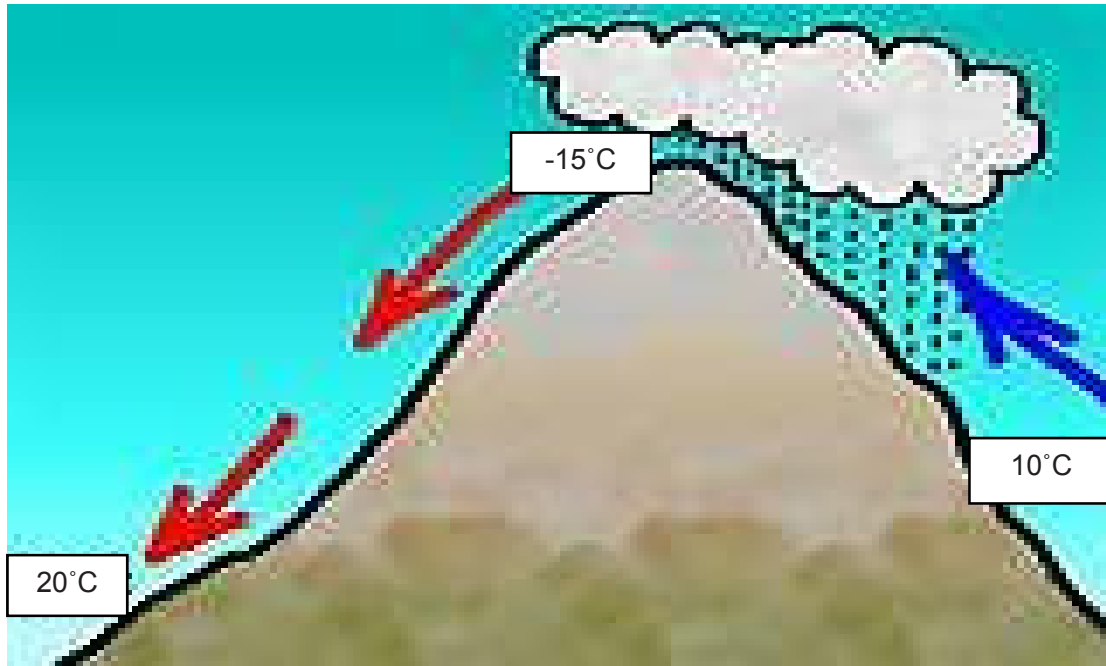


- 1.4.1 Name the **ocean** labelled 2 on the map. (1x1)(1)
- 1.4.2 Describe the direction of rotation of ocean currents in the southern hemisphere. (1x1)(1)
- 1.4.3 Explain how oceans act as a source of rainfall. (2)
- 1.4.4 Write a paragraph of approximately 8-10 lines in which you compare the difference in temperatures and rainfall on land of the coastal areas at 1 and 2 respectively. (4x2)(8)

[12]

## FÖHN WINDS

Refer to **FIGURE 1.5** illustrating a **Föhn wind** and answer the questions.



- 1.5.1 Define the term Föhn wind. (1x1)(1)  
1.5.2 Explain why the Föhn winds are hot and dry. (2x1)(2)  
1.5.3 Describe briefly how the Föhn winds occur. (3X2)(6)

[9]

## 1.6 EL NINO

Study **FIGURE 1.6A** and **1.6B** when answering the following questions:

FIGURE 1.6A – NORMAL CONDITIONS

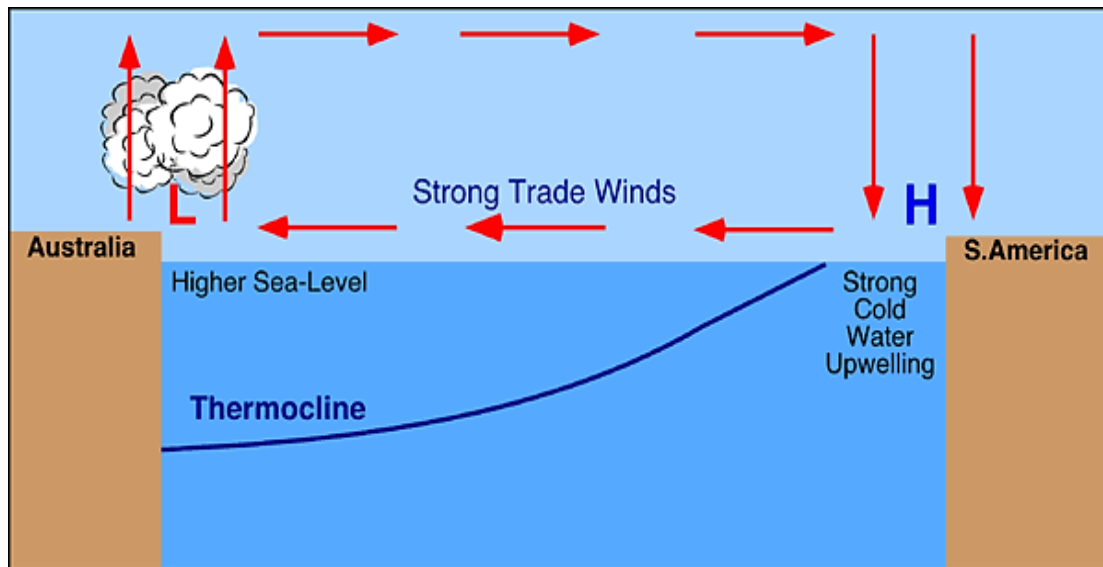
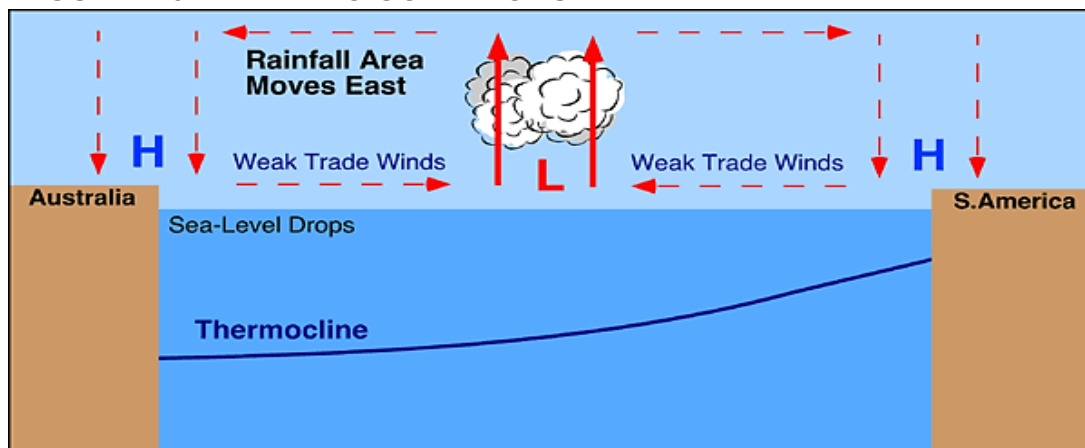


FIGURE 1.6B – EL NINO CONDITIONS



1.6.1 Compare the trade winds in **FIGURE 1.6A** to the trade winds in **FIGURE 1.6B**.

(1X2)(2)

1.6.2 Explain the main effect that El Nino has on the rainfall of Australia.

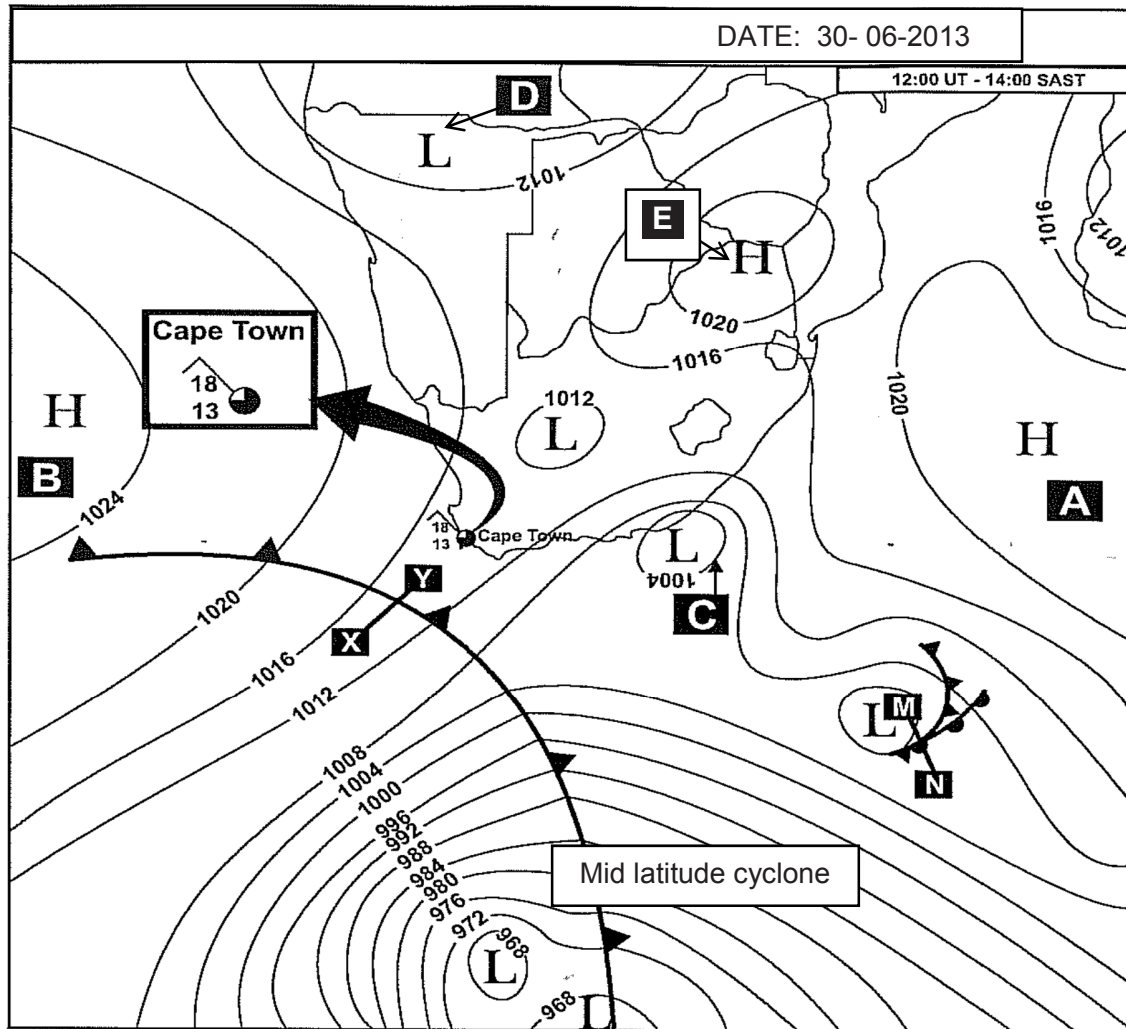
(1x2)(2)

1.6.3 “El Nino occurs periodically in the Pacific Ocean and may cause severe droughts in Africa”. Write a **paragraph** in which you predict the **effects (results)** of **drought** and how people and the economy might suffer.

(4x2)(8)  
[12]

## 1.7 SYNOPTIC WEATHER MAP

Refer to the **Synoptic weather map, FIGURE 1.7** and answer the questions.



- 1.7.1 Name the pressure cells labelled **A**, **B**, **C** and **E** respectively. (4x1)(4)
- 1.7.2 Use the station model to describe the weather in Cape Town. (5x1)(5)
- 1.7.3 Provide TWO pieces of evidence from the map which indicates that this is a winter map. (2x2)(4)
- 1.7.4 Predict the direction in which the Mid Latitude Cyclone will move. (1X2)(2)
- 1.7.5 Predict the changes in the weather at Cape Town as the cold front moves over Cape Town. (2X2)(4)

[19]

**GRAND TOTAL: 75**



## MEMORANDUM

### DATA HANDLING

#### GRADE 11

#### EXEMPLAR 1

#### MARKS 75

#### QUESTION 1

- 1.1.1 D – ☐ Polar
- 1.1.2 B – ☐ sub-tropical HP
- 1.1.3 A – ☐ Sub-polar LP belt
- 1.1.4 C – ☐ Polar cell
- 1.1.5 C – ☐ Anticyclones
- 1.1.6 D – ☐ Inter-tropical Convergence Zone
- 1.1.7 A – ☐ Pressure gradient force (7 x 1) (7)
- 1.2.1 26/ 27°C ☐ (1 x 1) (1)
- 1.2.2  $26^{\circ}\text{C} - 6^{\circ}\text{C} = 20^{\circ}\text{C}$  ☐☐ (Range: 19°C to 21°C) (1 x 2) (2)
- 1.2.3 Cape Town has a minimum of 15°C and a maximum of 26°C during the summer months.☐☐ They experience hot and dry summers. ☐ (1 x 1) (1)
- 1.2.4 91/ 92/ 93 mm ☐ (1 x 1) (1)
- 1.2.5  $68\text{mm} + 92\text{mm} + 82\text{mm} = 242\text{mm} \div 3 = 86.6\text{ mm}$  ☐☐ (Range 85mm – 87mm) 1 x 2) (2)
- 1.2.6 Mediterranean ☐ (1 x 1) (1)
- 1.3.1 An effect whereby a mass moving in a rotating system experiences a force acting perpendicular to the direction of motion and to the axis of rotation.☐ Force of deflection ☐ (1 x 1) (1)
- 1.3.2 The rotation of the earth on its axis causes Coriolis force. ☐☐ (1 x 2) (2)
- 1.3.3 Coriolis Force deflects wind to the right in the northern hemisphere and to the left in the southern hemisphere.☐☐ (1 x 2) (2)
- 1.3.4 Coriolis Force is stronger from the equator to the poles☐☐ (1 x 2) (2)
- 1.3.5 Pressure Gradient Force ☐ (1 x 1) (1)

- 1.4.1 South Atlantic Ocean/Atlantic ☐ (1 x 1) (1)
- 1.4.2 The direction of movement of ocean currents in the southern hemisphere is anticlockwise as the earth spins on its axis from west to east. ☐  
(1 x 1) (1)
- 1.4.3 Moisture can be carried towards the land in the form of humid air or clouds created by warm ocean currents.☐☐ When moisture rises up into the atmosphere it cools and condensation occurs☐☐ANY ONE (1 x 2) (2)
- 1.4.4 Coastal Area 1: Warm Mozambique/ Agulhas currents heat the air over the ocean bring higher temperatures over land. ☐☐  
Moisture is being carried by the onshore warm air. ☐☐  
When the moist humid air rises above the continent, ☐☐  
condensation occurs causing high amount of rainfall. ☐☐
- Coastal Area 2: The cold Benguela current can lower temperatures air over the ocean is cold and dry. ☐☐  
These onshore winds blow over the west coast causing temperature to drop ☐☐  
No rain as these cold winds do not carry moisture. ☐☐  
ANY FOUR. Should refer to both Coastal areas (4 x 2) (8)
- 1.5.1 A hot southerly wind on the northern slopes of the Alps.☐☐ (1 x 1) (1)
- 1.5.2 After passing the ridge and descending along the leeside of the mountain, the air becomes warmer/ the air heats adiabatically. ☐☐  
Temperature of drier air will rise even faster. ☐☐ This results in dry and hot winds. ☐☐ They are hot and dry because of friction with escarpment and compression.☐☐  
(1 x 2) (2)
- 1.5.3 Föhn winds are caused by the subsidence of moist air after passing a high mountain.☐☐ The air is forced to move upslope when it encounters a mountain barrier.☐☐ As the temperature decreases with height, the moist air will become saturated and condense to form clouds and rain ☐☐  
The amount of water vapour that remains in the air therefore decreases. ☐☐  
After passing the ridge and descending along the leeside of the mountain, the air becomes warmer. ☐☐  
Temperature of drier air will rise even faster. ☐☐  
This results in dry and hot winds. ☐☐ ANY THREE (3 x 2) (6)

- 1.6.1 Figure 1.6A – Tropical easterly winds are stronger whilst in Figure 1.6.B tropical easterly winds are weaker. ☐☐ (1 x 2) (2)
- 1.6.3 No rainfall/ It causes drought as no moisture is blown over the east coast of Australia. ☐☐ (1 x 2) (2)
- 1.6.3 Differences in vulnerability ☐☐  
 People die from starvation ☐☐  
 People might migrate to other areas ☐☐  
 Food shortages, malnutrition and famine ☐☐  
 Food usually has to be imported ☐☐  
 Products become more expensive ☐☐  
 Economy suffers due to fall in GDP ☐☐ (ANY FOUR) (4 x 2) (8)
- 1.7.1 A – South Indian Anticyclone (Mauritius HP) ☐  
 B – South Atlantic Anticyclone (St Helena HP) ☐  
 C – Coastal Low ☐  
 E – Kalahari /Continental HP ☐ (4 x 1) (4)
- 1.7.2 Air Temp – 18 °C; ☐  
 Dew point – 13°C; ☐  
 North westerly winds; ☐  
 10 knots wind speed. ☐  
 Cloud cover is ¾ / 75% ☐ (5 x 1) (5)
- 1.7.3 Cold front further north ☐  
 Anticyclones closer to land ☐  
 The date is during winter - 30/06 ☐  
 Presence of the Kalahari High ☐ (ANY TWO) (2 x 1) (2)
- 1.7.4 West to east/ easterly ☐ (1 x 2) (2)
- 1.7.5 Temperature decreases ☐☐  
 Pressure increases ☐☐  
 Cumulonimbus clouds form above the boundary of different air. ☐☐  
 Gale force winds and heavy rains. ☐☐  
 The clouds roll by as the cold front passes by. ☐☐ (ANY TWO) (2 x 2) (4)

## Exemplar 2

### DATA HANDLING

**MARKS: 75**

**TIME: 1 hour**

#### Instructions and information

1. This Assessment Task is set according to guidelines and assessment options as presented in the Geography CAPS document.
2. Learners will be required to perform the following actions:
  - Analysing and synthesising information from sources.
  - Drawing, analysing and interpreting graphs.
  - Reading and interpreting synoptic weather maps.
3. This Assessment Task consists of FOUR questions

**QUESTION 1:**

**Global air circulation**

**QUESTION 2:**

**The role of oceans in climate control**

**QUESTION 3:**

**Reading and interpreting synoptic  
weather map**

**QUESTION 4:**

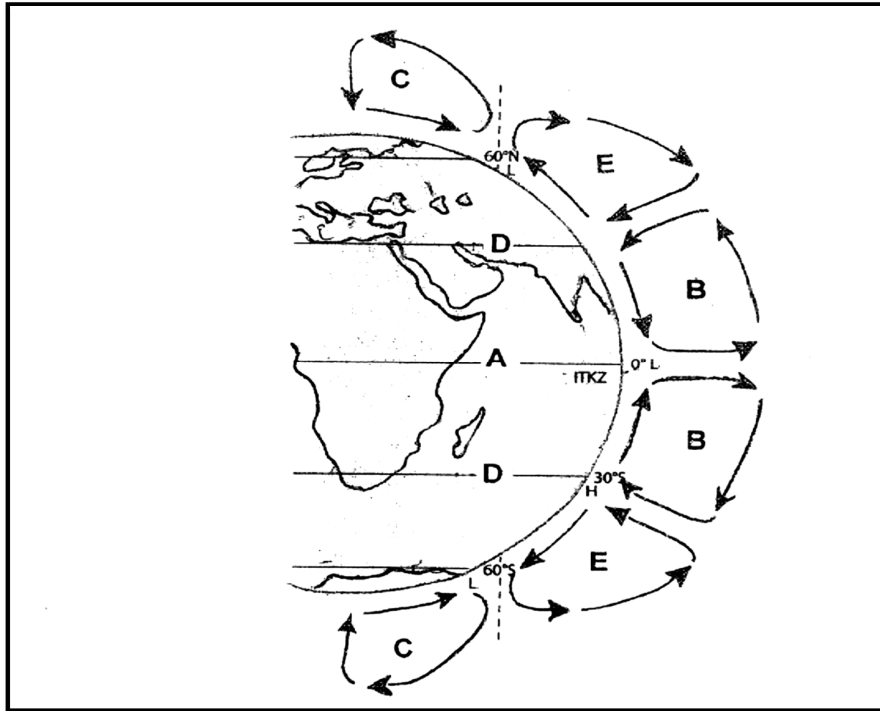
**EL Nino and La Nina**

4. The total time allocated to this task is 1 hour (60 minutes). (If periods are shorter, the task should be conducted over 2 periods.)
5. All the questions must be completed under controlled conditions.
6. The completion of all four questions of this task should not go beyond the first term.
7. ALL diagrams are included as part of the question.
8. Write clearly and legibly
9. All errors must be corrected and completed in pencil on the script by the learner as part of remediation of this task.

### Question 1: Global air circulation

- 1.1 Study the figure below showing global circulation and answer the questions that follow.

Figure 1.1



1.1.1 Identify surface winds at cell B and C 2x1 (2)

---

1.1.2 Re-draw the table below and compare the pressure system dominant at the area at 30° and 60° south of the equator. 6x1 (6)

	At 30° SOUTH	At 60° SOUTH
Rotation of air		
Associated weather		
Rising or descending air		

1.1.3 Draw a simple (freehand) cross section to illustrate the pressure system at 30° SOUTH 2x1 (2)

1.1.4 Write a paragraph of eight lines and explain how the cell at the area marked C is 4x2 (8)

formed.

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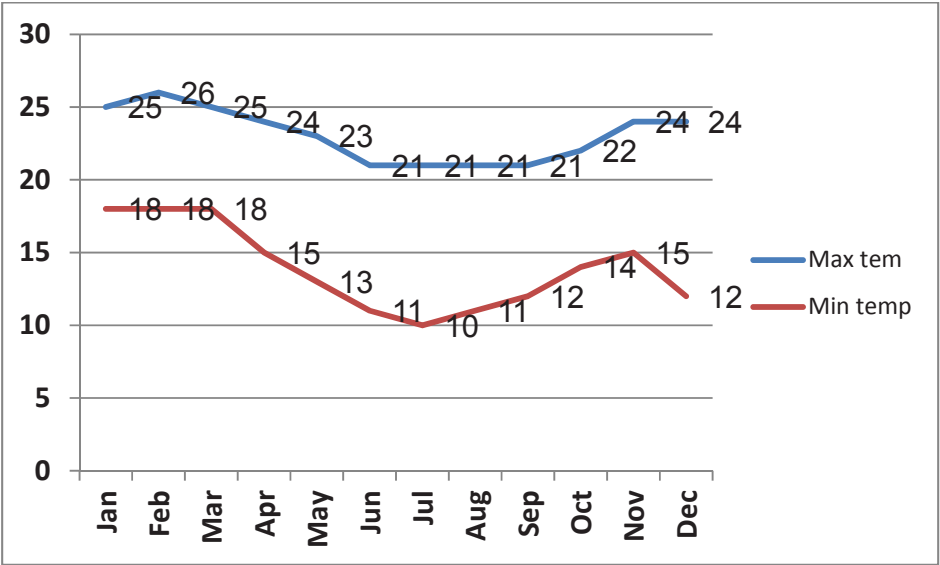
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(18)

**QUESTION 2: The role of oceans in climate control.**

2.1 Refer to graph (Fig 2.1) below on the maximum and minimum temperatures of East London in Eastern Cape in degrees Celsius (<sup>0</sup>C)



2.1.1 What is the difference in degrees between the maximum and minimum temperatures in January and in June? 2x1 (2)

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---

2.1.2 How do the temperature figures indicate that the sea has a moderating effect on the temperatures of East London? 1x1 (1)

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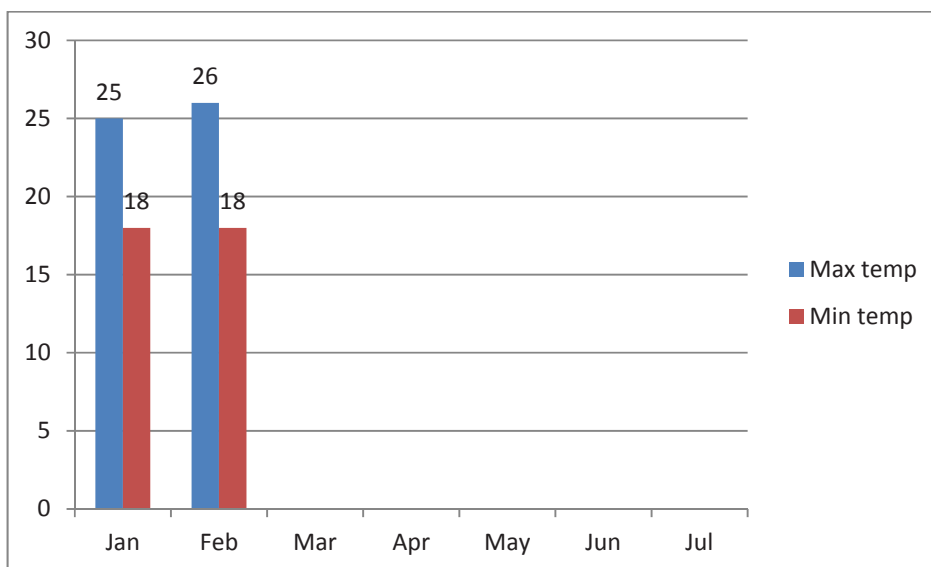
2.1.3 Name two processes that directly regulate the temperature of coastal areas between day and night. 2x1 (2)

---

---

2.1.4 Draw a bar graph from **March to July** to illustrate the temperature in figure 2.1 (10x1) (10)

NB. Use the **bar graph provided below**. January and February has been drawn for you.



1 mark for correct maximum and minimum temperature per month March to June 10x1 (10)



2.1.5 Explain the difference between a land and sea breeze.

2x1 (2)

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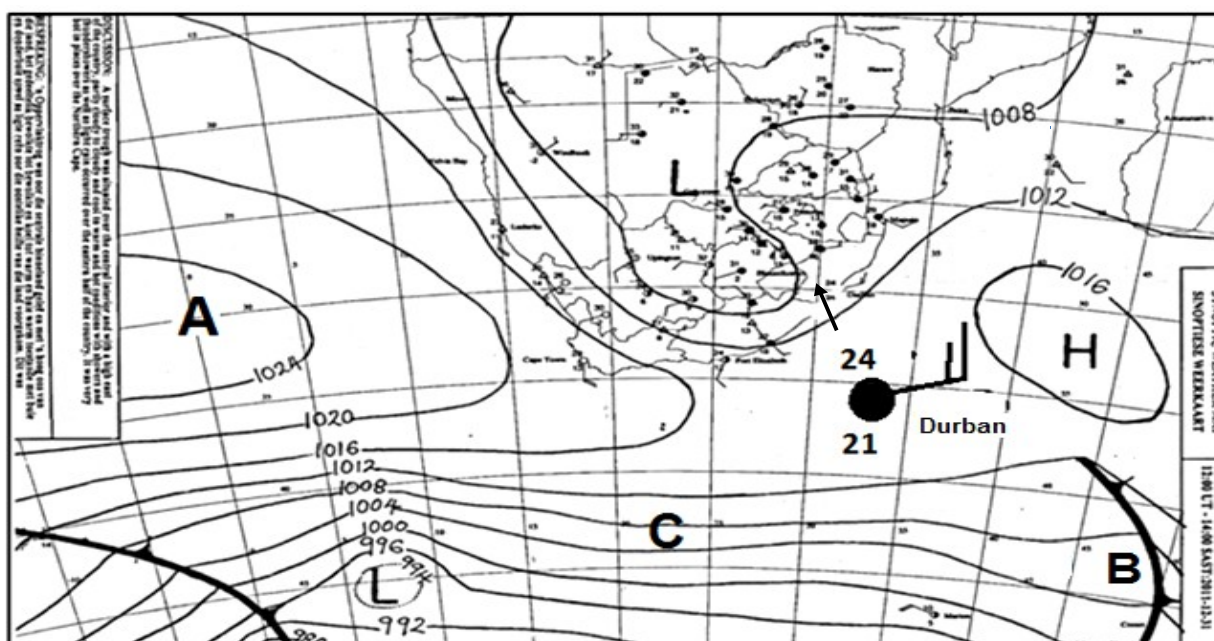
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/17/

### Question 3: Reading and interpreting synoptic weather map

3.1 Refer to figure 3.1 below and answer the questions that follow.



Source: DBE past exam paper June-July 2015

3.1.1 What season is indicated by the synoptic weather map?

1x1 (1)

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---

3.1.2 Provide three pieces of evidence from the synoptic weather map to support your answer.

3x2 (6)

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---

3.1.3 Give a full weather report of the weather station at Durban. (NB!! Tthe diagram has been expanded and placed in the sea).

5x1 (5)

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3.1.4 Determine the atmospheric pressure in the centre of high pressure east of Durban. 2x1

(2)

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3.1.5 The area marked (A / C) is experiencing high wind speed. (**Choose the correct answer in brackets**).

1x1 (1)

---

3.1.6 Give a reason for your answer in question 3.1.5.

2x2 (4)

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3.1.7 Suggest the reason why the letter A represents a high-pressure cell.

1x1 (1)

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/20/

#### Question 4: EL Nino and La Nina

4.1 Refer to figure 4.1A and 4.1B

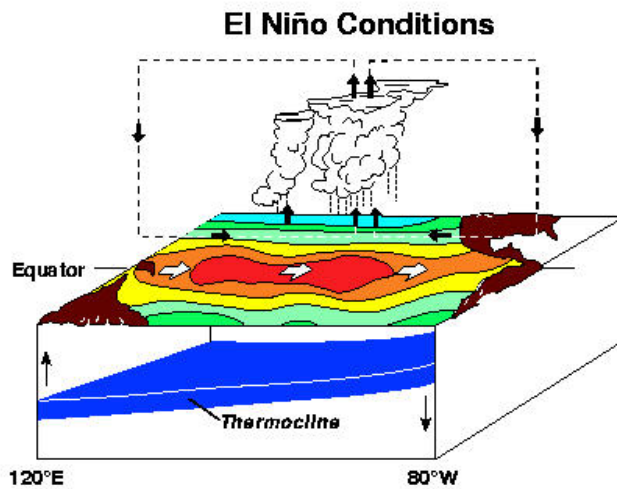


Figure 4.1 A - Source: Google images

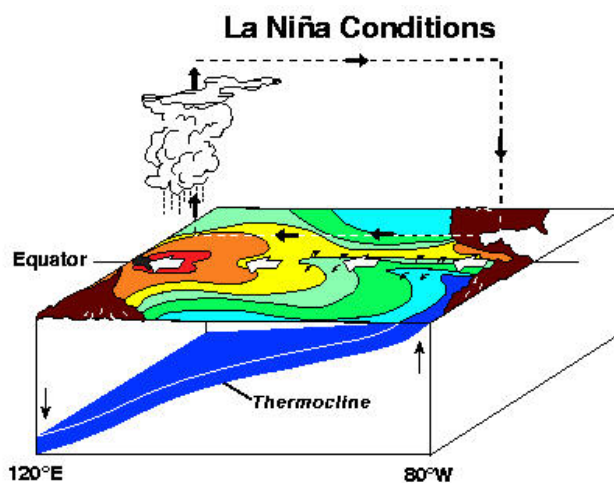


Figure 4.1 B - Source: Google images

4.1.1 What is the other name given to EL Nino

1x1 (1)

4.1.2 What is the other name given to La Nina

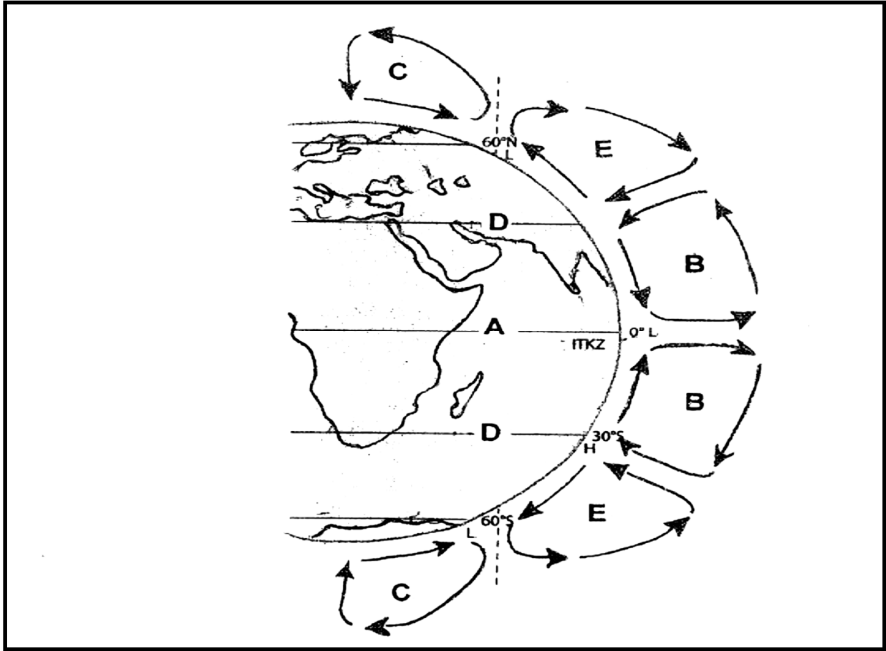
1x1 (1)

- 4.1.3 Name the ocean where the two processes occur. 1x2 (2)
- 
- 4.1.4 Explain how the high pressure and low pressure associated with EL Nino will affect the areas where they dominate. 2x2 (4)
- 
- 
- 
- 
- 4.1.5 What is the main difference between EL Nino and La Nina. 2x2 (4)
- 
- 
- 4.1.6 South Africa is currently (2016) experiencing EL Nino conditions. Write a paragraph of about eight lines and explain how EL Nino affects human activities 4x2 (8)
- 
- 
- 
- 
- 
- 
- 
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- 
- /20/
- Total : 75**

**MEMORANDUM**

**Question 1: Global air circulation**

1.1 Study the figure below showing global circulation and answer the questions that follow. **Fig 1.1**



1.1.1

1 Identify surface winds at cell B and C (2x1) (2)

B= tropical easterlies ✓

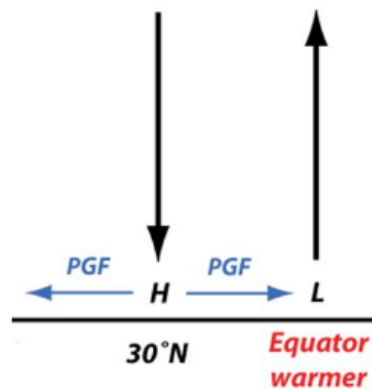
C = polar easterly wind ✓

1.1.2 Draw the table below and compare the pressure system dominant at the area at 30° and 60° south of the equator.

	At 30°	At 60°
<b>Rotation of air</b>	Anticlockwise✓	Clockwise✓
<b>Associated weather</b>	Calm, fair, dry/hot ✓	Cloudy, rainy and stormy weather. ✓
<b>Rising or descending air?</b>	Descending. ✓	Rising. ✓

6x1 (6)

1.1.3 Draw a freehand diagram (cross-section OR top view) to illustrate the pressure system at 30° .



(2)

11.4

Write a paragraph of eight lines and explain how the cell at the area marked C is formed. 4x2 (8)

Air sinks at the poles forming high-pressure zones. ✓✓

There is divergence of air on the surface. ✓✓

The divergence results in surface winds called polar easterly winds. ✓✓

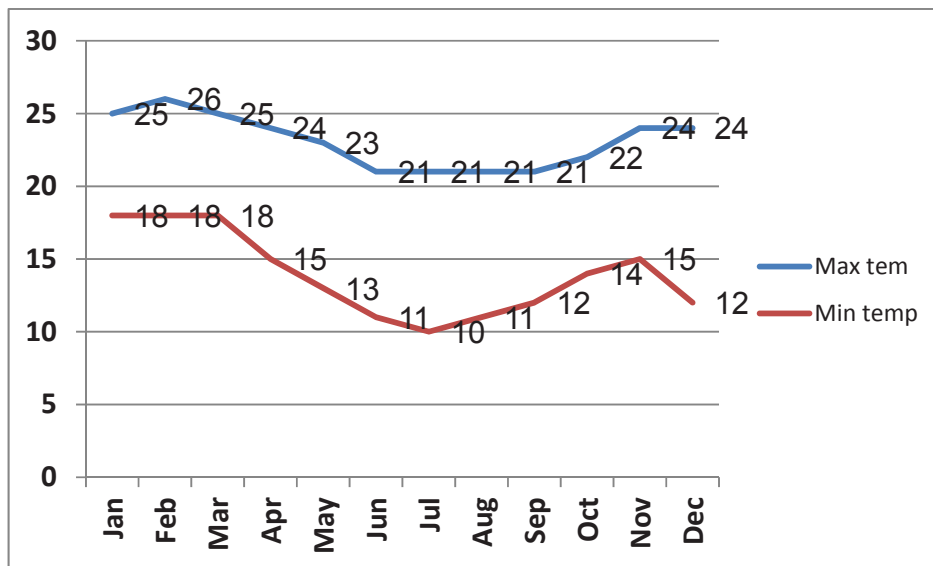
The polar easterly winds move towards to low pressure zone around 60°. ✓✓

The rises and diverges in the upper atmosphere and flows back into the polar pressure zone (and the subtropical pressure zone). ✓✓

(18)

## QUESTION 2: The role of oceans in climate control.

2.1 Refer to graph (**Fig 2.1**) below on the maximum and minimum temperatures of East London in Eastern Cape in degrees celcius (°C)



- 2.1.1 What is the difference in degrees between the maximum and minimum temperatures in January and in June respectively? 2x1 (2)

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January = 7°C✓

June = 10°C✓

---

- 2.1.2 How do the temperature figures indicate that the sea has a moderating effect on the temperatures of East London? 1x1 (1)

---

The temperature difference is not big. ✓

---

- 2.1.3 Name two processes that directly regulate the temperature of coastal areas between day and night. 2x1 (2)

---

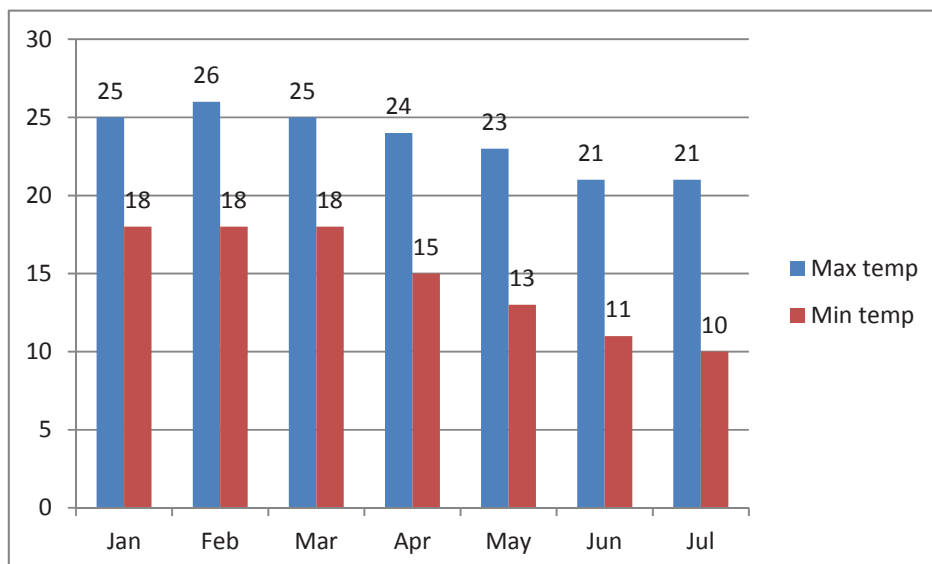
Land breeze. ✓

Sea breeze. ✓

---

- 2.1.4 Draw a bar graph from **January to July** to illustrate the temperature in fig 2.1 10x1 (10)

NB. Use the **bar graph provided below**. January and February has been drawn for you.



10x1 **10**

1 mark for correct maximum and minimum temperature per month March to June

2.1.5 Explain the difference between a land and sea breeze.

2x1 **(2)**

Sea breeze blows from the sea into the land during the day. ✓

Land breeze blows from the land into the sea during the night. ✓

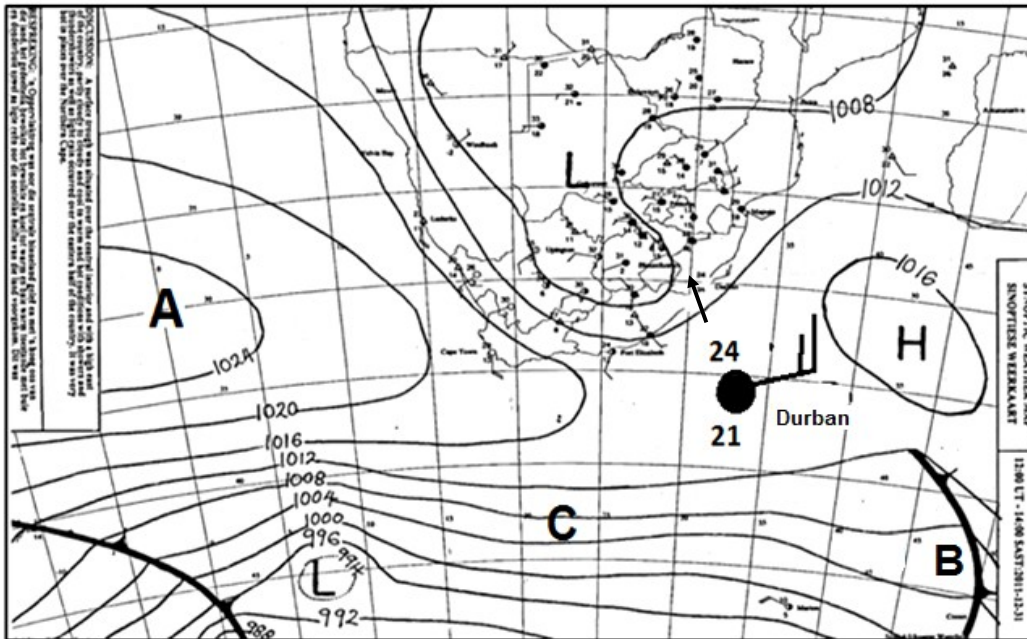
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**(17)**

### Question 3: Reading and interpreting synoptic weather map



3.1 Refer to figure 3.1 below and answer the questions that follow.



Source: DBE past exam paper( June-July 2015)

- 3.1.1 What season is indicated by the synoptic weather map? 1x1 (1)  
Summer. ✓
- 3.1.2 Provide three pieces of evidence from the synoptic weather map to support your answer. 3x2 (6)  
Presence of low-pressure cell in the interior. ✓✓  
The high-pressure cells have migrated southwards. ✓✓  
Weather stations in the interior show high cloud cover. ✓✓  
The cold front passes south of the country. ✓✓
- 3.1.3 Give a full weather report of the weather station at Durban. (Please note that Durban has been expanded and placed in the sea for easier viewing). 5x1 (5)  
Air temperature = 24°C✓  
Dew point temperature = 21°C✓  
Wind direction = North – east/ South North-east. ✓  
Wind speed = 15knots✓  
Cloud cover = overcast 8/8, 4/4✓
- 3.1.4 Determine the atmospheric pressure in the centre of high pressure east of Durban. 2x1 (2)

- 3.1.5 The area marked ( A / C ) is experiencing high wind speed. (**Choose the correct answer in brackets**). 1x1 (1)

C.✓

- 3.1.6 Account for your answer to question 3.1.5. 2x2 (4)

The contour lines are close to each other at C. (Steep gradient) ✓✓

This indicates that there is strong wind. ✓✓

- 3.1.7 Suggest the reason why the letter A represents a high-pressure cell. 1x1 (1)

The atmospheric pressure increases towards the centre of the cell. ✓

(20)

#### Question 4: EL Nino and La Nina

- 4.1 Refer to figure 4.1A and 4.1B

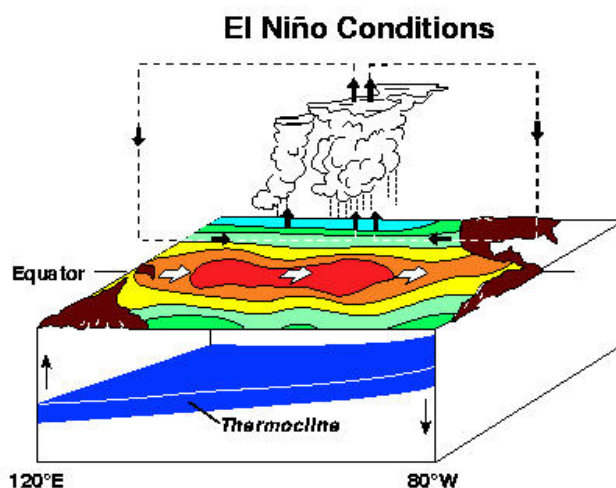
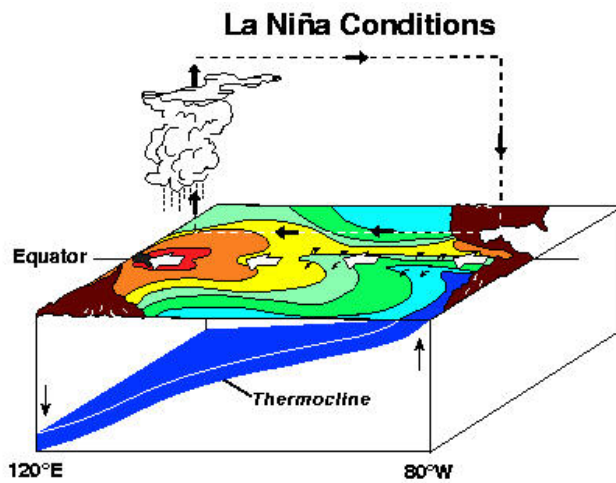


Figure 4.1 A - Source: Google images



**Figure 4.1 B Source: Google images**

- |       |  |         |
|-------|--|---------|
| 4.1.1 | What is the other name given to EL Nino<br>Boy child✓  | 1x1 (1) |
| 4.1.2 | What is the other name given to La Nina<br>Girl child✓   | 1x1 (1) |
| 4.1.3 | Name the ocean where the two processes occur?<br>Pacific Ocean✓  | 1x2 (2) |
| 4.1.4 | Explain how the high pressure and low pressure associated with EL Nino will affect the areas where they dominate.<br><br>High pressure is associated with descending air which leads to dry conditions over an area (over Indonesia and Australia). ✓✓<br><br>Low pressure is associated with rising air which results in heavy rainfall (over the Pacific) ✓✓ | 2x2 (4) |
| 4.1.5 | What is the main difference between EL Nino and La Nina.<br><br>EL Nino brings dry weather conditions /drought/ low rainfall season✓✓<br><br>La Nina results in high rainfall season/ floods. ✓✓   | 2x2 (4) |
| 4.1.6 | South Africa is currently (2016) experiencing EL Nino conditions. Write a paragraph of about eight lines and explain how EL Nino is affecting <u>human activities</u> .<br><br>Crop failure due to lack of water for irrigation. ✓✓  | 4x2 (8) |

Lack of water for domestic use. ✓✓

Decrease in fish supply. ✓✓

Water restrictions have to be imposed due to water shortages. ✓✓

Generation of hydroelectricity is threatened. ✓✓

Industries that depend on farming products do not have adequate raw material. ✓✓

ANY FOUR. Accept other reasonable answers.

**(20)**

**TOTAL: 75**

## Exemplar 3

MARKS: 75

TIME: 1 hour

### Instructions

1. Answer all the questions.
2. Number your answers correctly.
3. Write neat and legibly.

### Section A – The Atmosphere

#### Question 1

##### The Earth's energy balance

Study **Figure 1** and answer the questions that follow.

- 1.1 Name the latitudes where a balance is reached between incoming and outgoing radiation? (1×2) [2]
- 1.2 Explain the heating process between the two latitudes mentioned in (1.1) (1×2) [2]
- 1.3 Explain the heating process from the abovementioned latitudes to the poles. (1×2) [2]
- 1.4 How is the energy balance between the tropics and the poles restored on Earth? (1×2) [2]
- 1.5 What are the consequences if the process described in (1.4) did not take place? (1×2) [2]

[10]

#### Question 2

##### Monsoon winds

2. The graph and map in **Figure 2** illustrate weather patterns experienced in Dhaka (Bangladesh), an area influenced by monsoons.
  - 2.1. Name the months that have the highest temperature and rainfall respectively. (2×1) [2]
  - 2.2 Calculate the annual maximum temperature range. (1×2) [2]
  - 2.3 Provide two reasons for the respectively small temperature range. (2×2) [4]

- 2.4 Between which months does Dhaka experience monsoon rains? (1×2) [2]
- 2.5 What monsoon season is illustrated in the graph in **Figure 2**? (1×2) [2]
- 2.6 In a paragraph of no more than EIGHT LINES (8) lines explain how monsoon rains form during this season. (4×2) [8]

[20]

### Question 3

#### Africa's weather and climate

**Figure 3** illustrates the climate of two towns in Africa north of the equator. Study them and then answer the questions:

- 3.1. Where is Cairo and Monrovia respectively situated in relation to the equator and Sahara Desert? (2×2) [4]
- 3.2 Cairo has a temperature range of 16°C. Explain the difference in the annual temperature range. (2×2) [4]
- 3.3 One would expect Monrovia to have a high rainfall throughout the year. How would you explain the lower rainfall from December to March? (3×1) [3]
- 3.4 Compare the rainfall patterns of the two cities. (2×2) [4]

[15]

### Question 4

#### The Earth's energy balance

You are visiting New York, USA, when South Africa is experiencing the Southern Winter Solstice.

- 4.1 Name this position of the Earth in the Northern Hemisphere. (1×1) [1]
- 4.2 Describe the conditions in New York in terms of the **direct rays of the sun, insolation, the season**, as well as **the relative lengths of the day and night**. (4×1) [4]

[5]

## Section B – Map work

### Question 5

Study **Figure 5**, a photo taken looking at the East Rand, and answer the questions that follow:

- 5.1.1 During what time of the day are orthophoto's taken? Give a reason for your answer. (2×1) [2]
- 5.1.2 During what time of the day was the photo in **Figure 5** taken (i.e. morning or afternoon) (1×1) [1]
- 5.1.3 Give a reason for your answer in (5.2.1). (1×2) [2]
- 5.1.4 Name the type of aerial photograph being used in **Figure 5**. Give a reason for your answer. (2×1) [2]
- 5.1.5 Name the five recognition skills used to identify or interpret objects on a photo. (5×1) [5]
- 5.1.6 Describe the resolution image of this photo. (1×2) [2]
- 5.1.7 Identify the following features on the Orthophoto map:
- (a) A point
  - (b) A line
  - (c) A polygon
- (3×2) [6]
- 5.1.8 Calculate the area of block B (in km<sup>2</sup>) on the Orthophoto map. Show ALL your calculations. (5×1) [5]
- [25]

FIGURE 1

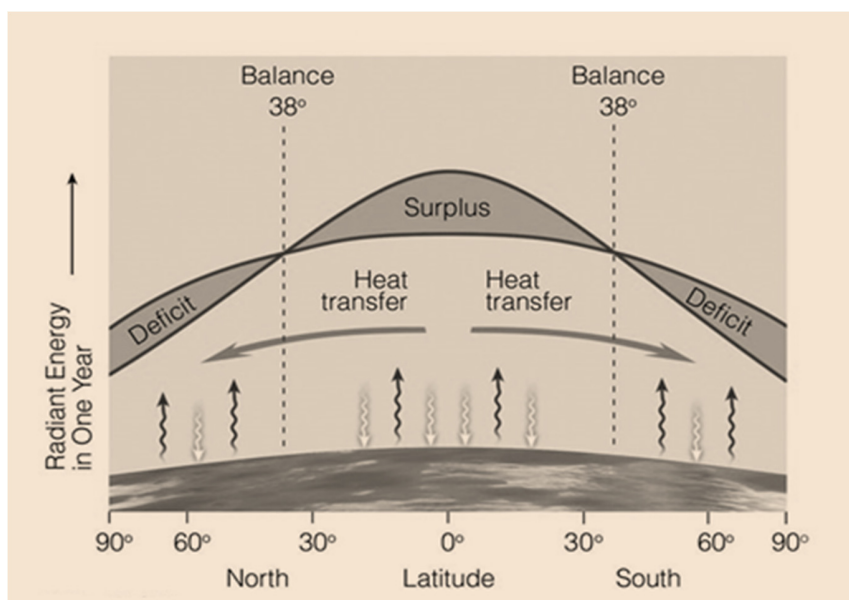
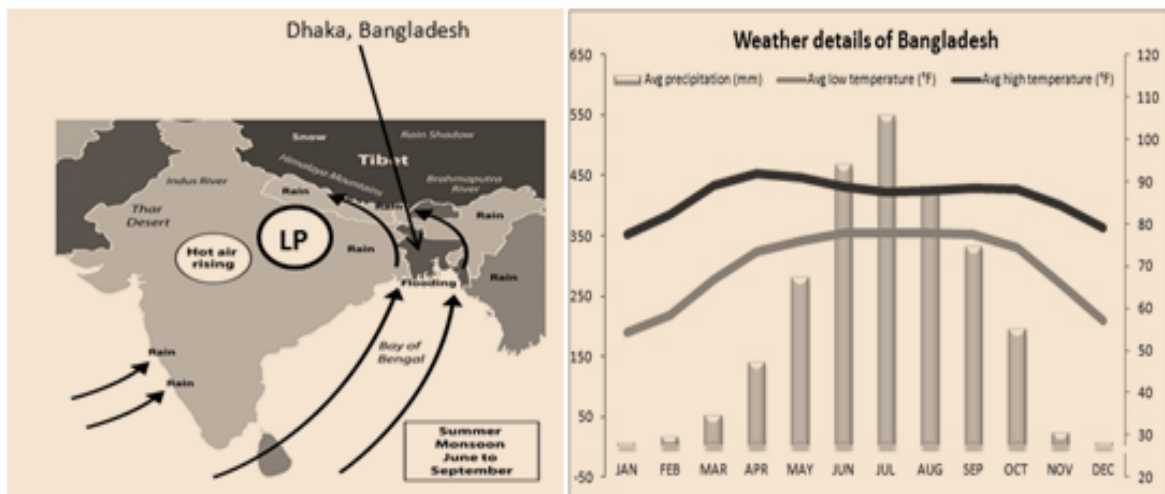
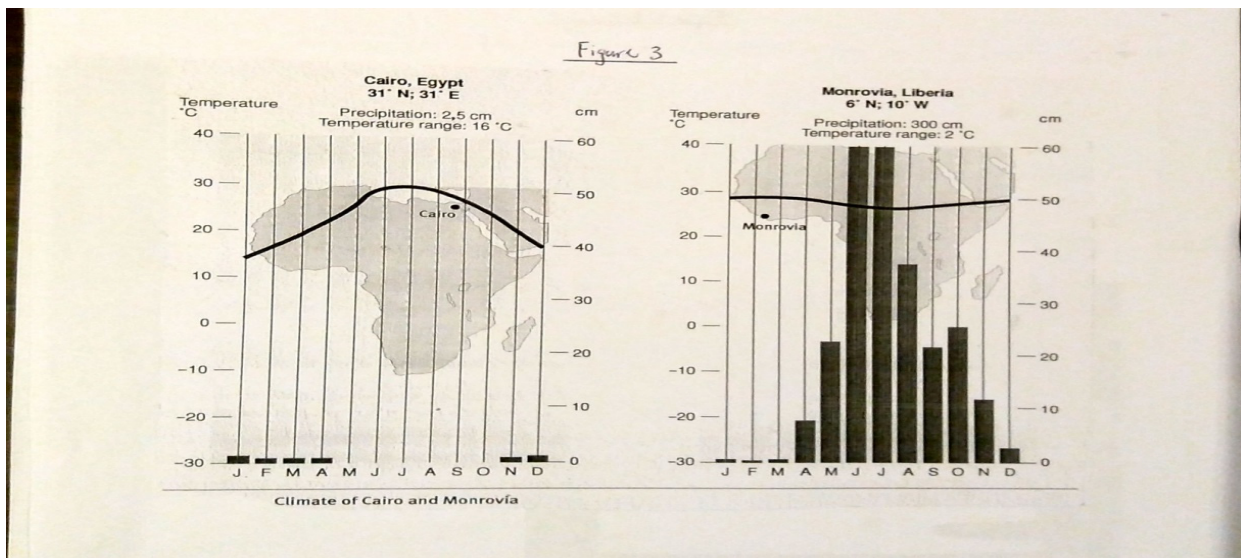


FIGURE 2





**FIGURE 3**



**Figure 5**



SOURCES: VIA AFRIKA

## MEMORANDUM

### Section A

#### Question 1.

- 1.1.1 38° N & 38° S ✓✓ (1x2)
- 1.1.2 From 38° N across the equator to 38° S there is surplus energy ✓✓ (1x2)
- 1.1.3 From 38° N and 38° S towards the poles there is an energy deficit ✓✓ (1x2)
- 1.1.4 Heat energy is transported via the atmosphere (air) and oceans (water circulation) from low to high latitudes ✓✓ (1x2)
- 1.1.5 The equatorial regions would become hotter and the polar regions steadily colder ✓✓ (1x2)

#### Question 2

- 2.1. Temperature: April / Rainfall: July ✓✓ (2x1)
- 2.2. Temperature range: 34° C -25° C = 9° C ✓✓ (1x2)
- 2.3. Situated around the ocean/ has a moderating effect ✓✓ (2x2)
- 2.4. May until October ✓✓ (1x2)
- 2.5. Summer wet monsoon ✓✓ (1x2)
- 2.6. The overhead sun moves northwards during the northern summer. ✓✓
  - The ITCZ shifts north over the Indian subcontinent. ✓✓
  - The increase in isolation over ✓✓
  - The Asian interior creates a low pressure system. ✓✓
  - At the same time the subtropical high pressure dominates the Indian ocean with surface temperatures of 30° C. ✓✓
  - Warm moist air from over the Indian ocean flows northwards and later north-eastwards over the land areas. ✓✓
  - This produces high rainfall over the subcontinent. ✓✓ (4x2)

#### Question 3

- 3.1. Cairo - north of the equator ✓✓ / north of the Sahara ✓✓ (2x2)
- 3.2. Desert climate ✓✓ - very warm days and very low temperatures at night. ✓✓

(2x2)

3.3. Shifting of the ITCZ southwards. ✓ The sun is direct overhead the Tropic of Capricorn ✓

Monrovia is then under the influence of the subtropical high pressure and continental (CT) air masses. ✓ This makes it drier during these months. ✓

(3x1)

3.4. Cairo - very little rain has a clear rain season (winter months). ✓✓

Monrovia high rainfall, rains almost throughout the year. ✓ ✓ (2x2)

#### **Question 4**

4.1. Northern summer solstice. ✓ (1x1)

4.2. Sun's rays are direct over the Tropic of Cancer. ✓ The northern hemisphere receives more insolation. ✓

This causes the northern hemisphere to experience summer conditions. ✓ That means longer days and shorter nights. ✓ (4x1)

#### **Section B:**

#### **Question 5**

5.1.1 Between (12:00 & 14:00pm). ✓

The sun is at its highest point. ✓ (2x1)

5.1. 2. Afternoon ✓ (1x1)

5.1.3 The shadows from the buildings are in a south-easterly direction meaning the sun is in the west where it sets or is busy setting. ✓✓ (1x2)

5.1.4. Highly oblique ✓

Shows the surface, the horizon and portion of the sky. ✓ (2x1)

5.1.5. Shape ✓

Pattern ✓

Size ✓

Shadows ✓

Tone and texture ✓ (5x1)

5.1.6. Visible objects or features and therefore high resolution. ✓ ✓ (1x2)

5.1.7. Point - buildings ✓✓

Line - Roads / railway lines/ river ✓✓

Polygons – Sportsgrounds / golf course/ recreational areas ✓ ✓ (3x2)

5.1.8. Area = Length X breadth ✓

Length -  $1.7 \text{ cm} \times 0.1 = 0,17 \text{ km}$  ✓ (Range 1.5 - 1.9)

Breadth -  $0.8 \times 0.1 = 0,08 \text{ km}$  (Range 0.6 - 0.9)

$0,17 \times 0,08 = 0,0136 \text{ km}^2$  ✓ (5x1) (Range  $0,009 \text{ km}^2 - 0,0171 \text{ km}^2$ ) (5x1)

## Exemplar 4

MARKS: 75

TIME: 1 hour

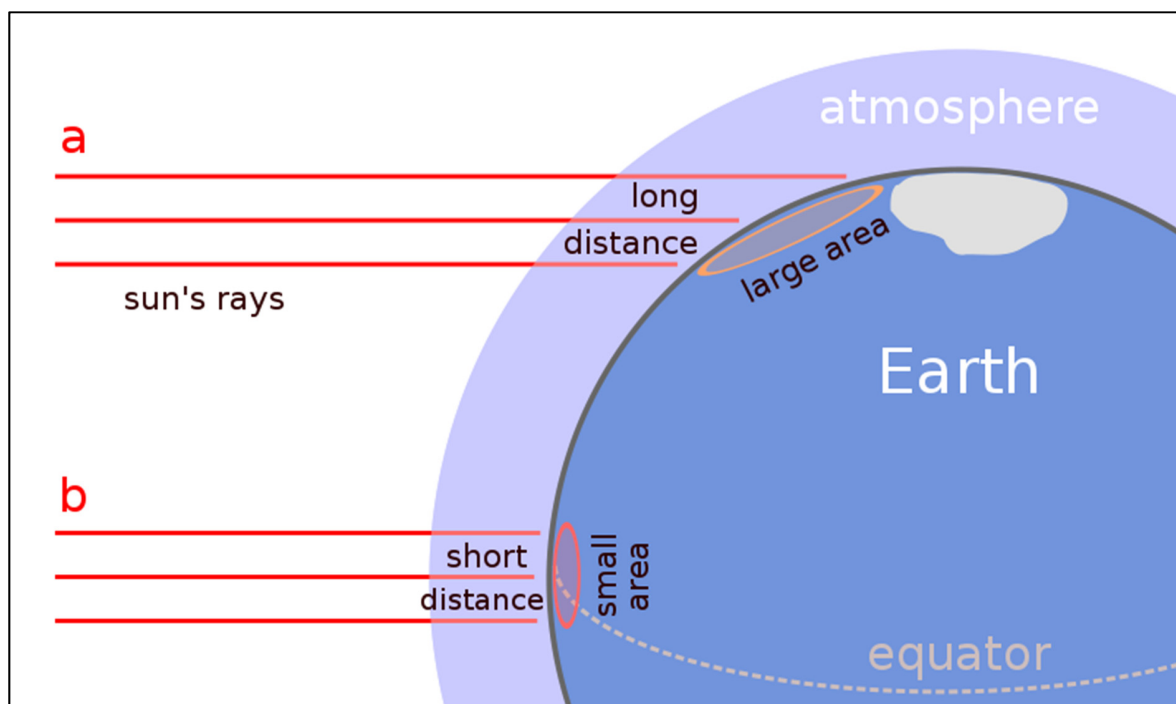
### INSTRUCTIONS:

1. Carefully read all the questions.
2. Number the questions exactly as they appear on the paper.
3. Answer all the questions.
4. Write neatly and legibly.
5. Start each question on a new page.

### QUESTION 1

1. 1 Study **FIGURE 1.1** below and answer the questions that follow:

**FIGURE 1.1**



1.1.1 Where do the sun's rays strike the earth's surface at right angles? At A or

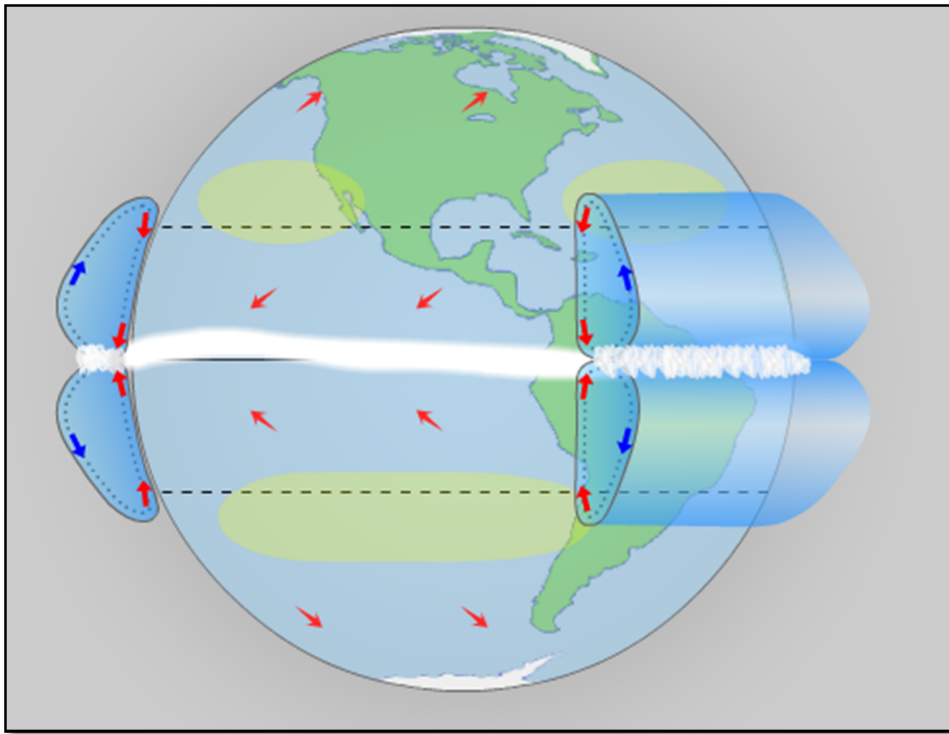
B? 9 (1 X 1) (1)

1.1.2 Which place, A or B has an energy deficit?

(1 X 1) (1)

1.1.3 Explain how energy balance is maintained over the Earth's surface.  
(1 X 2) (2)

1. 2 Study **FIGURE 1.2** below and answer the questions.



Adapted from Pearson Animation

1.2.1 Name the tricellular cell at A and B.  
(2 x 1) (2)

1.2.2 Name the zone at E.

(1 x 1) (1)

1.2.3 Describe the heating and cooling processes at B.

(2 x 2) (4)

1.2.4 Draw and label the air circulation of the Ferrel cell

(2 x 2) (4)

1.2.5 Name the wind belt at C.

(1 x 2) (2)

1.2.6 Account for the direction wind at C.

(1 x 2) (2)

1.2.7 In a paragraph of about eight lines evaluate the role of convergence in the formation of precipitation.

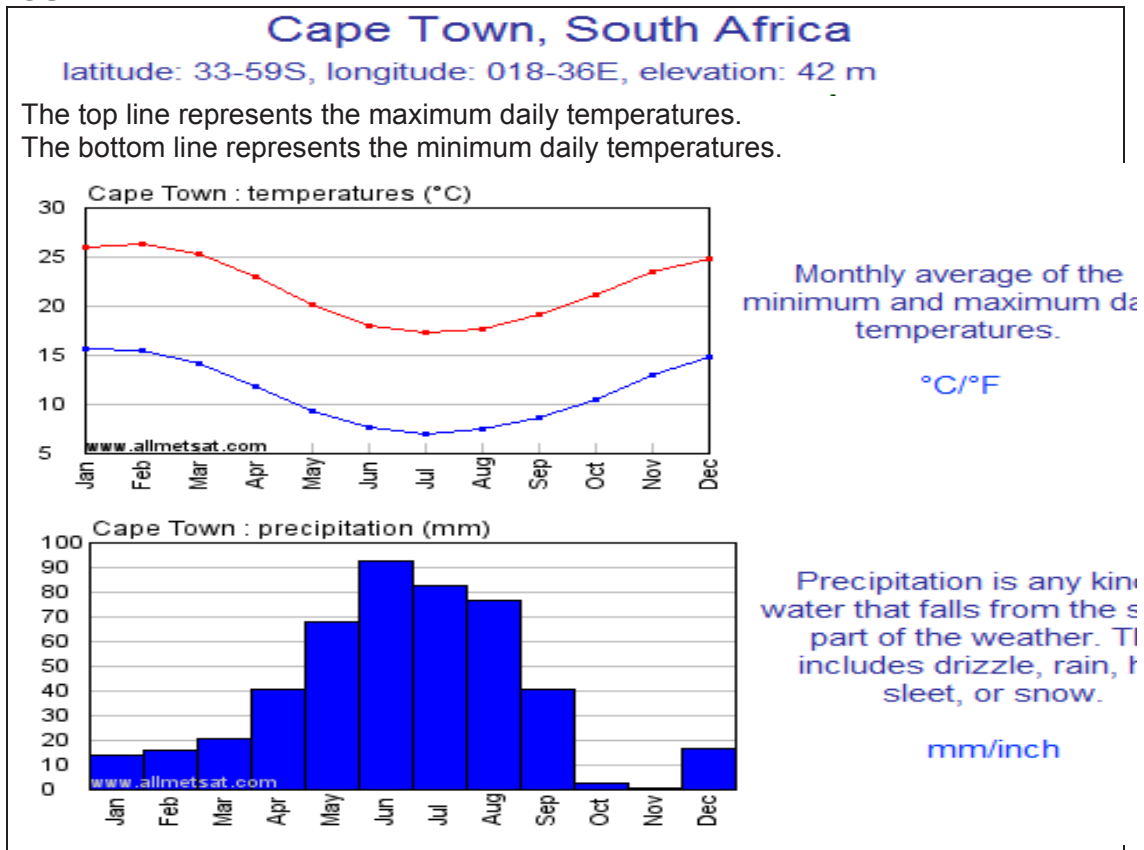
(4 x 2) (8)

**[29]**

## Question 2

Study the graph in **FIGURE 2.1** below and answer the questions that follow:

**FIGURE 2.1**

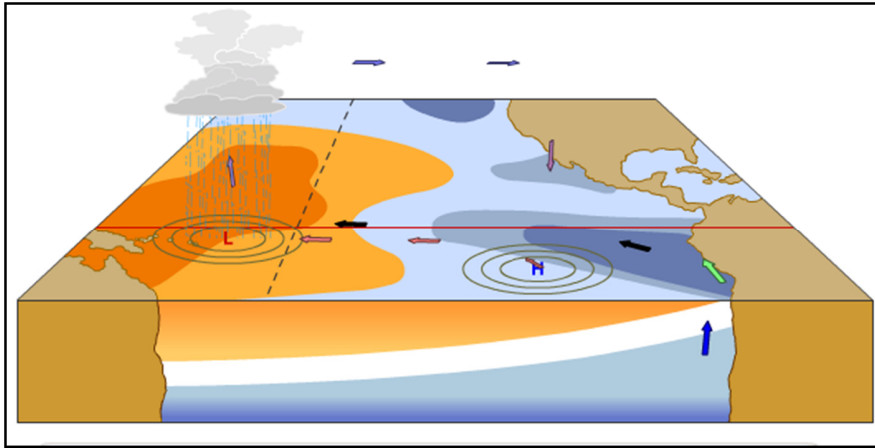


- 2.1 Which instrument do we use to measure temperature?  
(1 x 1) (1)
- 2.2 State the maximum average temperature for Cape Town and the month in which it occurred.  
(2 x 1) (2)
- 2.3 State the maximum precipitation for Cape Town in mm as well as the month in which it is recorded.  
(2 x 1) (2)
- 2.4 One form of precipitation recorded in Cape Town is snow, especially during winter. Which evidence from the graph is supporting this statement?  
(1 x 2) (2)
- 2.5 Make use of a diagram to illustrate the cold and warm fronts. (2 x 2) (4)



- 2.6 Cape Town receives its rainfall mainly during winter. Give a full account on the formation of the type of rainfall dominating the area. (3 x 2) (6)
- 2.7 Compare the rainfall and temperature graphs information. Explain the relationship between the TWO elements of weather. (2 x 2) (4)
- (21)**

### Question 3



Adapted from Pearson animations

- 3.1 Study the diagram above and identify the following:
- 3.1.1 Is the label at A warm or cold? (1 x 1) (1)
- 3.1.2 Is the label at B warm or cold? (1 x 1) (1)
- 3.1.3 Does this diagram represent EL Nino or La Nina? (1 x 1) (1)
- 3.1.4 Describe TWO causes for the formation of the EL Nino atmospheric conditions as indicated in the diagram above. (2 x 2) (4)
- 3.1.5 In a paragraph of about eight evaluate the impact of La Nina on the climate and the economy of African countries. (4 x 2) (8)

**(15)**



**3.2** Study the synoptic weather map on the following page and answer the questions.

3.2.1 Name the high-pressure cells west and east of South Africa respectively.  
(2 x 1) (2)

3.2.2 State one reason for the occurrence of these high-pressure cells.  
(1 x 1) (1)

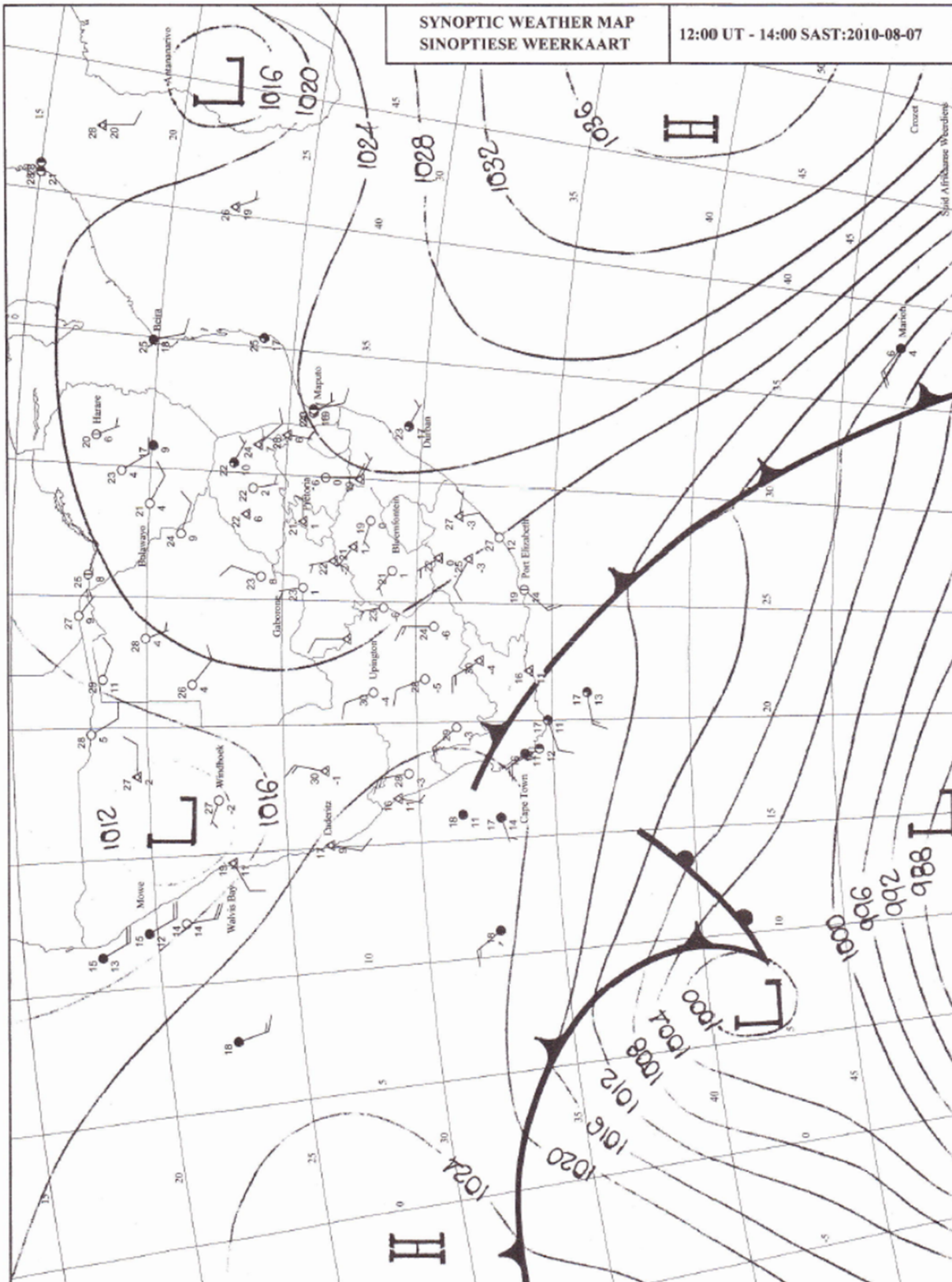
3.2.3 State the temperature at Walvis Bay and the temperature at Beira. Give the temperature difference between Walvis Bay and Beira in °C. (3 x 1) (3)

3.2.4 Give reasons for the temperature difference mentioned in 3.2.3  
(2 x 2) (4)

**(10)**

SYNOPTIC WEATHER MAP  
SINOPTIESE WEERKAART

12:00 UT - 14:00 SAST:2010-08-07



**DISCUSSION:** A cold front was situated over the south-western parts of the country causing partly cloudy to cloudy and cold to cool conditions with light rain and isolated showers along the south-west coast and adjacent interior. A high east of the country caused partly cloudy to cloudy and cool conditions with light rain in places along the KwaZulu-Natal coast. The remainder of the country was mainly sunny and cool to warm.

**BESPREKING:** 'n Kouefront was oor die suidwestelike dele van die land geleë en het gedeeltelik bewolkte tot bewolkte en koue tot koel toestande met ligte reën en enkele buie langs die suidweskus en aangrensende binneland veroorsaak. 'n Hoog oos van die land het gedeeltelik bewolkte tot bewolkte en koel toestande met ligte reën plek-plek langs die KwaZulu-Natale kus veroorsaak. Die res van die land was hoofsaaklik sonnig en koel tot warm.

South African Weather Service

## MEMORANDUM

Total: 75

### QUESTION1

1.1.1 B ✓

(1 x 1) (1)

1.1.2 A ✓

(1 x 1) (1)

1.1.3 Heat is transferred to cold areas and hot areas are cooled by winds from cold areas. ✓✓

Tropics, which receive more energy, have energy surplus✓✓.

It will transfer the energy to the poles with a deficit / shortage of energy✓✓.

Energy is transferred as sensible heat, winds and ocean currents. ✓✓**ANY**

**ONE** (1 x 2) (2)

### 1.2

1.2.1 Hadley cell ✓

(1 x 2) (2)

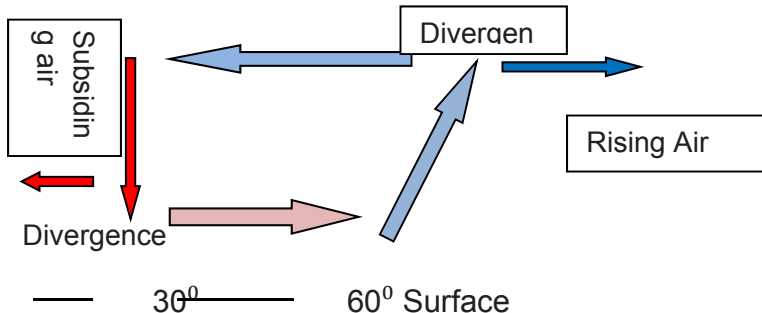
1.2.2 Inter Tropical convergence zone ✓

(1 x 1) (1)

1.2.3 Earth is heated by the sun and the earth heats the air resting on the surface; the air starts to rise causing an area of low pressure✓✓; air start to flow in form the area of higher pressure and rise this happen from the north and south✓✓ (2 x 2) (4)

1.2.4

Draw and label the air circulation of the Ferrel cell.



1.2.5 Tropical Easterlies✓✓

(1 x 2) (2)

1.2.6 Air circulation around a high pressure cell is clockwise in the southern hemisphere and anti-clockwise in the northern hemisphere✓✓ Air flow out of a high-pressure cell and into a low-pressure cell; ✓✓ Coriolis force causes the air to deflect to the left in the southern hemisphere and to the right in the northern hemisphere✓✓ causing a wind flowing from the east.

✓✓

**ANY TWO**

(2 x 2) (4)

1.2.7 Air having different properties meets and there will be convergence. ✓✓

The two differing air masses won't mix, cold air pushes warm air above it. ✓✓

Inflowing air pushes the current air higher causing convection current✓✓

Convection current cause the water vapour to rise ✓✓

The wet rising air goes to dew point altitude ✓✓

Rising water vapour cools down to condense✓✓

This constant stream of rising air cause continuous precipitation ✓✓

Result in high rainfall in area of ITCZ✓✓

**ANY**

**FOUR** (4 x 2) (8)

## Question 2

2.1 Thermometer ✓

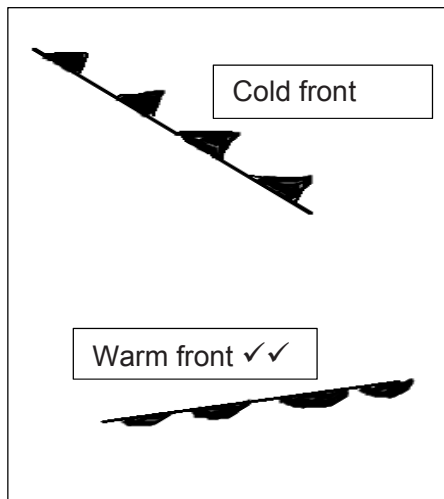
(1 x 1) (1)

2.2 26°C ✓and the month is February✓

(2 x 1) (2)

2.3. 92 mm ✓and the month in which it occurs is June✓ (2 x 1) (2)

2.4 Very cold temperatures/ temperatures below 10 are recorded. (1 x 2) (2)



2.5

(2 x 2) (4)

- 2.6 The cold front from the ocean is faster and catch up the warm air. ✓✓  
 The cold air behind uplifts the lighter warm air ✓✓  
 Warm air will be forced to rise above the heavier cold air ✓✓  
 The warm moist air rises up to dew point level where it condenses. ✓✓  
 Cumulonimbus clouds form ✓✓  
 Rain or even thunderstorms falls in the Cape. ✓✓

(3 x 2) (6)

- 2.7 Summers are hot and dry, ✓✓ very low rainfall in summer ✓✓. No rain was recorded for November. Winters are cold ✓✓ reaching up to 3C and wet ✓✓. The highest average rainfall is recorded in June. ✓✓

**ANY TWO**

(2 x 2) (4)

### Question 3

- 3.1.1 **A** Warm ✓

(1 x 1) (1)

- 3.1.2 **B** Cold ✓

(1 x 1) (1)

- 3.1.3 EL Nino ✓

(1 x 1) (1)

- 3.1.4 An upwelling of cold water against the coast causes an area of high pressure; ✓✓

The area of high pressure is caused by the cold water when the air mass takes on the characteristics of the surface it rests on✓✓  
The Walker circulation assists as the air rises at the low-pressure and descends at the high-pressure area. ✓✓ ANY TWO (2 X 2) (4)

3.1.5 La Nina may cause higher rainfall over large areas of the land. ✓✓

The rainfall will be heavier and the rain season will be prolonged (extended).

This will result in higher monthly average rainfall. ✓✓

This may lead to flooding in some parts of the country.

Flooding may damage infrastructure such as roads, pipelines, and power lines. ✓✓

This will affect the crop production – negatively.

It will result in shortage of food.

Food prices will rise. ✓✓

Some areas may be affected with an increase in diseases like malaria and bilharzia. ✓✓

IF ONLY ONE FACTOR IS DESCRIBED, NO MORE THAN 6 MARKS  
MUST BE ALLOCATED. ANY FOUR (4 x 2) (8)

3.2.1 South Atlantic high-pressure cell✓  
(1 X 1) (1)

South Indian high-pressure cell✓  
(1 X 1) (1)

3.2.2 Lies on 30°S line of latitude. Line of subsidence. ✓  
(1 X 1) (1)

3.2.3 25°C ✓ -15°C ✓ = 10°C ✓  
(3 X 1) (3)

3.2.4 Walvis Bay on west coast where cold Benguela ocean current cools the air temperature ✓✓

Beira is on east coast where the warm Mozambique current moderates the land temperature by increasing it slightly✓✓  
(2 X 2) (4)

TOTAL: [75]

## GRADE 11

### RESEARCH TASK

#### Exemplar 1

<b>Navorsingsprojek – Nie-konvensionele Energiebronne</b>  <b>Geografie</b>  <b>Graad 11</b>	<b>Research project – Non-conventional energy resources</b>  <b>Geography</b>  <b>Grade 11</b>
<b>Opdrag</b>  Die nasionale elektrisiteits voorsienings kommissie het erken dat die verskaffing van elektrisiteit onder druk is en dat dit 'n reserwe van slegs 1% het.  Hipotese: Daar sal in die toekoms meer gesteun word op nie-konvensionele energiebronne in Suid Afrika vir die voorsiening van elektrisiteit.  Ontwerp 'n navorsingsvoorlegging waarin jy bepaal watter een van sonenergie of windenergie die meeste potensiaal het vir aanwending in Suid Afrika.	<b>Assignment</b>  The national electricity supply commission acknowledges that the provision of electricity is under pressure and that a reserve of only 1% is available.  Hypothesis: South Africa will rely more on non-conventional resources for the provision of power in the future.  Do a research in which you determine whether solar or wind energy has the best potential for the generation of electricity in South Africa.
In jou navorsingsvoorlegging moet jy die volgende aanspreek: <ul style="list-style-type: none"><li>• Kort oorsig van die ontwikkeling van die energiebron.</li><li>• 'n Kaart van die verspreiding van die energiebron in Suid-Afrika.</li><li>• Beskrywing van benutting van energiebron.</li><li>• Beskrywing van belangrikheid van energiebron.</li><li>• Beskrywing van probleme t.o.v aanwending van energiebron.</li><li>• 'n Gevolgtrekking.</li><li>• Verwerping of bevestiging van die hipotese.</li></ul>	You must address the following in your research: <ul style="list-style-type: none"><li>• Brief history of the development of the energy source.</li><li>• A map of the distribution energy source in South Africa.</li><li>• Description of the application of the energy source.</li><li>• Description of the importance of the energy source.</li><li>• Description of the problems encountered when using the source.</li><li>• A conclusion.</li><li>• An acceptance or rejection of hypothesis.</li></ul>
<b>Vereistes</b>  Formaat – Geskrewe of elektronies <ul style="list-style-type: none"><li>• 5 getikte bladsye of 7 geskrewe bladsye sonder illustrasies.</li></ul>	<b>Requirements</b>  Format – Written or electronic <ul style="list-style-type: none"><li>• 5 pages typed or 7 pages written without illustrations</li></ul>

<ul style="list-style-type: none"> <li>• Bibliografie van ten minste 6 bronne waarvan slegs 4 internet oorsprong het.</li> <li>• Kopie vir portefeulje.</li> </ul>		<ul style="list-style-type: none"> <li>• Bibliography of at least 6 sources of which only 4 may be internet sourced.</li> <li>• Hardcopy for portfolio.</li> </ul>		
	Date Datum	Learner signature Leerder	Parent Signature Ouer	
Ontvangs van opdrag Receipt of assignment				
Beplanning/Planning				
Inhandigingsdatum / Due date				
Ek verklaar dat die werk my eie werk is. I declare that this work is my own				
Signature / Handtekening				



Naam		Graad 11 Navorsingsprojek – Nie-konvensionele energiebronne						
G	Navorsing ASSESSERINGS KRITERIA	1 (0-29) ontoereikend	2 (30-39) Basiese prestasie	3 (40-49) Matige prestasie	4 (50-59) Voldoende prestasie	5 (60-69) Beduidende prestasie	6 (70-79) Verdiense prestasie	7 (80-100) Uitmuntende Prestasies
1	Kort oorsig van ontwikkeling van Energiebron	Geen	Swak	Baie min	Bevredigend	Goed	Baie Goed	Volledige beskrywing
2	'n Kaart van die voorkoms van energiebron	Geen	Swak	Swak kaart redelik volledig	Goeie kaart min info	Goeie kaart Redelike info	Goeie kaart Goeie info	Volledige kaart Volledige info
3	Beskrywing van benutting van energiebron	Geen	Slegs een	Twee tot drie Swak beskryf	Drie tot vyf Basies beskryf	Goed beskryf	Meer as ses Goed beskryf	Meer as ses Uitstekend
4	Beskrywing van belangrikheid van energiebron	Geen	Slegs een	Twee Swak beskryf	Drie tot vyf Basies beskryf	Goed beskryf	Meer as vyf Goed beskryf	Meer as ses Uitstekend
5	Beskrywing van probleme t.o.v aanwending van energiebron.	Geen	Slegs een	probleem Swak beskryf	probleem Basies beskryf	Goed beskryf	Meer as een probleem Goed beskryf	Meer as een probleem Uitstekend
6	Gevolgtrekking & Verwerping of bevestiging van hipotese.	Geen	Beperkte Bespreking	Bespreking geen aanduiding	Aanduiding geen bespreking	Beperkte bespreking en aanduiding	Goeie bespreking met aanduiding.	Volledige bespreking met aanduiding.
7	Produkgehalte	Swak	Produk nie van gehalte om op	Produk onnet en onvolledig	Produk onnet maar volledig	Produk redelik netjies en	Produk netjies diagramme duidelik met	Uitstaande produk kleurvol netjies en

		trots te wees nie			volledig	byskrifte.	stylvol .
		0	1				
8	Verskaf 'n lys van verwysingsbronne wat jy gebruik het	Geen	Volledig.				
	Punte= /50						

Name		Gr 11 Report project – Non-conventional energy						
	Report CRITERIA	1 (0-29) Not achieved	2 (30-39) Elementary achievement	3 (40-49) Moderate achievement	4 (50-59) Adequate achievement	5 (60-69) Substantial achievement	6 (70-79) Meritorious achievement	7 (80-100) Outstanding achievement
1	Energy source development	None	Poor	Little information	Fair information	Good information	Very good information	Complete description
2	A map of the distribution energy source	None	Poor	Poor information fair map	Good map little information	Good map fair information	Good map Good info	Complete map Detailed info
3	Description of application of the energy source	None	Only one	Two to three Poor description	Three to five Basic description	Three to five Good description	More than six Good description	More than six Outstanding
4	Description of the importance of the energy source	None	Only one	Two to three Poor description	Three to five Basic description	Three to five Good description	More than six Good description	More than six Outstanding
5	Description of the problems encountered when using the source.	None	Only one	Poor description	Basic description	Good description	Very good description	Outstanding
6	Conclusion and acceptance or rejection of hypothesis	None	No indication – poor description	No indication fair description	Indication poor description	Indication satisfactory description	Indication good description.	Indication – Outstanding.
7	Overall impression.	Very poor	Poor, hastily done	Weak, sub-secondary level	Product quality inferior	Product not neat but completed	Product neatly typed/written; diagrams clear with labels and	Outstanding product, neat and stylish



# RESEARCH TASK

## Exemplar 2

<b>Navorsingsprojek – Impak van ontwikkeling op locale omgewing</b> <b>EIA) Environmental Impact Assessments</b> <b>(SIA) Social Impact Assessments</b> <b>Geografie</b> <b>Graad 11</b>	<b>Research project :</b> <b>Impact of development on local environments</b> <b>(EIA) Environmental Impact Assessments</b> <b>(SIA) Social Impact Assessments</b> <b>Geography</b> <b>Grade 11</b>
<b>Opdrag</b> <p>Die mense lewe in harmonie met die omgewing. Die mens verander die omgewing om sy leefstyl te vergemaklik en dit beïnvloed die omgewing.</p> <p>Hipotese: Ekonomiese ontwikkeling het 'n negatiewe impak op die omgewing.</p> <p>Ontwerp 'n navorsingsvoorlegging waarin jy die impak van ekonomiese ontwikkeling in jou omgewing oor die laaste 5 tot 10 jaar ondersoek.</p>	<b>Assignment</b> <p>People live in harmony with the environment. People tend to change the environment to improve their lifestyles and this changes impact on the environment.</p> <p>Hypothesis: Economic development has a negative impact on the environment.</p> <p>Do a research in which you investigate the impact of economic development in your area over the last 5 to 10 years.</p>
<p>In jou navorsingsvoorlegging moet jy die volgende aanspreek:</p> <ul style="list-style-type: none"> <li>• Twee kaarte van jou omgewing met 'n 5 km radius waarin meeste van die ontwikkeling plaasgevind het. Een kaart moet die omgewing aantoon soos dit tans is, en die ander kaart moet wees van hoe die omgewing aan die begin voorheen (5-10 jaar gelede) gelyk het. (Gebruik Google Earth)</li> <li>• 'n Kaart wat die veranderinge wat plaasgevind het duidelik aantoon met byskrifte.</li> <li>• Beskrywing van positiewe impak van die ekonomiese ontwikkeling.</li> <li>• Beskrywing van negatiewe impak van die</li> </ul>	<p>You must address the following in your research:</p> <ul style="list-style-type: none"> <li>• 2 maps of the area of your investigation. The area should have a radius of 5 km from your own house. One map should represent the area as it is currently and the other map should be of the area at the start of the investigation. (Use Google earth as a source where possible or hand-drawn sketch maps)</li> <li>• Plot the changes/ economic development on a map of the area and label it accordingly.</li> <li>• Description of the positive impact of the economic development.</li> <li>• Description of the negative impact of the</li> </ul>

ekonomiese ontwikkeling. <ul style="list-style-type: none"> <li>Beskrywing van omgewingsprobleme wat veroorsaak is deur die ekonomiese ontwikkeling.</li> <li>'n Gevolgtrekking.</li> <li>Verwerping of bevestiging van die hipotese.</li> </ul>		economic development. <ul style="list-style-type: none"> <li>Description of the environmental problems caused by the economic development.</li> <li>A conclusion.</li> <li>Bibliography where applicable(website)</li> </ul>	
<b>Vereistes</b> Formaat – Geskrewe of elektronies <ul style="list-style-type: none"> <li>5 getikte bladsye of 7 geskrewe bladsye sonder illustrasies.</li> <li>Bibliografie van ten minste 6 bronne waarvan slegs 4 internet oorsprong het.</li> <li>Kopie vir portefeulje.</li> </ul>		<b>Requirements</b> Format – Written or electronic <ul style="list-style-type: none"> <li>5 pages typed or 7 pages written without illustrations</li> <li>Bibliography of at least 6 sources of which only 4 may be internet sourced.</li> <li>Hardcopy for portfolio.</li> </ul>	
	Date Datum	Learner signature Leerder	Parent Signature Ouer
Ontvangs van opdrag Receipt of assignment			
Completed maps/Kaarte voltooid			
Inhandigingsdatum / Due date			
Ek verklaar dat die werk my eie werk is. I declare that this work is my own			
Signature / Handtekening			

Naam		Graad 11 Navorsingsprojek – Impak van ekonomiese ontwikkeling						
	Navorsing ASSESSERINGS KRITERIA	1 (0-29) ontoereikend	2 (30-39) Basiese prestasië	3 (40-49) Matige prestasië	4 (50-59) Voldoende prestasië	5 (60-69) Beduidende prestasië	6 (70-79) Verdienste prestasië	7 (80-100) Uitmuntende Prestasies
1	Twee kaarte van die gebied wat deel van die navorsing is.	Geen	Slegs een kaart	Swak kaart redelik volledig	Goeie kaart min info	Goeie kaart Redelike info	Goeie kaart Goeie info	Volledige kaart Volledige info
2	'n Kaart wat die veranderinge wat plaasgevind het duidelik aantoon met byskrifte	Geen	Swak	Swak kaart onvolledig	Goeie kaart min info	Goeie kaart Redelike aanduiding	Goeie kaart Goeie aanduiding	Volledige kaart Volledige aanduiding
3	Beskrywing van positiewe impak van die ekonomiese ontwikkeling.	Geen	Slegs een	Twee tot drie Swak beskryf	Drie tot vyf Basies beskryf	Drie tot vyf Goed beskryf	Meer as ses Goed beskryf	Meer as ses Uitstekend
4	Beskrywing van negatiewe impak van die ekonomiese ontwikkeling.	Geen	Slegs een	Twee Swak beskryf	Drie tot vyf Basies beskryf	Drie tot vyf Goed beskryf	Meer as vyf Goed beskryf	Meer as ses Uitstekend
5	Beskrywing van omgewingsprobleme wat veroorsaak is deur die ekonomiese ontwikkeling.	Geen	Slegs een	Swak beskrywing van probleme	Basies beskrywing van probleme	Goeie beskrywing van probleme	Baie goeie beskrywing van probleme	Uitstekende beskrywing van probleme
6	Gevolgtrekking & Verwerping of bevestiging van hipotese.	Geen	Swak gevolgtrekking en geen aanduiding	Beperkte gevolgtrekking en geen aanduiding	Swakgevolgtrekking en aanduiding	Bevredigende gevolgtrekking en aanduiding	Goeie gevolgtrekking met aanduiding.	Uitstekende gevolgtrekking met aanduiding.
7	Produkgehalte	Swak	Produk nie van gehalte om op trots te wees nie	Produk onnet en onvolledig	Produk onnet maar volledig	Produk redelik netjies en volledig	Produk netjies diagramme duidelik met byskrifte.	Uitstaande produk kleurvol netjies en stylvol .
		0	1					
8	Verskaf 'n lys van verwysingsbronne wat jy gebruik het	Geen	Volledig.					
	Punte= /50							

Name		Gr 11 Research project – Impact of economic development						
	Report CRITERIA	1 (0-29) Not achieved	2 (30-39) Elementary achievement	3 (40-49) Moderate achievement	4 (50-59) Adequate achievement	5 (60-69) Substantial achievement	6 (70-79) Meritorious achievement	7 (80-100) Outstanding achievement
1	Two maps of the area of your investigation.	None	Only one map	Poor information fair maps	Good maps little information	Good maps fair information	Good maps Good info	Complete maps Detailed info
2	Plot the changes/ economic development on a map of the area and label it accordingly.	None	Poor indication	Poor map fair indication	Good map partly indicated	Good map fair indication	Good map Good indication	Complete map Detailed indication
3	Description of the positive impact of the economic development.	None	Only one	Two to three Poor description	Three to five Basic description	Three to five Good description	More than six Good description	More than six Outstanding
4	Description of the negative impact of the economic development.	None	Only one	Two to three Poor description	Three to five Basic description	Three to five Good description	More than six Good description	More than six Outstanding
5	Description of the environmental problems caused by the economic development.	None	Only one	Poor description of problems	Basic description of problems	Good description of problems	Very good descriptions of problems	Outstanding description of problems
6	Conclusion and acceptance or rejection of hypothesis	None	Poor conclusion and no indication	Fair conclusion no indication	Poor conclusion good indication	Satisfactory conclusion and indication	Good conclusion and indication.	Outstanding conclusion and indication.
7	Overall impression.	Very poor	Poor, hastily done	Weak, sub-secondary level	Product quality inferior	Product not neat but completed	Product neatly typed/written; diagrams clear with labels and in frames	Outstanding product neat and stylish
		0	1					
8	Provide a list of reference sources that you have used	None	Complete description					
	Marks /50							



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