GRADE 11	TERM 2	SOCIAL SCIENCES - GEOGRAPHY MID-YEAR MOCK EXAMINATION - MEMO	E-classroom

Time: 3 hours Marks: 225

Question 1

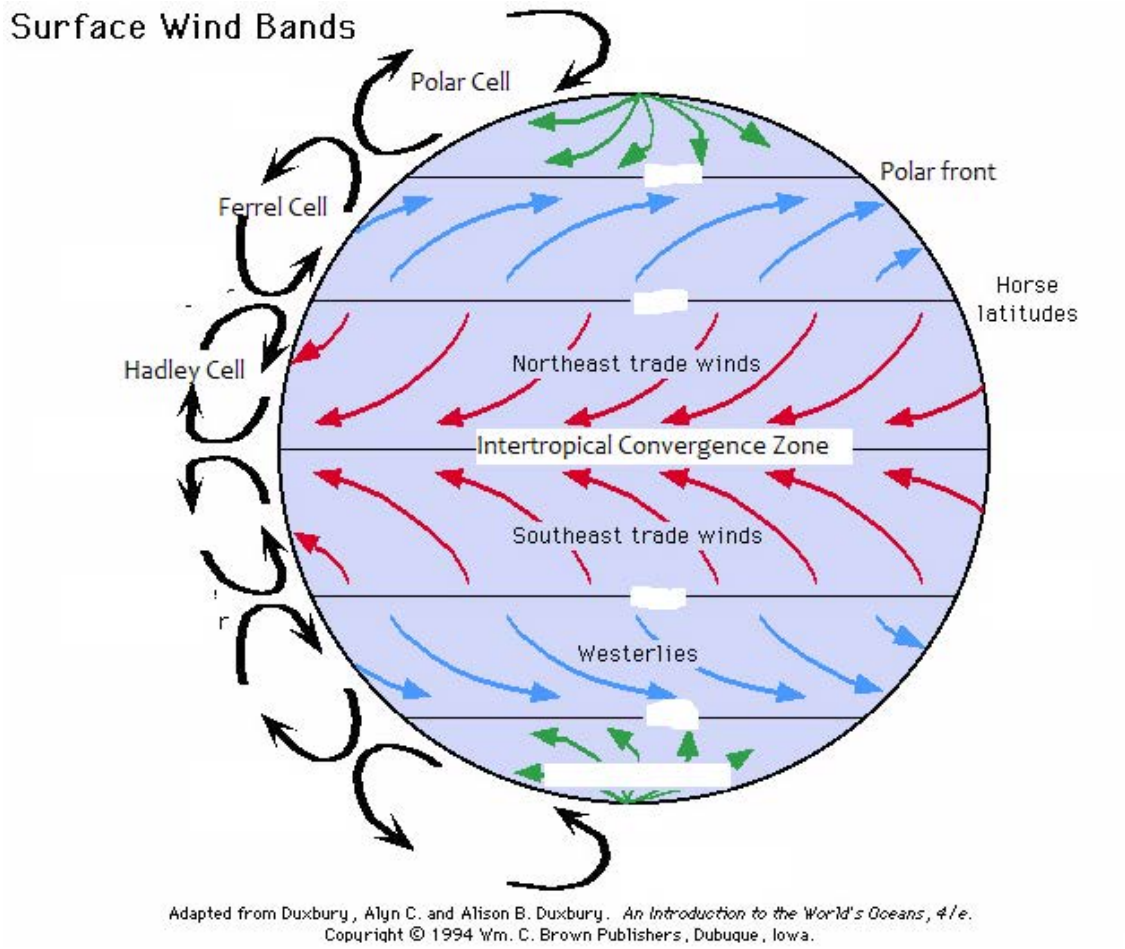
1. Answer this question on a new sheet of paper.

1.1. Match the term in Column A with the correct description in Column B. Write only the question number and the corresponding answer. (15)

Column A		Column B	
1.1.1	Knickpoint	***B.***	***The point where the pediment joins the talus, or a change in slope gradient***
1.1.2	Ferrel cell	***E.***	***An atmospheric cell lying between 30° and 60° N and S***
1.1.3	Topography	***L.***	***The relief of the land***
1.1.4	Coriolis effect	***N.***	***An effect whereby a mass of moving air moving in a rotating system experiences a force perpendicular to the direction of motion and to the axis of rotation***
1.1.5	Batholith	***O.***	***The largest and deepest of intrusive igneous features***
1.1.6	Jet stream	***C.***	***A narrow, variable band of very strong, predominantly westerly air currents encircling the globe several kilometres above the Earth***
1.1.7	Anti-cyclone	***H.***	***A large-scale circulation of winds around a central high pressure***
1.1.8	Canyon	***G.***	***A deep, narrow valley in an arid area***
1.1.9	Basalt	***F.***	***An example of a volcanic igneous rock***
1.1.10	Heat equator	***D.***	***Intertropical convergence zone***
1.1.11	Backwasting	***A.***	***Slopes eroding back parallel to their original position***
1.1.12	Albedo	***M.***	***The amount of solar radiation reflected off the Earth's surface***
1.1.13	Insolation	***J.***	***Incoming solar radiation***
1.1.14	Cuesta basin	***I.***	***Circular-shaped cuesta ridges with the scarp slopes facing outwards***
1.1.15	Net radiation surplus	***K.***	***An accumulation of heat from the sun***

1.2. Climate

1.2.1. Refer to the figure below and then state whether the following statements are true or false. Write only the question number and your answer. (7)



Source: http://addeyans-geography.weebly.com/global-atmospheric-circulation.html

1.2.1.1. The intertropical convergence zone is located along the equatorial low-pressure belt. ***True***

1.2.1.2. A zone of high pressure is located between the polar and Ferrel air-circulation cells. ***False (mid-latitude low)***

1.2.1.3. Rain, thunderstorms and tropical cyclones occur frequently in the Hadley air-circulation cell. ***True***

1.2.1.4. The sub-tropical high pressure belt is located between the Hadley and Ferrel air-circulation cells. ***True***

1.2.1.5. The westerlies are winds that form as a result of air movement from a low- to a high-pressure cell. ***False (air moves from a high-pressure cell to a low-pressure cell)***

1.2.1.6. The force that causes air to deflect to the left in the Southern Hemisphere is known as the Coriolis force. ***True***

1.2.1.7. A geostrophic wind blows across isobars due to friction.
False – geostrophic winds blow parallel to isobars

1.2.2. Refer the synoptic chart on page 5 and then answer the questions that follow.

1.2.2.1. Give two pieces of evidence that prove that this chart shows typical summer conditions over South Africa. (2)
Low pressure over interior
High day-time temperatures
No visible high-pressure cell
No mid-latitude cyclones reaching South Africa

1.2.2.2. Locate the 30° line of latitude.

a. Name the global pressure belt located along this line of latitude. (1)
Sub-tropical high-pressure belt

b. Name the two surface pressure cells associated with this line of latitude in South Africa. (2)
South Indian high-pressure cell and South Atlantic high-pressure cell

c. Explain why this global pressure belt is separated into two pressure cells on the Earth's surface but remains as a single pressure belt in the upper atmosphere. (2)
Differences in temperature between land and sea creates different pressures, therefore separate cells

1.2.2.3. Locate the weather station at Durban, also shown below.

a. Describe the weather being experienced in Durban on this day. (4)
Temperature – 29° C
Dew-point temperature – 16° C
Wind direction – NE
Wind speed – 10 knots

b. Account for the lack of cloud cover reading on this day. (1)
Automatic weather station

1.2.2.4. Locate the weather station at Upington, redrawn below.

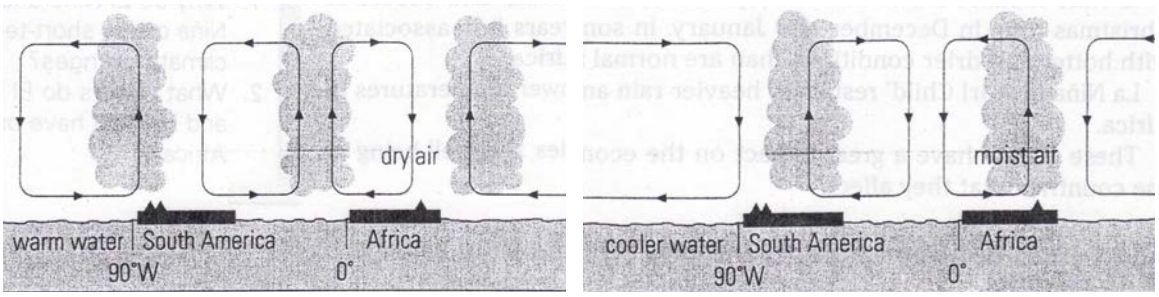
a. Give the cloud cover at Upington on this day. (1)
No cloud cover

b. Describe the temperature and moisture of the tropical continental air mass that is located at Upington. (2)
High temperatures of 33° C
Dry conditions – extremely low dew-point temperature

c. In a short paragraph, account for the semi-desert climate region in which Upington is located. (3)
Semi-desert – lack of rain, Upington in the high-pressure belt characterised by sinking air, sunny conditions and very little to no rainfall

1.2.5. El Niño

1.2.5.1. Draw a rough sketch to show the differences in the rainfall patterns during El Niño and La Niña. (6)



1.2.5.2. Describe the way in which El Niño causes droughts in the eastern part of South Africa. (2)
El Niño alters the distribution pattern of rainfall over southern Africa. Rain no longer falls in summer. The rain now falls to the east of the continents as the warmer temperatures over the Pacific Ocean shift the normal warmer circulation further east.

1.2.5.4. Discuss three human activities in the eastern part of South Africa that contribute to the worsening impact of droughts in the region. (3)
Can explain any of the following:
- ***Overgrazing***
- ***Deforestation***
- ***Overfarming***
- ***Farming on marginal land***
- ***Subsistence farming***
- ***No irrigation***

1.2.4.5. Outline the difference between drought and desertification. (2)
Drought – lack of rainfall over a period
Desertification – loss of fertile soils in low rainfall areas

1.2.6. Refer to the image below and then answer the questions that follow.

Source: https://www.theguardian.com/global-development/gallery/2016/oct/07/lives-devastated-el-nino-drives-drought-mozambique-in-pictures

1.2.5.1. Describe the environmental conditions experienced by people living in Mozambique. (2)

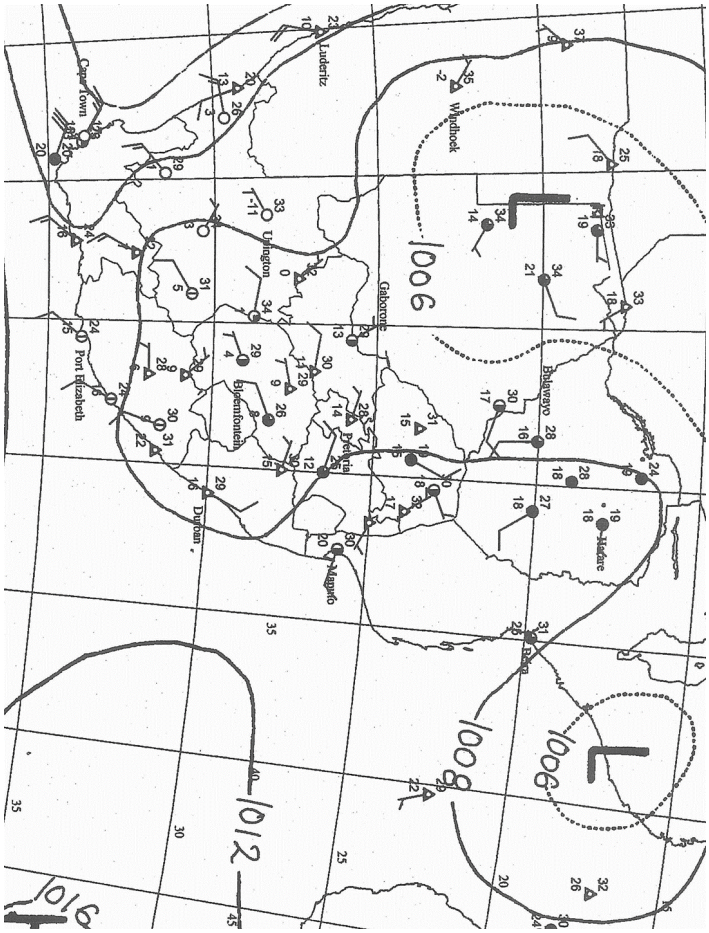
Low rainfall, semi-arid region

1.2.5.2. Explain why the impact of droughts in Mozambique is more severe than in a more economically developed country such as South Africa. (4)

Mozambique cannot afford dams or reservoirs.
The do not have management strategies in place.
They do not inform and educate people to store water and not waste water.
The do not provide emergency drought-relief services.
Any reasonable and logical answer

1.2.5.3. Suggest and explain three measures Mozambique can take to reduce the impact of drought in the country. (6)

- ***Collect and analyse climatic data to provide warning systems.***
- ***Prevent overgrazing.***
- ***Plant drought-resistant crops.***
- ***Maintain vegetation cover.***
- ***Build deep dams and reservoirs.***
- ***Educate people.***



1.3. Geomorphology

1.3.1. Select the correct word or phrase from those given in brackets to make the sentence correct. Write only the question number and correct word/phrase. (5)

a. Mesas and buttes are commonly found (***in the Northern Cape*** / on the coastal plain).

b. The plateau of South Africa is highest in the (west / ***east***).

c. The (***Little Karoo*** / Great Karoo) lies on the (***coastal plain*** / plateau) between the (***Southern Cape coastline and Langeberg Mountains*** / Langeberg Mountains and Swartberge Mountain Ranges).

1.3.2. Study the photograph below and then answer the questions that follow.

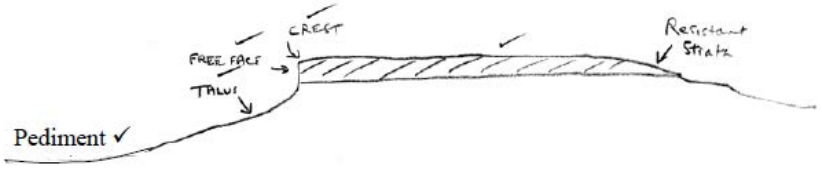
Source: S. Thompson

1.3.2.1. Identify the landform shown in the photograph above. (1)
Butte

1.3.2.2. Give a reason for you answer in 1.3.2.1. (1)
Taller than it is wide

1.3.2.3. Where in South Africa (which province) are these landforms most commonly found? (1)
Northern Cape

1.3.2.4. Draw a labelled sketch to show the four slope elements that are shown on the photograph above. (4)



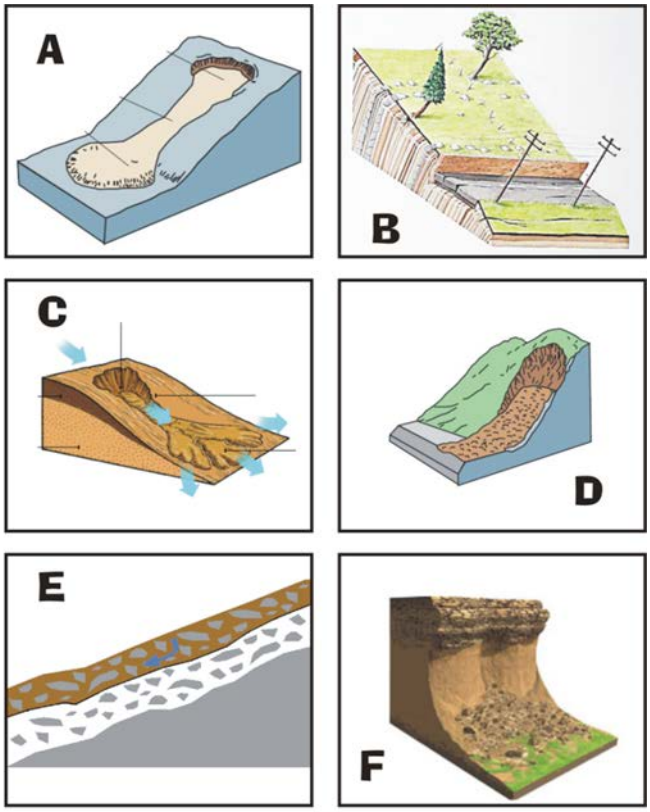
1.3.2.5. Describe the types of mass movement that are associated with each slope element. (4)
Crest – rockfalls, soil creep
Scarp/cliff – rockfalls
Talus/debris slope – mud flow, solifluction
Pediment – soil creep

1.3.2.6. Name the original landform that preceded the landform shown in the photograph. (1)
Plateau

1.3.2.7. State the name and describe the process associated with the geomorphological process that is responsible for the erosion of the original landform to what is seen in the photograph. (3)

Scarp retreat / slope retreat / backwasting

1.3.3. Study the figure below that indicates different mass movement landforms.



1.3.3.1. List the different forms of mass movement A to F. (6)

A – earth flow
B – soil creep
C – mud flow
D – landslide
E – solifluction
F - rockfall

1.3.3.3. Which two of the above types of mass movement can be classified as flowage? (2)

A and F

1.3.3.5. Outline how each of mass movements A and F form. (4)

A – occurs in clay areas when clay particles are saturated with water and move quickly down the slope

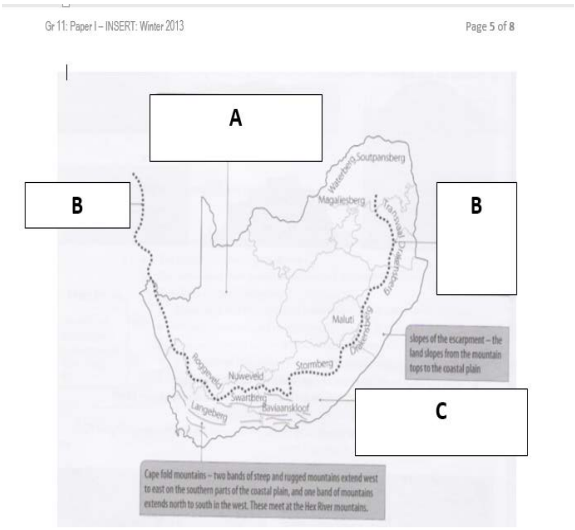
F – occurs when rock fragments break off from parent mass as a result of weathering and fall to the bottom of the slope, collecting at the bottom as scree/debris

1.3.3.6. "In areas where humans have affected the stability of slopes, the probability of mudflows and landslides is increased." Fully account for this statement. (3)

Humans have affected the stability of slopes by clearing away vegetation, adding weight and using steep slopes for:

- ***Settlement***
- ***Transport routes***
- ***Quarrying and removal of material from side/bottom of hill***
- ***Dumping waste material***
- ***Recreation (hotels, hiking, camps)***

1.3.4. Refer to the figure below, showing the topography of South Africa, and answer the questions that follow.



1.3.4.1. Identify by naming each of the areas labelled A, B and C. (3)

A – plateau
B – escarpment
C – coastal plain

1.3.4.2. Describe a characteristic of feature A. (1)

Fairly level high ground

1.3.4.3. Define the term 'strata'. (1)

A layer of rock or soil

1.3.5 Read the extract below and then answer the questions that follow.

> On 30 July 2014, a landslide occurred in the village of Malin in the Ambegaon taluka of the Pune district in Maharashtra, India. The landslide, which hit early in the morning while residents were asleep, was believed to have been caused by a burst of heavy rainfall, and killed at least 151 people. The landslide was first noticed by a bus driver who drove by the area and saw that the village had been overrun with mud and earth. In addition to those dead, more than 160 people, and possibly up to 200, were believed to have been buried in the landslide in 44 separate houses. Rains continued after the landslide, making rescue efforts difficult.
>
> *Source: https://en.wikipedia.org/wiki/2014_Malin_landslide*

1.3.5.1. Define the term 'mass movement'. (1)
Movement of surface material under the force of gravity

1.3.5.2. What was the cause of the Malin landslide? (1)
Heavy rainfall

1.3.5.3. As a member of the rescue and rebuilding team you are required to make a list of the four needs of the victims:

a. immediately after the disaster, and (4)
- ***Water***
- ***Food***
- ***Shelter***
- ***Medical assistance***

b. a few months later. (4)
- ***Water***
- ***Food***
- ***Shelter***
- ***Work***
- ***Medical care***

Question 2

2. Start this question on a new page.

2.1. Define the following terms: (10)

2.1.1. Hogsback ***– a long hill or mountain with steep sides***

2.1.2. Hadley cell ***– large-scale atmospheric convection cell, rises at Equator and sinks at approximately 30 N and S***

2.1.3. Cuesta ***– ridge with a gentle dip slope and steep scarp slope***

2.1.4. Polar front ***– the point where the Ferrel and polar cells meet***

2.1.6. Intertropical convergence zone ***– the heat Equator***

2.1.7. Isobar ***– a line joining places of equal pressure***

2.1.8. Weather ***– the day-to-day atmospheric changes***

2.1.9. Inclined strata ***– layers of rock that are at an angle to the horizontal***

2.1.10. Mudslide ***– a mass of land (mud) that moves downslope due to gravity and rainfall***

2.1.11. Soil creep ***– the slow movement of soil down a slope***

2.2. Refer to the synoptic chart on page 12 and then answer the questions that follow.

2.2.1. What is the isobaric interval on this map? (1)
4 hPa

2.2.2. Where will the wind speed be greater – at A or at B? ***A*** How do you know this? (2)
The pressure gradient is steeper / isobars are closer together

2.2.3. Find Gough Island and Marion Island. At which of these places is the wind almost geostrophic? Give a reason for your answer. (2)

Marion Island; wind blows almost parallel to the isobars

2.2.4. What would be the direction of the geostrophic wind at B? (1)
NW

2.2.5. Draw a sketch to show the forces that would be operating on it. Label the isobars in your sketch and put in the lines of latitude and longitude. (5)
Learners need to show geostrophic forces and pressure gradient force acting on the wind.

2.2.6. What weather is currently being experienced in Port Elizabeth? (5)
Air temperature – 18° C
Dew-point temperature – 14° C
Wind speed – 25 knots
Wind direction – SW
Cloud cover – $\frac{1}{4}$

2.2.7. What is the pressure at D and E? (2)
D – between 1 032 hPa and 1 033 hPa
E – between 1 020 hPa and 1 022 hPa

2.2.8. Which features of the global circulation are the pressure systems centred at D and E? (2)
High-pressure cells

2.2.9. Name these pressure systems. (2)
D – South Indian high pressure
E – South Atlantic high pressure

2.2.10. What is the pressure at F? (1)
Between 1 020 and 1 022 hPa

2.2.11. Is this a high pressure of low pressure? (1)
High pressure

2.2.12. What information from the chart, besides the date, tells you that this is winter? (2)
Cold front over South Western Cape; high pressure over land and ocean north of 25°; cold temperatures

2.2.13. Why is it overcast at Cape Town? (1)
Presence of the cold front brings clouds

2.2.14. What is likely to happen to the temperature at place C in the next 24 hours? (1)
Temperature is likely to drop

2.2.15. Give a reason for your answer in 2.2.14. (1)
There is cooler air behind the cold front, causing the temperature to drop.

2.2.16. Look at the station models near to G.

a. What is the cloud cover at these places? (1)
None

b. Explain why there is the amount of cloud you observed. (2)
High-pressure cell present

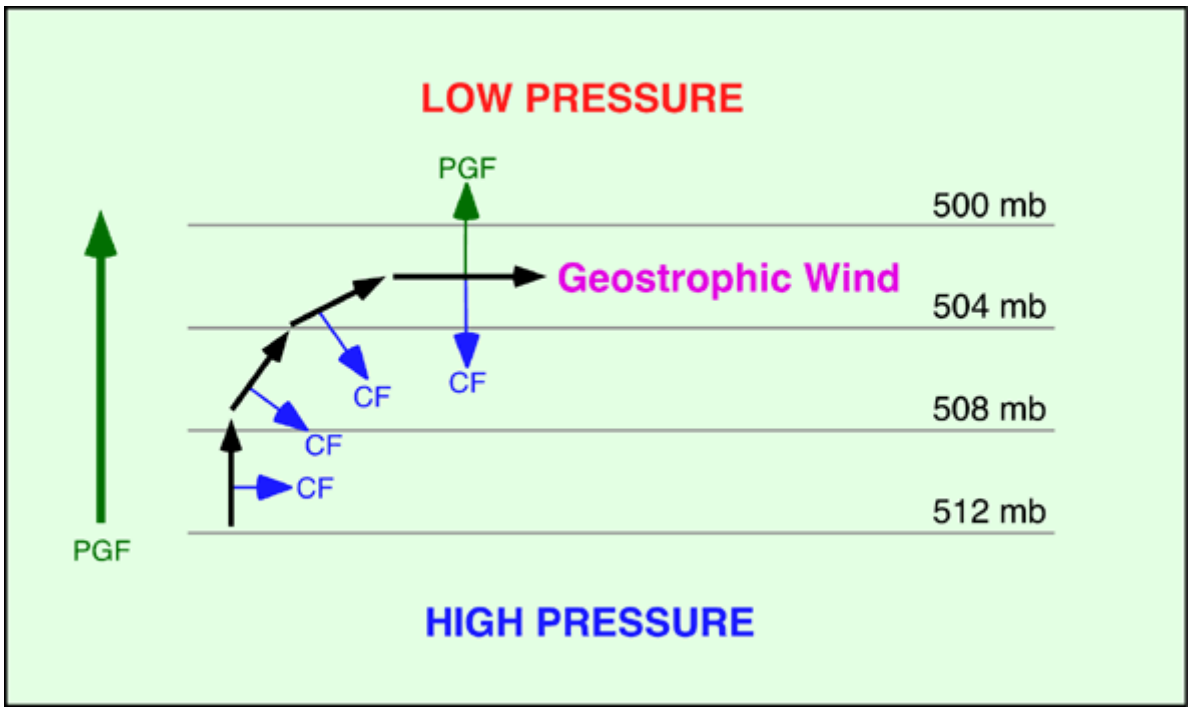
2.2.17. Describe and account for the difference in temperature between Durban and place K on the west coast. (4)
Durban – warm ocean current, warmer temperatures
Place K – cold ocean current, cooler temperatures

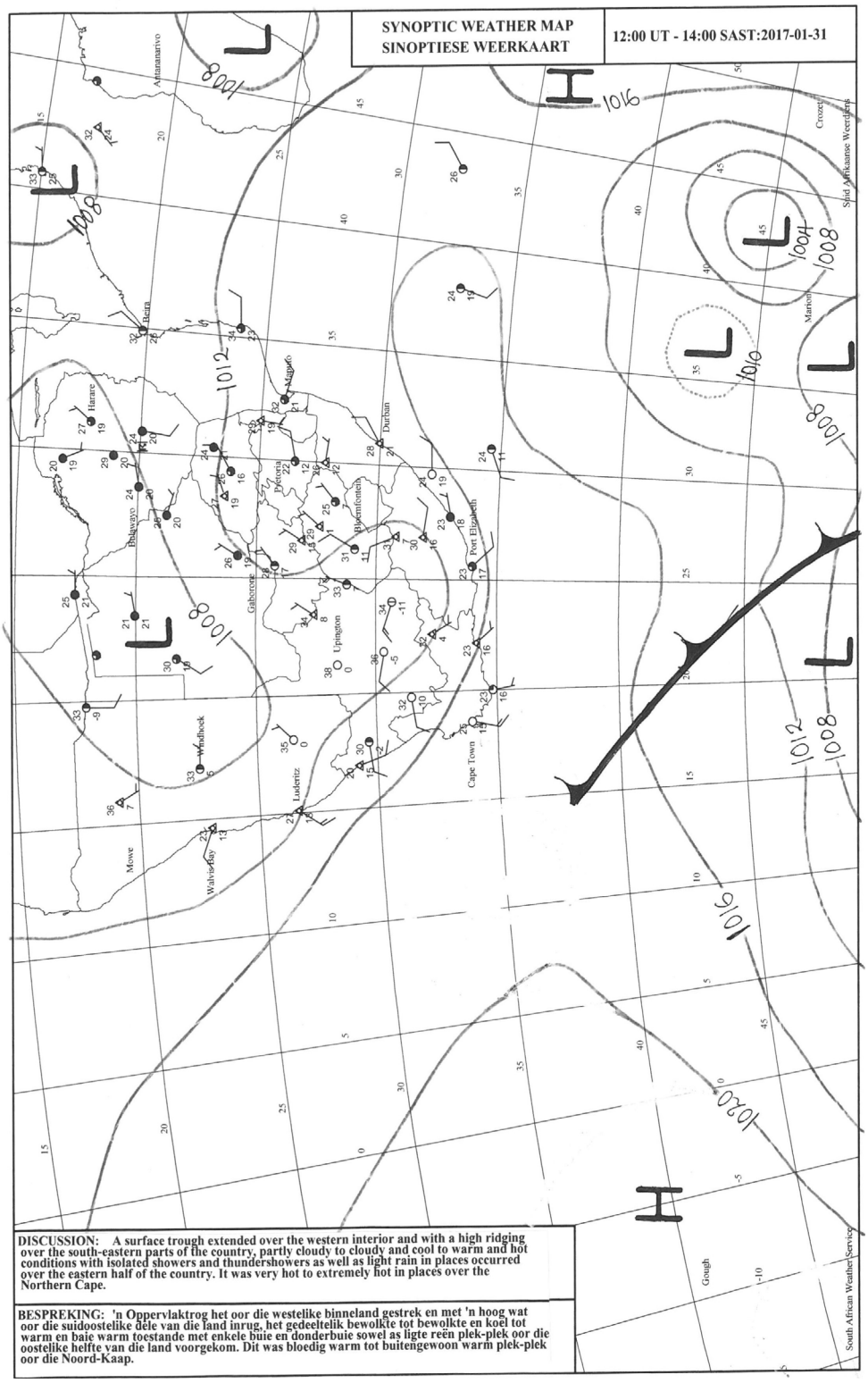
2.2.18. Is the flow of wind around the high-pressure system at E clockwise or anticlockwise? (1)
Anticlockwise

2.2.19. If you stood with your back to the wind at I, would the high pressure be on your left or your right? (1)
Right

2.3. Differentiate between maritime and continental air masses. (2)
Maritime air masses are experienced when a place is found close to the oceans. They have smaller temperature ranges and more mild winters. Continental air masses are located inland and have larger temperature ranges and experience hot summers and cold winters.

2.4. Explain how winds are formed by referring to the pressure gradient, pressure gradient force and Coriolis force. Use diagrams to help you answer this question. (6)

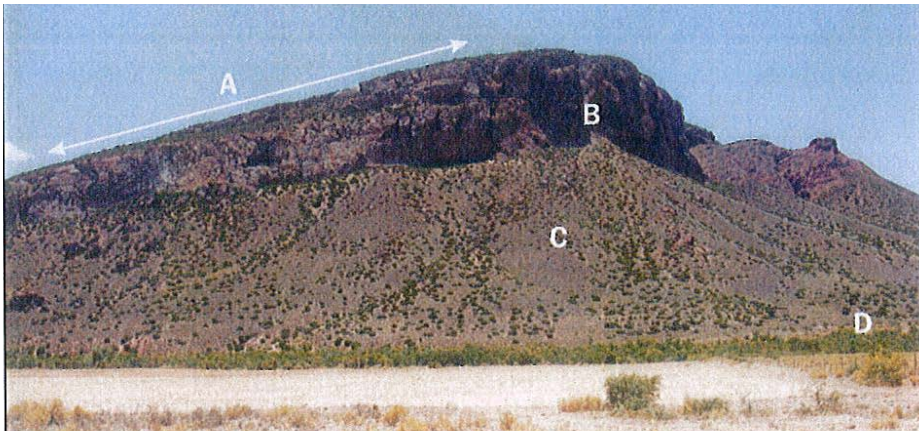




2.5. Discuss the general weather being experienced over South Africa on this day. (4)

Learners need to look at the description given on the synoptic chart.

2.6. Study the figure below and then answer the questions that follow.



2.6.1. State why the landform shown in the figure above is called a homoclinal ridge. (2)
Inclined strata with a clear dip and scarp slope

2.6.2. Identify the slope elements marked A and B. (2)
A – dip slope
B – scarp slope

2.6.3. B and C represent layers of different rock types.

a. State which layer (B or C) is less resistant to erosion. (1)
C

b. Give a reason for your answer in a. above. (1)
It is visible in the image that layer C has been eroded; it is the talus slope.

2.6.4. The slope from B to D is concave in shape. Draw a simple sketch to show how a concave slope would appear on a topographic map. (2)
Learners need to show contour lines that are steep at the top and gentle at the bottom.

2.7. Study the landform below and then answer the questions that follow.

2.7.1. Identify the landform shown in the figure above. (1)
Mesa

2.7.2. Describe two points to explain how this landform was formed. (2)
From erosion of a plateau, top resistant layer of rock erodes much slower

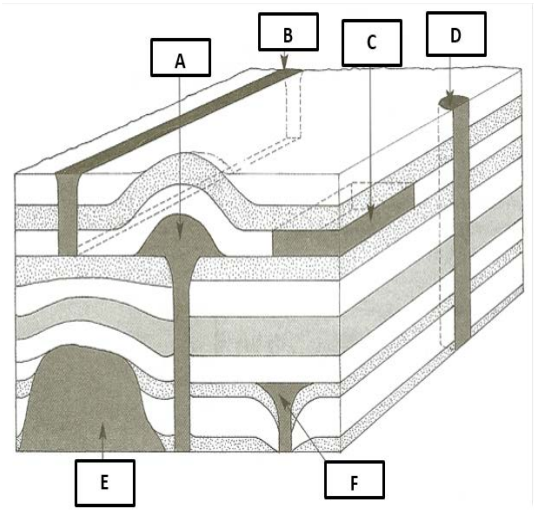
2.7.3. Over many thousands of years the landform changes and becomes smaller.

a. Draw a diagram to show how this landform becomes smaller over time. (2)
Need to show backwasting, the landform becomes narrower

b. Give this process a name. (1)
Backwasting, scarp retreat

c. State the names of the previous larger landform and the resulting smaller landform. 2)
Previous – plateau
Resulting – butte

2.8. The following diagram shows intrusive features. Refer to the diagram and then answer the questions that follow.



2.8.1. Identify by naming each feature labelled A to F. (6)
A – laccolith
B – dyke
C – sill
D – pipe
E – batholith
F - lopolith

2.8.2. Over time, feature E is exposed to the surface of the Earth. Name this new exposed landform and give an example. (2)
Dome – Northgate Dome

2.8.4. Differentiate between intrusive and extrusive features. (2)
Intrusive – those that are formed below the Earth's surface
Extrusive – those that are found on the Earths' surface

2.9. Refer to the photograph below and then answer the questions that follow.

Source: IEB, 2008

2.9.1. Define the term 'mass movement'. (1)
Movement of materials under the force of gravity

2.9.2. Explain the causes of soil creep. (2)
Freeze-thaw
Gravity
Poor farming methods

2.9.3. As a farmer who owns this land, write a report in which you:

- Describe the effects of this mass movement on your farmlands, (2)
  Thinner soils
- Describe the effects of this mass movement on your farming infrastructure, and (2)
  Damages walls
  Pushes over poles and fences
- Suggest solutions to this problem. (4)
  Building gabions
  Digging trenches
  Planting tree lines

2.10. Read the extract below and then answer the questions that follow.

Mudslide in rural Afghanistan kills hundreds, including rescuers

Rescue operation under way as thousands of homes buried in Badakhshan province

Sat, May 3, 2014, 01:00

Hundreds of people were buried alive in a remote northern corner of Afghanistan yesterday when a mudslide swept through a village and a second collapse then trapped neighbours who had rushed to help, according to local officials.

Thousands of tons of soil and rocks broke from a hill in Badakhshan district near the Tajik border, creating a wave of mud that destroyed everything in its path.

"There are around 1 000 houses in Aab Barik, 300 were buried when this happened, then 600 local people who live in the site went to help but unfortunately the hill collapsed a second time," said provincial governor Shah Waliullah Adib.

Badakhshan is poor and fairly isolated, and although the landslide hit not far from the provincial capital, it was in a dangerous area with patchy communication links and a heavy insurgent presence.

If the governor's estimate of the toll is confirmed, it would make the landslide the country's deadliest natural disaster since 1998, when two earthquakes each killed several thousand people.

A member of parliament from the province, Mohammad Zakria Sauda, said: "At first a small part of the hill came down. And then, when people went to help, the other big part came down. Casualties could be as many as 1 000 people. Children and women are stuck under the soil."

Source: www.irishtimes.com

2.10.1. Explain why the mudslide occurred. (1)
Heavy rainfall

2.10.2. Account for the high death toll. (1)
Two mudslides occurred

2.10.3. Discuss the social impacts of the mudslide. (3)
Loss of life, housing and jobs

2.11. With the aid of a neatly annotated diagram, explain the development process of a tor and state the type of rock that is associated with tors. (8)
Large granite intrusions exist below the ground.
The granite has numerous cracks and joints.
Chemical weathering takes place along these joints in the rocks.
Over time the Earth's surface is eroded and the granite is exposed.
Large core stones remain attached to the Earth and to each other.