HILLCREST HIGH SCHOOL
GRADE 10
GEOGRAPHY
MAY 2014

TIME : 2 hours **MARKS**: 200

EXAMINER : Mr CM Girvin

INSTRUCTIONS

1. Answer all the questions in this examination paper

2. Number your answers exactly as the questions are numbered

3. Write legibly!

4. Watch the time!

SECTION A : MULTIPLE CHOICE

In answering the questions in this section, merely write down the question number and the letter that corresponds to the most correct answer eg. 14 F. **DO NOT WRITE OUT THE WHOLE ANSWER – YOU WILL JUST WASTE TIME**

1. Which of the following rocks is **NOT** metamorphic?

A	quartzite	B	schist
C	slate	D	granite

2. According to the theory of continental drift, all the continents were once joined together in one super continent called

A	Panasia	B	Panafrica
C	Pangaea	D	Panthalassa

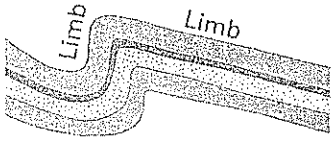
3. In South Africa the _____ facing slope is always the warmest

A	west	B	south
C	north	D	east

4. A parcel of air is capable of holding 120 g/cm³ of water vapour. It is currently holding 90 g/cm³. The relative humidity is thus

A	0,5%	B	50%
C	75%	D	100%

5.



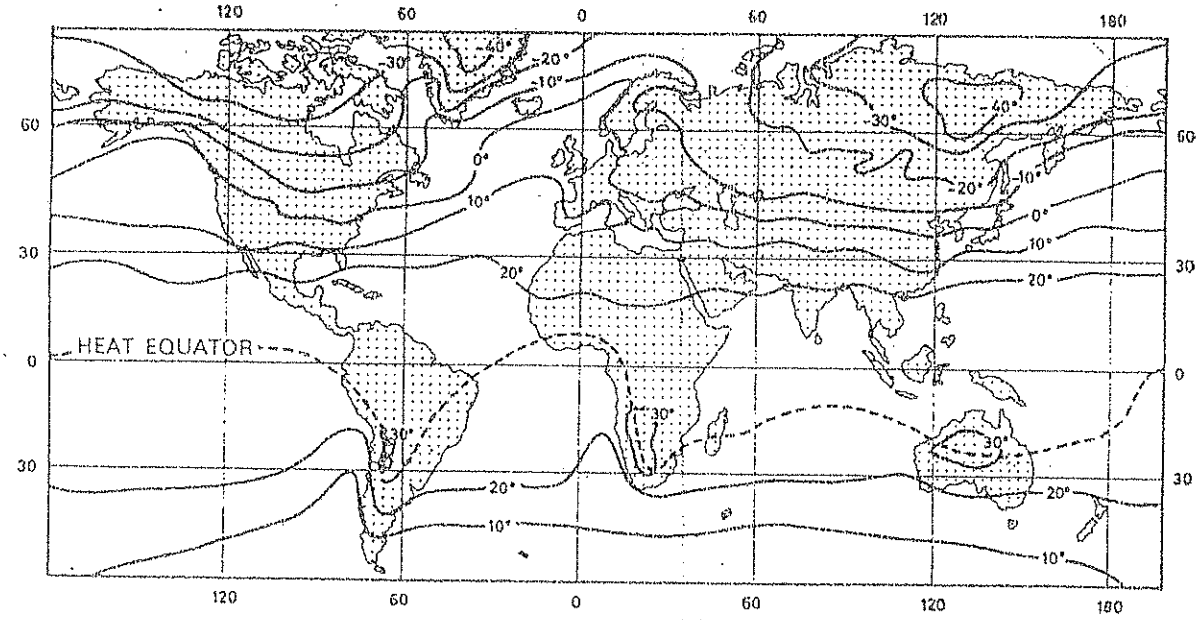
This diagram shows a

A Simple fold
B Overfold
C Fault
D Overthrust fold

6. A layer of the atmosphere in which temperature increases with height is called a

A isothermal layer
B lapse layer
C inversion layer
D egg layer

Refer to the diagram below to answer questions 7 and 8



7. The lines drawn on this map are

A isobars
B isohyets
C isotherms
D isoseismal lines

8. This map shows most clearly the influence of _____ on temperature

A distance from the sea
B latitude
C ocean currents
D altitude

9. The point on the earth's surface directly above the focus of an earthquake is called the

A barycentre
B tsunami
C fault line
D epicentre

10. A _____ cone is a volcanic cone that is formed by alternate layers of volcanic ash and lava

A shield B cinder
C composite D caldera

2 X 10 = [20]

TOTAL SECTION A : 20

SECTION B : CLIMATOLOGY

1. DURBAN'S WEATHER

A group of Grade 10 Geography students (!) collected weather data for Durban during March 2014. Some of this data is shown on the table below

DATE	MAXIMUM TEMPERATURE	MINIMUM TEMPERATURE	RH	RAINFALL TOTAL
2/3	31	22	85	0
3/3	31	22	80	0
13/3	23	17	75	38,8
14/3	29	22	90	38,8
17/3	30	23	95	39
20/3	27	20	90	43,8
23/3	31	21	80	44,4
24/3	31	21	80	44,4
25/3	31	22	80	44,4
30/3	20	20	90	64,2
31/3	28	19	90	64,2

1.1 Using the data in this table calculate:

1.1.1 the temperature range for Durban for March 2014

1.1.2 the average maximum temperature for Durban for March 2014 (4)

1.2 Explain why the results of your calculations in 1.1 could be regarded as inaccurate (2)

1.3 The Durban Metropolitan Area stretches from Verulam in the north to Umkomaas in the south and from the coast inland to Cato Ridge in the west. Name **TWO** factors that would influence temperatures in the Durban Metropolitan Area (2)

1.4 **DESCRIBE AND EXPLAIN** how **ANY ONE** of these factors would affect temperatures in the DME (4)

1.5 Refer to the column headed **'RH'**

1.5.1 What does 'RH' stand for? (1)

1.5.2 Provide a definition of this term (2)

1.5.3 What **TWO** factors most commonly determine the RH? (2)

1.5.4 If the RH was 100%, what state would the air have reached? (1)

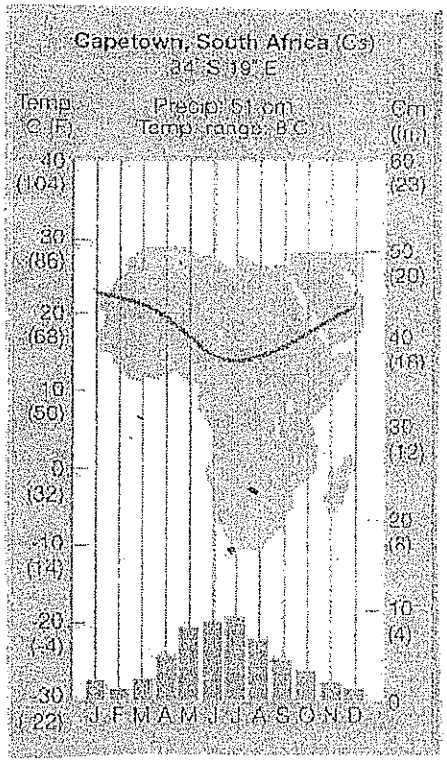
1.5.5 What **PROCESS** would occur when the state mentioned in 1.5.4 was attained? (1)

1.6 State briefly why this data is referred to as **WEATHER** data and not **CLIMATE** data (2)

[21]

2. MOISTURE IN THE ATMOSPHERE

Refer to the climate graphs for Cape Town below and then answer the questions that follow:



2.1.1 In what season does Cape Town get most of it's rain? (1)

2.1.2 Hence state what **TYPE** of climate Cape Town is said to have (1)

2.2.1 Name the three **TYPES** of rain (3)

2.2.2 Which **TWO** types are most likely to occur in Cape Town in June? (2)

2.2.3 **EXPLAIN** your answer in 2.2.2 (4)

2.3 Name the **TYPE** of precipitation being described in **EACH** of the statements below

2.3.1 forms when the air temperature drops below freezing on clear nights

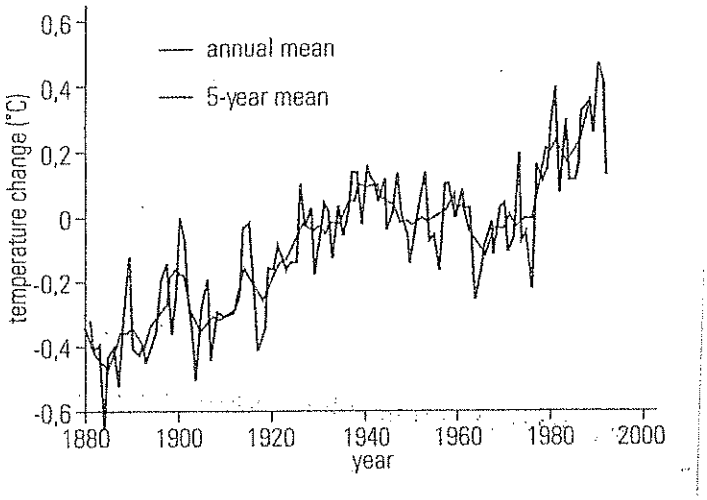
2.3.2 ice particles increase in size in a thunderstorm cloud and can cause great damage to crops

2.3.3 tiny water droplets form when air cools making driving dangerous (3)

2.4 Use the words and phrases listed below, to **EXPLAIN** the basic process involved in the formation of all types of precipitation
precipitation ; dew point temperature ; condensation ; relative humidity increases ; air temperature drops ; saturation ; air can hold less water vapour ; relative humidity is 100% ; super saturated (6)
[20]

3. CLIMATE CHANGE

The diagram below shows the change in world temperatures between 1880 and 2000



3.1.1 By how much have world temperatures changed between 1880 and 2000? (1)
3.1.2 Hence state what problem this graph highlights (1)

3.2.1 Suggest **TWO** causes of the problem identified in 3.1.2 (4)
3.2.2 Select **ONE** of these causes (3.2.1) and explain how it, in turn, causes the problem you identified in 3.1.2 (4)

3.3 Explain, briefly, the role played by the following in attempting to address the problem identified in 3.1.2:
3.3.1 the Montreal Protocol
3.3.2 the Kyoto Protocol
3.3.3 events like Earth Hour held on 29 March 2014 (9)
[19]

4. SYNOPTIC CHARTS

Refer to the synoptic chart for 15 March 2011 which is attached to this question paper and then answer the questions below

4.1.1 Why is this called a **SYNOPTIC** chart? (1)

4.1.2 Name **ONE** source from which the information to compile this synoptic chart was obtained (1)

4.2 Name

4.2.1 the pressure cell labelled A

4.2.2 the line labelled X

4.2.3 the feature labelled Y (3)

4.3 Describe the weather at East London on this day (5)

4.4 Explain why rainfall is highly unlikely at Pretoria on this day (2)

4.5 Some stations on the map recorded clear skies

4.5.1 Name **ONE** of these stations (1)

4.5.2 **EXPLAIN** how these conditions would favour the formation of **DEW** (3)

4.6 What **SEASON** is represented by this synoptic chart? Give **ONE** reason for your answer (4)

[20]

TOTAL SECTION B : 80

SECTION C : GEOMORPHOLOGY

1. STRUCTURE OF THE EARTH

It is the year 2500 AD and you live on the planet Zot. As one of it's most respected geomorphologists, you are appointed by the Grand Premier to head a mission to investigate the structure of the planet Earth. Using special earth burrowing equipment constructed from heat resistant steel, you are able to burrow right through to the centre of the planet, something that has never been done before. Upon your return to Zot, you are feted as a national hero and awarded the Grand Octagon (1st Class with Krypton Bar) by the Grand Premier and you submit a report on your findings.

1.1 Name the four layers through which you passed (4)

1.2 Approximately how thick was the first layer? (1)

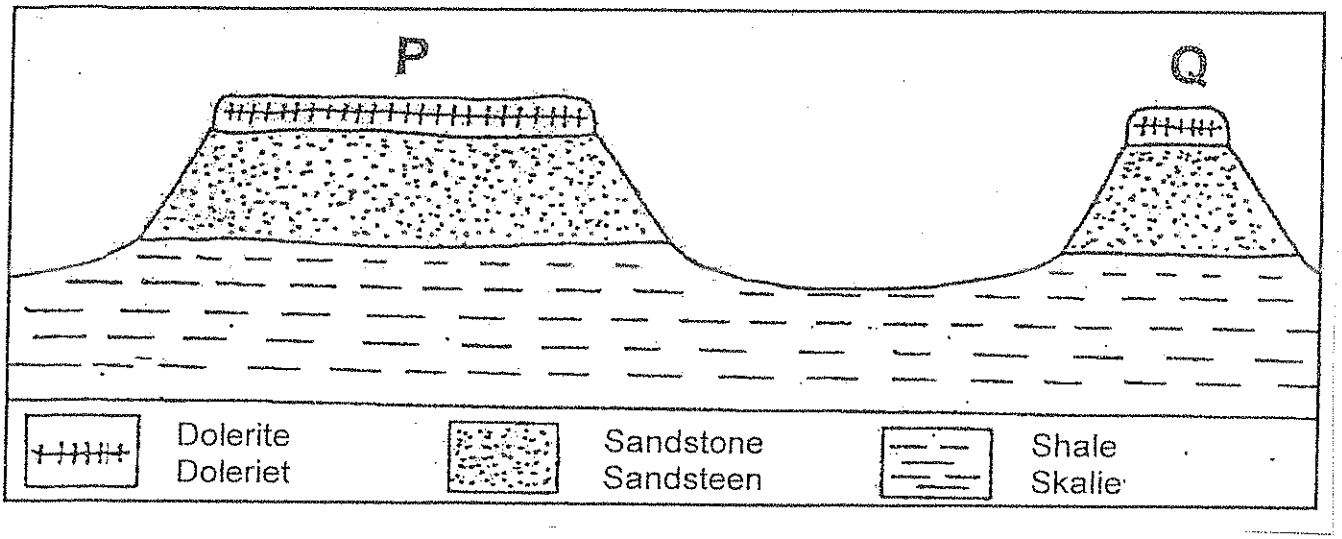
1.3 Describe the second layer you passed through (2)

1.4 You were surprised to find the very central layer was solid even though the temperatures were extremely high. How did you explain this phenomenon in your report? (2)

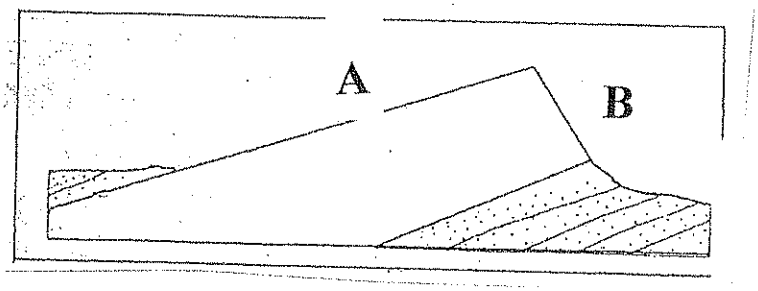
[9]

2. THE ROCK CYCLE, ROCK TYPES AND ASSOCIATED FEATURES

Refer to the diagrams below and then answer the questions that follow



R



2.1 Name the features labelled P, Q and R (3)

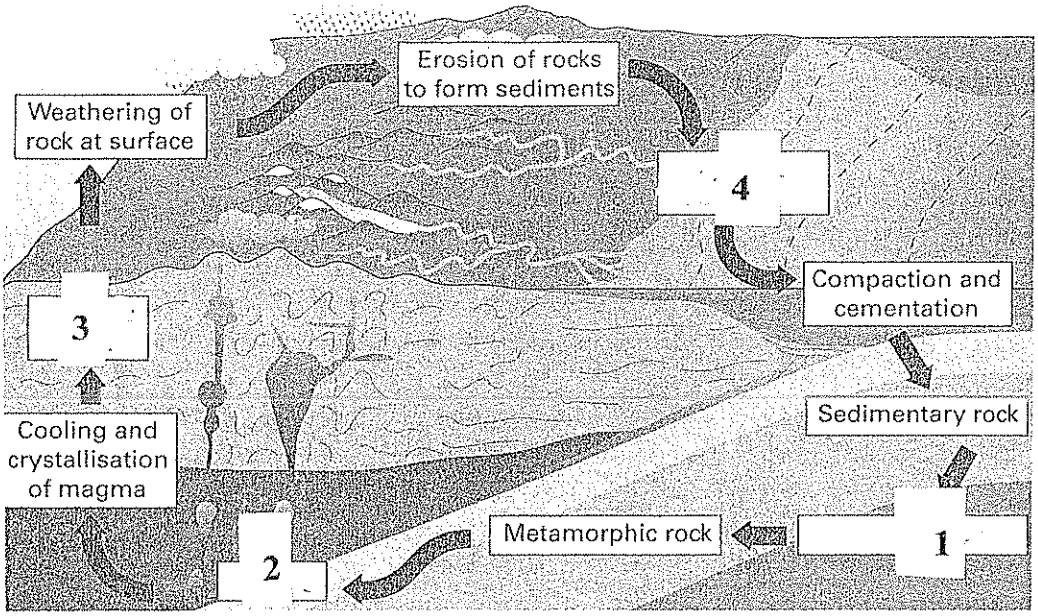
2.2 State one difference between features P and Q and feature R (2)

2.3 Identify the slopes labelled A and B on feature R (2)

2.4 What **TYPE** of rock is:
2.4.1 sandstone
2.4.2 dolerite (4)

2.5 Hence state **TWO** important differences between sandstone and dolerite (4)

2.6 The diagram below shows the rock cycle

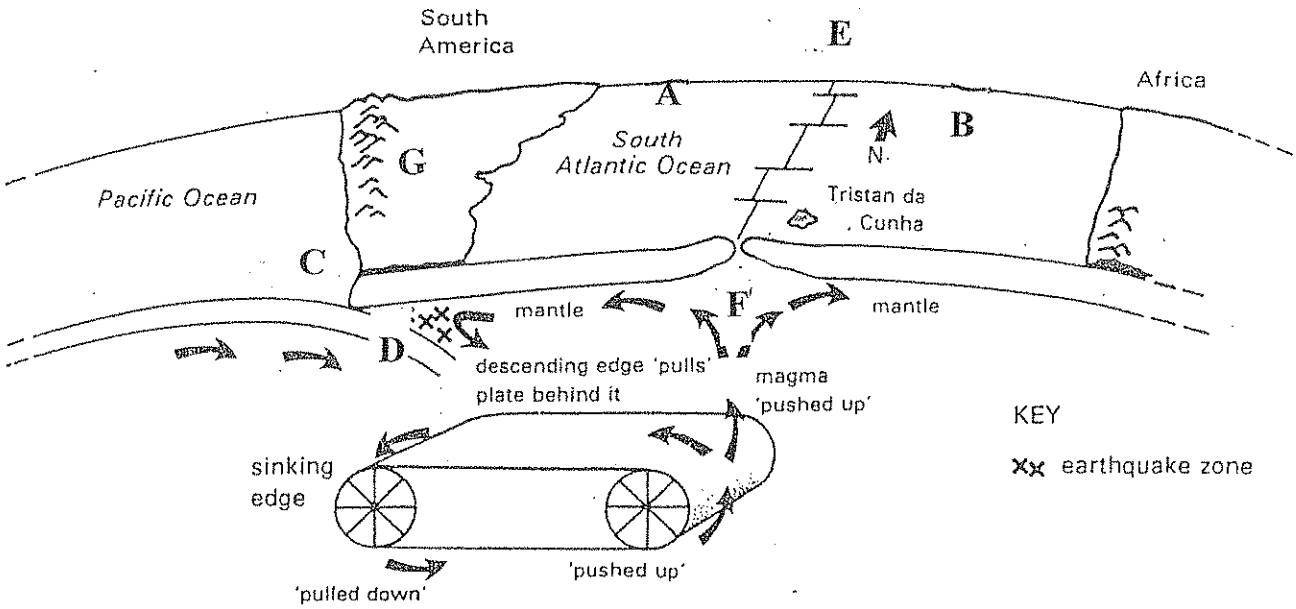


2.6.1 How does this diagram show a **CYCLE**? (2)

2.6.2 Provide suitable labels for the stages of the cycle labelled 1 – 4 (8)
[25]

3. CONTINENTAL DRIFT

Refer to the diagram below and then answer the questions that follow



3.1 All the continents were once joined together

3.1.1 Who first proposed this theory? (1)

3.1.2 What evidence did he provide for his theory? (4)

3.2 Name the plates labelled A and B in the above diagram (2)

3.3 Provide suitable labels for C, D, E and F on this diagram (4)

3.4.1 What is meant by the term **PLATE BOUNDARY**? (2)

3.4.2 What **TYPE** of plate boundary exists between the plates labelled A and B in the above diagram? (1)

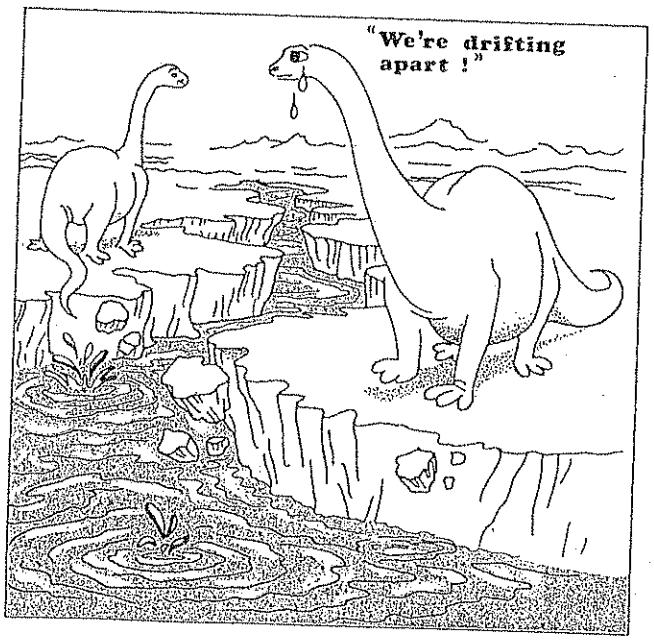
3.4.3 Explain briefly, **ONE** important difference between what is happening at C and what is happening at F (4)

3.5 The Andes Mountains are marked G.

3.5.1 Would you classify these mountains as **FOLD MOUNTAINS**? (1)

3.5.2 Give **ONE** reason for your answer in 3.5.1 (2)

[21]



13 One consequence of plate movement!

4. EARTHQUAKES

Read the report below about the earthquake which devastated Christchurch in New Zealand in February 2011, and then answer the questions that follow

Case study: New Zealand, 22 February 2011

The 6,3-magnitude quake struck at lunchtime, when streets and shops in New Zealand's second largest city were packed and offices were occupied. The mayor of Christchurch, Bob Parker, said, "There will be deaths, there will be a lot of injuries, there will be a lot of heartbreak in this city."

Hundreds of dazed, screaming and crying residents wandered through the streets as sirens blared throughout Christchurch after the quake. The epicentre of the earthquake was just 4.8 km from the city. The focus was only 5 km below the surface.

Daniel Tobin, multimedia editor at the Christchurch Press, was buying lunch when the quake struck. "I ran out of the shop and the building in front of me came down on top of people, and the building beside it came down on top of people, and the building the other side came down. It was horrific scenes, lots of people screaming," he told the *Guardian* (*New Zealand Herald* newspaper).

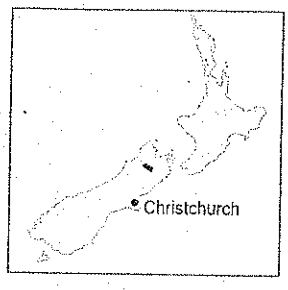


Figure 3.102 Location of earthquake and epicentre.

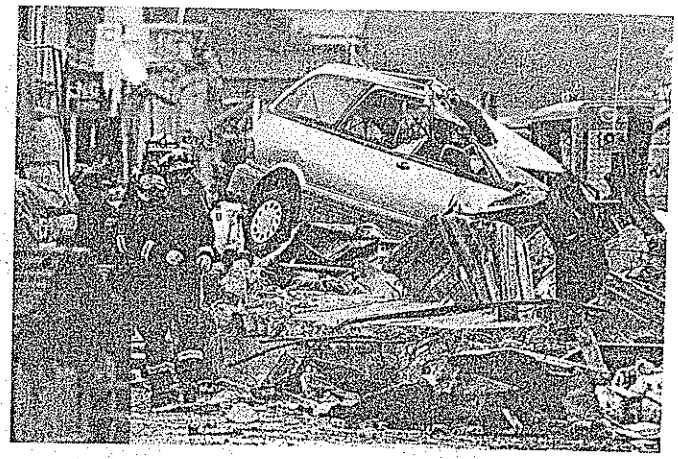


Figure 3.103 Earthquake damage in Christchurch.

4.1 Explain the meaning of these terms used in the article
- 4.1.1 **FOCUS**
- 4.1.2 **EPICENTRE**

(4)

4.2 The magnitude of the earthquake was 6,3
- 4.2.1 On what scale is this measured? (2)
- 4.2.2 How severe would this earthquake have been on this scale? (2)

4.3 Why does New Zealand experience many earthquakes (most of them not as severe as the one described in the article)? (2)

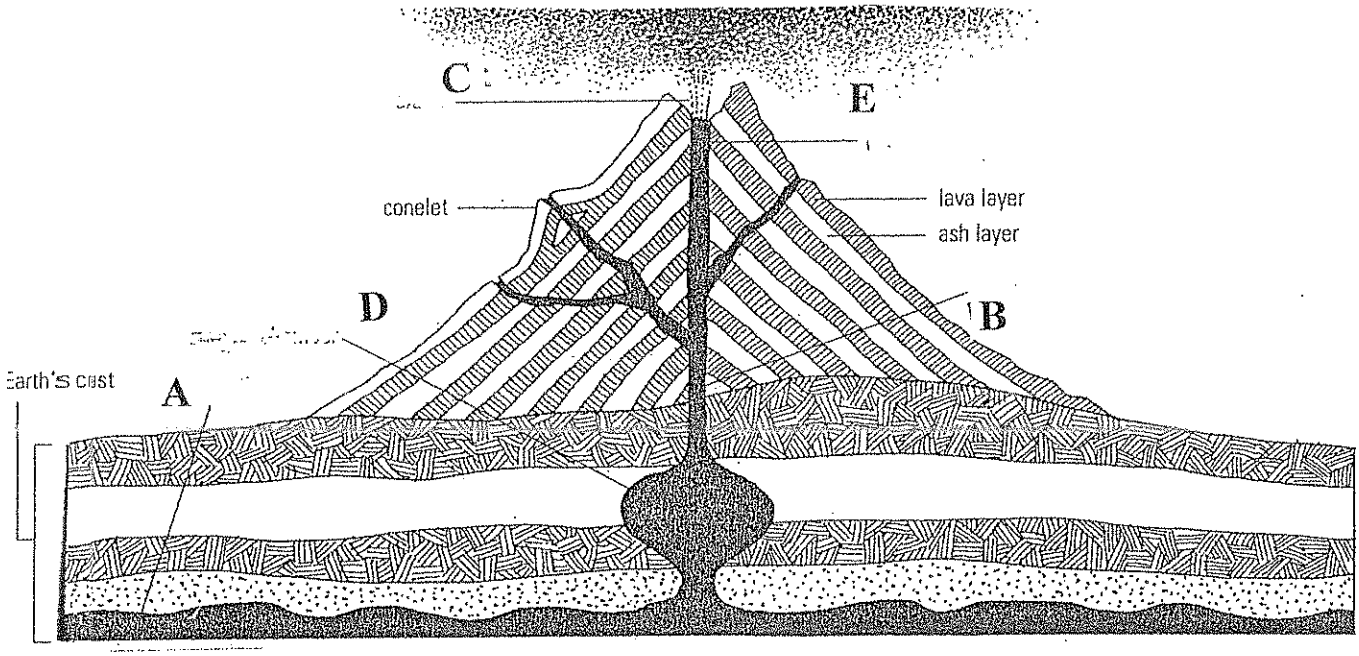
4.4 Explain why the mayor said 'There will be deaths, there will be a lot of injuries' (4)

4.5 No mention is made of a **TSUNAMI** following this earthquake
- 4.5.1 What is a tsunami? (2)
- 4.5.2 Why was there no tsunami following the Christchurch quake? (2)

4.6 Explain briefly what might have been done to reduce the damage and destruction caused by this earthquake (4)

[22]

5. These questions refer to the diagram below



5.1 Provide suitable labels for the parts of the volcano labelled A, B, C, D and E
Make your choice from the following list of words:
crest ; crater ; gneiss ; composite ; pipe ; vent ; focus ; magma chamber
mantle ; Pompeii (5)

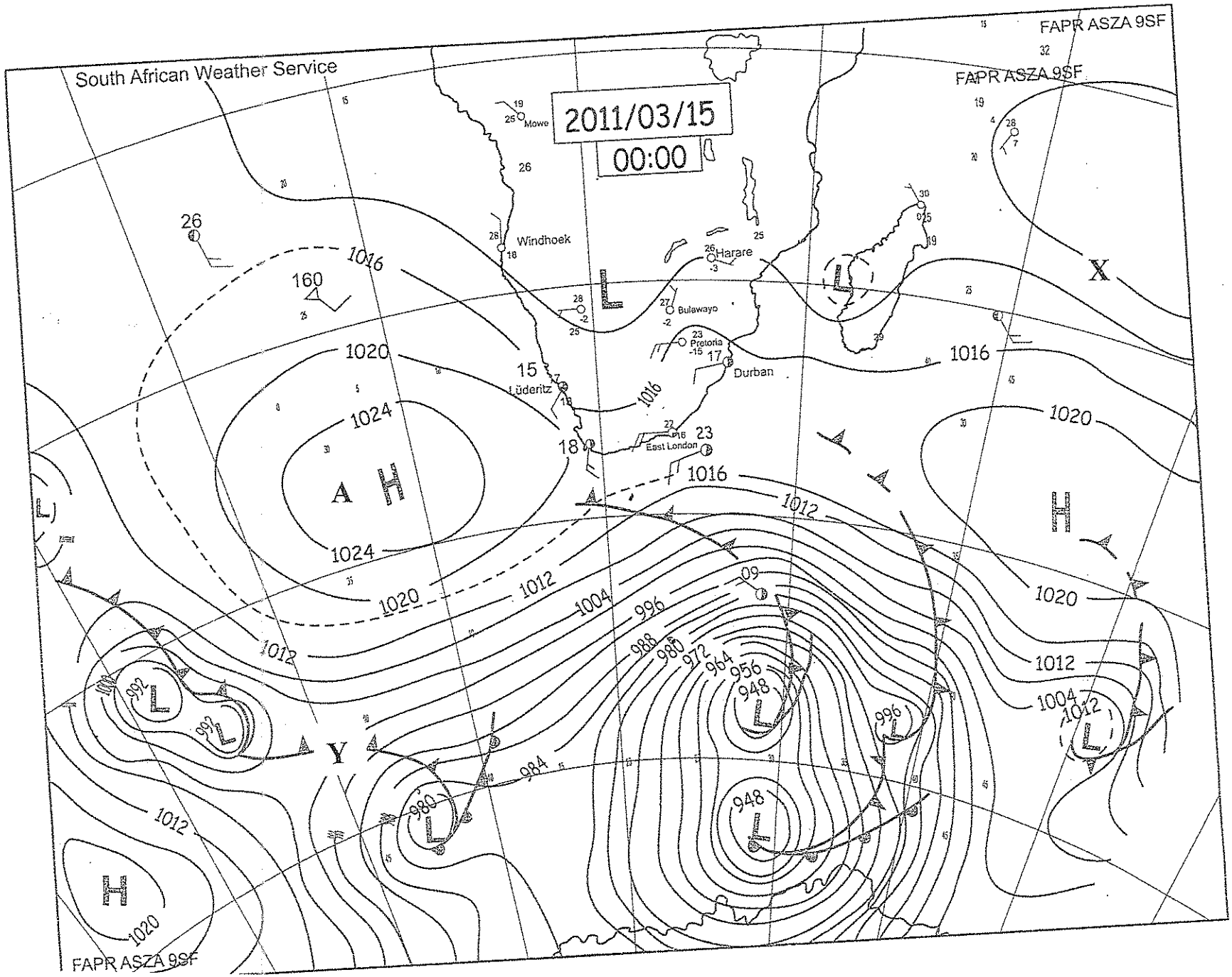
5.2 This is an example of an **ACTIVE** volcano.
5.2.1 What is an active volcano? (2)
5.2.2 Name and describe **TWO OTHER** types of volcano (4)

5.3 What type of volcanic eruption is shown in this diagram? (2)

5.4 There are three types of volcanic cone – cinder, lava and composite. Explain, with reasons, what type of cone is shown in the diagram above (4)

5.5 **ASSESS** the effect that this volcano could have on the lives of the people living in close proximity to it (6)
[23]

TOTAL SECTION C : 100


South African Weather Service
2011/03/15
00:00
FAPR ASZA 9SF
FAPR ASZA 9SF
FAPR ASZA 9SF
Mowe
Windhoek
Harare
Bulawayo
Pretoria
Durban
Lüderitz
East London
1016
1020
1024
1012
1004
996
988
980
972
964
956
948
992
984
A H
H
X
Y