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St Alban's College

Geography Theory

Form 4

24 November 2014

Examiner: Ms. P. Bossenger

Time: 2 Hours

Moderator: Mr F. Enslin

Marks: 150

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This paper consists of 13 pages
2. Read the questions carefully.
3. **ANSWER** all the questions:
4. Credit will be given for the following:
 - Interpretation and explanation; and
 - Evidence of personal observations where this is appropriate to the question.
5. You are encouraged to use sketch maps, diagrams and other explanatory drawings to support your Answer wherever relevant.
6. Number your answers exactly as the questions are numbered.
7. It is in your own interest to write legibly and present your work neatly.
8. There is a GLOSSARY of words on page 2 explaining what the words in **bold** used in the questions mean.

GLOSSARY

WORD	MEANING
Account for	To explain why, by giving reasons.
Analyse	To separate into parts or elements and to describe or examine each in detail.
Annotate	To add notes or explanations to a sketch, map or drawing
Argue	To present reasons for or against.
Assess	To estimate or judge.
Calculate	To work out the value of something using a mathematical method.
Classify	To divide into groups or types so that things with similar characteristics are in the same group.
Comment	To give your opinion or make a statement about something; to write generally about
Compare and contrast	Compare: To point out or show both similarities and differences Contrast: To stress the differences, dissimilarities, or unlikeness of things
Define	To give the precise meaning of
Demonstrate	To show or make clear, to illustrate and explain; [can give examples].
Describe	To list the main characteristics of something, give an account of. [Note: a diagram or map may be part of a description.]
Determine	To discover as a result of investigation
Discuss	To examine or to investigate by argument the various aspects of a statement.
Distinguish	To see or to understand the difference between one thing and another
Elaborate	To write about something in depth, with much attention to the detail of the different parts making up the whole
Estimate	To make an approximate judgement or calculation.
Evaluate	To make an appraisal or express an opinion concerning the value
Examine	To analyse and to discuss; to look at something carefully.
Explain	To make clear or plain or to make sure that the reader understands what is being said.
Explore	To comment on something in detail
Give / Provide	To state or present the information.
Identify	To give the essential characteristics of, to name.
Indicate	To state or express briefly, to point out.
Justify	To prove or give reasons for decisions or conclusions, using logical argument.
Label	To mark a diagram or sketch with simple information.
List	To write an itemised series of concise statements; to present a list of names, facts, aspects or items.
Match	To find the exact counterpart of another.
Name	To state something; to list; to give; identify; mention.
Outline	To give the main features or general principles of a subject.
Predict	To say what is expected to happen; to foretell; to say in advance.
Prove	To test by means of argument or evidence, so that something guessed at can be shown to be true and correct
State	To present information or details plainly, directly and simply, without discussion.
Substantiate	To support an answer with proof or evidence.
Suggest	To propose an idea or course of action by way of a suggestion.

SECTION A: CLIMATOLOGY

QUESTION 1:

1.1 Terminology

Choose the correct term in brackets that corresponds with the statement. Write down only the number and the correct corresponding term.

1.1.1 The tilt in the earth's axis causes different (pressure belts/planetary winds/seasons).

seasons

1.1.2 Differences in air pressure are indicated by (isobars/isotherms/isohyets).

isobars

1.1.3 The rotation of the earth deflects winds to the (left/right/south) in the southern hemisphere.

left

1.1.4 The amount of change in the atmospheric pressure between high and low pressure areas (Gradient force/Wind/ Pressure gradient).

Pressure gradient

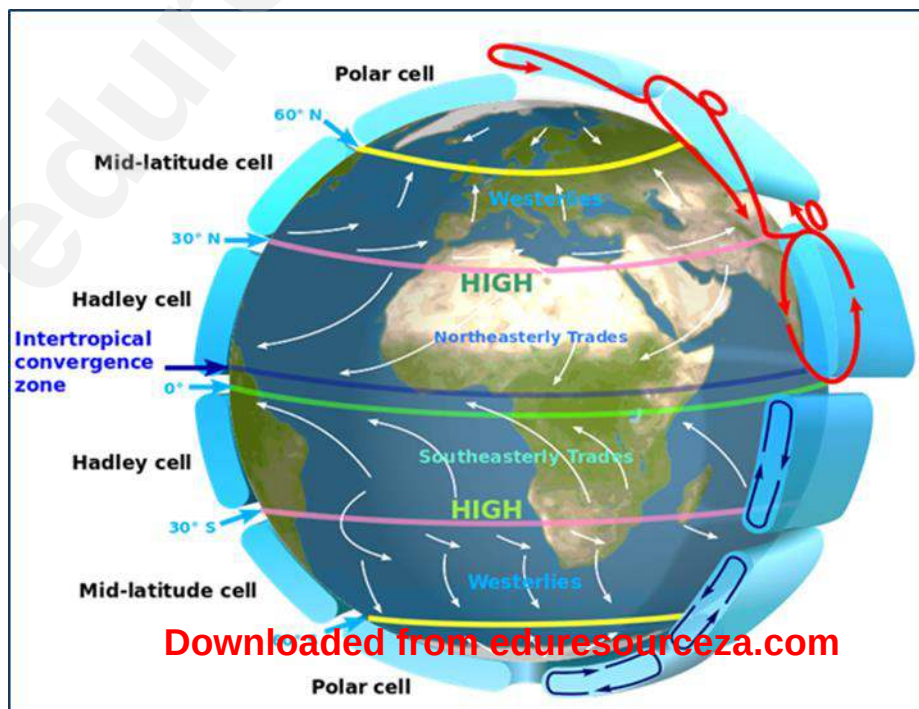
1.1.5 Theoretical wind that would result from the exact balance between Coriolis Force and Gradient Force (Resultant wind/Geostrophic Flow/Prevailing wind).

Geostrophic flow

[5]

1.2 The Tri-cellular arrangement during equinoxes

Refer to diagram 1.2 and fact file 1.2 below.



(Source: Atmospheric diagrams)

Fact file 1.2: The Westerlies might chill the southern hemisphere

The Westerlies (Roaring Forties, Furious Fifties and Stormy Sixties), sweeping around Antarctica over the Southern Ocean, seem to increase in strength as Earth heats up - thus insulating Antarctica from the meltdown happening in the Arctic Ocean. Antarctica might act as a fridge, preventing drastic increases in southern hemisphere temperatures. Antarctica contains as much frozen water as the Atlantic Ocean and the Ozone Hole above Antarctica has also shrunk to its smallest size in decades.

(Source: National Geographic Magazine) (compilation).

- 1.2.1 **Define** the term *equinoxes*. (2x2) (4)

Equinoxes indicate the two dates when the sun falls directly on the equator √√

Day and night is equally long (12 hours) √√

21/22 March and 22/23 September when it is spring/autumn

accept any two of the above answers

- 1.2.2 **Discuss** the predominant weather conditions in the ITCZ. (2x2) (4)

The ITCZ is warm because of intense insolation √√

It is wet because of high rainfall from thermal thunderstorms √√

It is humid as a result of high evaporation rates √√

- 1.2.3 **Give** an alternative name for the Mid-latitude cell. (1x2) (2)

Ferrel cell

- 1.2.4 **Evaluate** the reasons why ancient sailing ships voyaged with the Trade Winds. (1x2) (2)

The Trade Winds are constant and reliable √√

Blow from the same direction and with the same mild speed for most of the year

- 1.2.5 **Identify** two characteristics of the Westerlies. (2x2) (4)

They blow polewards, bringing warm airs √√

Their speeds increase towards the poles √√

- 1.2.6 **Give** the nickname of the Westerlies at 50°. (1x2) (2)

Furious Fifties

- 1.2.7 Scientists predict that global warming will influence the global circulation pattern.

Explain TWO ways in which global warming may influence global circulation. (2x2) (4)

Change in sea-surface temperatures – may interfere with surface pressure and rates of evaporation and hence affect global wind patterns.

- Shifts in ocean currents linked to temperature changes will also alter surface pressure and affect wind patterns and air circulation.

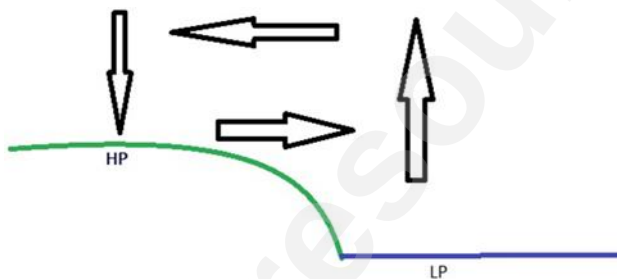
- Albedo effect – increasing melting of polar ice, will increase temperatures of polar areas as there will be less reflection – this will alter pressure and hence winds.

Other: Increased incidence of tropical cyclones/severity of tropical cyclones

Greater incidence of extreme weather such as droughts and floods

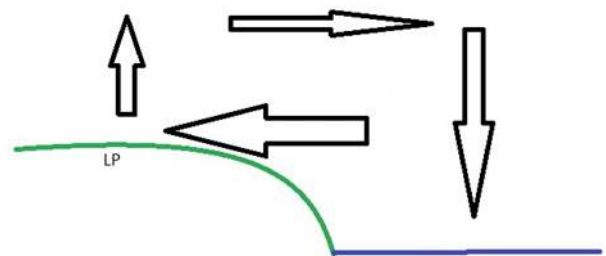
Flooding as a result of more intense rainfall.

1.3 **Draw** simple sketches to **explain** the difference between a *land breeze* and a *sea breeze*. [8]



At night, land cools quicker – air sinks –

HP – LP over sea, from land therefore land breeze



During day – land heats up quicker -

air rises – LP, Air from sea i.e. Sea Breeze

1.4 You have received the following information:

Cape Town weather 13 July 2014:

Temperature: 12°C, Dew point temperature: 10°C, Cloud cover: 4/4 , Rain,

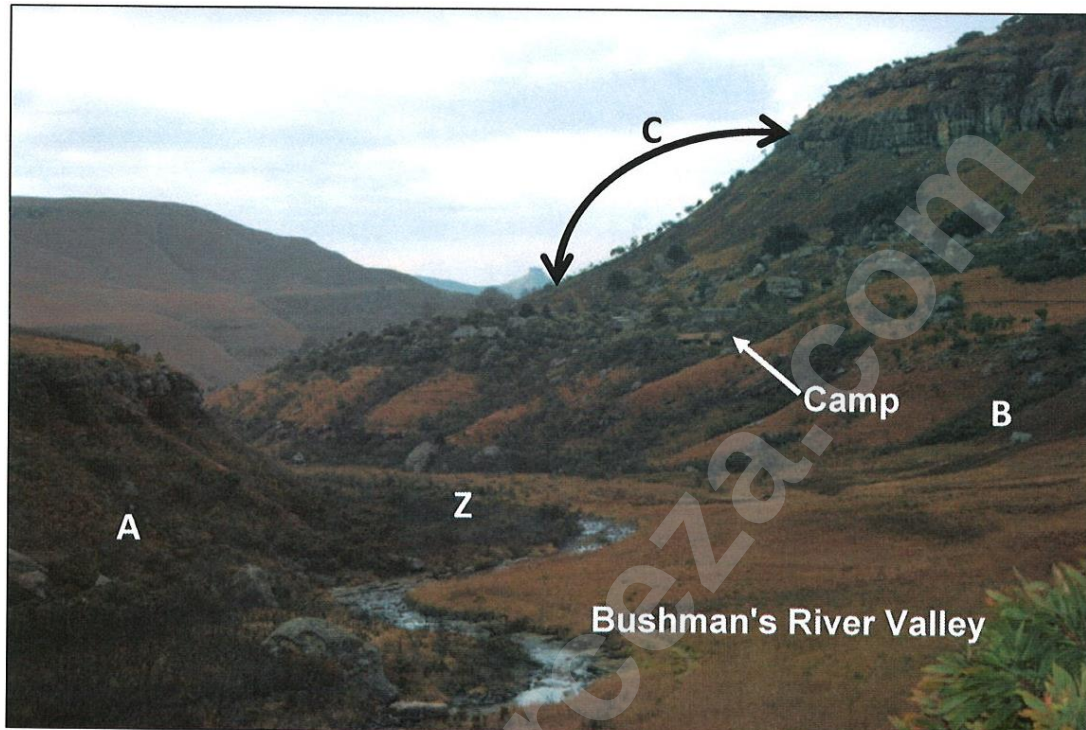
Wind from South Westerly direction at 25 knots.

Draw a simple map of South Africa and draw a weather station at the correct place.

[8]

1.5 Micro-climate

Figure 1.5: The Giant's Castle Camp, Central Drakensberg, KwaZulu-Natal



[Examiner's Photograph]

- 1.5.1 Study Photograph 1.6 carefully. **Identify** which slope (A or B) is north facing.

Provide a reason for your answer using evidence from the photograph.

(2x2) (4)

B – north facing (2 marks)

Reason: Slope A is covered in trees which is normally indicative of a cooler south facing slope, while slope B is covered by open grassland associated with a warmer north facing slope. (2 marks)

Settlement has been built on warmer north facing slope.

- 1.5.2 Study the position of the Giant's Castle camp. In your opinion is this a good position for the camp? **Provide** TWO reasons for your decision.

(2x2) (4)

Yes:

- Midslope – within the thermal belt area no danger or rockfalls
- North facing – therefore warmer
- Higher up away from the Bushman's river in case of flooding

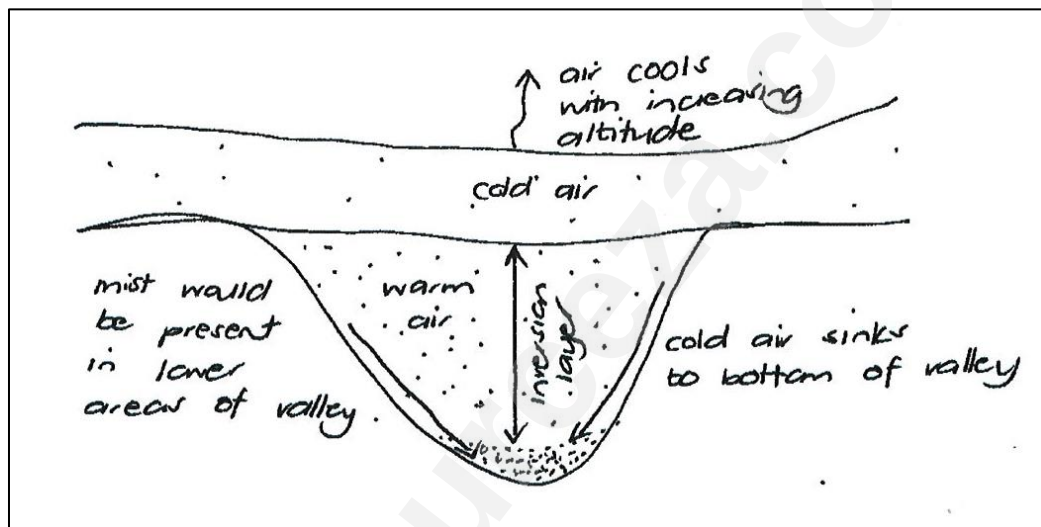
- 1.5.3 Visitors staying at the camp have commented on a layer of mist that often covers the Bushman's Valley area in the early morning. **Account** for their observations using a diagram and short explanatory notes

3.3.4 Mist is due to inversion layer:

3 marks for sketch

3 marks for notes/labels

(6)



1.6 Water Management in Knysna, Western Cape

Read the following newspaper headlines carefully.

Crisis calls for better regulation of water

Spending on water storage infrastructure lagging behind

WATER LEVEL IN GARDEN ROUTE DAM IS AT A HISTORIC LOW

Drought situation acute as dairy and vegetable farms suffer

HOMES THREATENED AS FIRE RAGES IN KNYSNA

Knysna, Officials talk on Drought Relief Projects

Write a report for the Knysna Municipality in which you **discuss** the following:

- **Causes of drought:**

- · Less rainfall
- · Water wastage
- · Limited storage capacity
- · Increasing population in area
- · Increasing development
- · Increasing number of golf courses – high irrigation demands

- **Economic impacts of the drought**

- Economic impacts:
- · Farmers suffer – less production and possible retrenchment of workers
- · Food costs rise
- · Damage to homes/infrastructure in fires – which will need to be repaired
- · Tourism affected – fewer people visiting a drought stricken area
- · Activities heavily reliant on water suffer, e.g. Golf.
- · Money will need to be spent on solutions and intervention strategies

- **Possible strategies to combat drought**

- · Water restrictions
- · Build more dams
- · Boreholes
- · Installation of Jo-Jo rain tanks in residential areas
- · Potential desalinisation projects developed
- · Installation of grey water systems

- Awareness and education

Marks will be awarded for structure of the report and adherence to the suggested sub-headings.

(9x2) (18)

SUB TOTAL: 75

SECTION B: RURAL SETTLEMENT

QUESTION 2: McGregor Case Study (pg 10)

- 2.1 Use the information from The Country Life magazine **develop** a **fact file** on McGregor. **Draw** a table and place in information in bullet points. (6x2) (12)

19th Century Village with white washed cottages

Small peaceful town

Surrounded by mountains – Montagu mountains

Small community where everybody knows everybody

Old stone irrigation channels

The Breede River runs past the Village

Famous for museums and historical buildings

Surrounded by nature reserves i.e. Greyton

South of N1 highway to Cape Town

Part of Cape wine lands route

- 2.2 **Classify** this settlement according its size and function. **Validate** your choice. (2x2) (5)

Small-Town Village / Quote

Commercial farming town or tourism

- 2.3 **Comment** briefly on the situation of this settlement. (3x2) (6)

Near the Boland Region / Western Cape / Situated on Route 62 / Near Robertson / Surrounded by nature reserves i.e. Greyton / South of N1 highway to Cape Town / Part of Cape wine lands route

- 2.4 Look carefully at the article in The Country Life magazine provided. Why did the author entitle this article 'Celebrating heritage in McGregor'? As part of your answer, **list** the reasons why McGregor is known as 'the best preserved town in the Cape'. (3x2) (6)

McGregor has lots of old historical features that have been preserved / 19th Century village / white washed cottages / half wild gardens / known for museums and historical buildings

- 2.5 **Land use**

The main objective of the McGregor Heritage Society is to ensure that McGregor maintain its historical and agricultural significance.

- 2.5.1 **Explain** the meaning of 'McGregor needs to embrace development or face depopulation. In your answer **explain** the meaning of 'depopulation'. (2x2) (4)

The town needs to adopt modern way of living mixed with old ways / if not people will leave the town and move to bigger cities

- 2.5.2 **Discuss** three factors that will cause people to leave McGregor. (3x2) (6)

Push factors i.e. lack of services i.e. no tertiary education / lack of medical care and hospitals/ limited infrastructure i.e. sewage, roads, electricity / no jobs / lack of entertainment i.e. no malls

- 2.5.3 The rate of unemployment in McGregor region and Western Cape is high (about

49%). **Suggest** THREE ways that the unemployed people in the McGregor region could still earn some money.

(3x2) (6)

Local people can be trained to work on vineyards / skills can be taught i.e. making of curios to supply to curio shops / employed in B&B / tour guides through township, grape farms et.

2.5.4 **Suggest** THREE actions the McGregor Heritage Society can implement to prevent 'depopulation'?

(3x2) (6)

Encourage small businesses to open up and employ local people / local businesses must sell local manufactured goods or curios/ market the town to attract more tourist which will create more job opportunities / ensure good image of town by keeping it clean /

2.6 Land conflict

The Boland area in the Western Cape has been hit by a series of farm worker strikes in 2013. This follows about two weeks of protests in the area over wages. Workers have been demanding R150 a day, up from the minimum wage of R69 a day. During the protests workers embarked on violent protests blocking the N-1 passing along the town with tyres and rocks and burning down some farmsteads.

2.6.1 **Elaborate** on the impact of the strikes on the economy of this region.

(3x2) (6)

Lower production / less products delivered to fresh market due to roads blocking / less exports / lower income for farmer / has to lay-off farm workers

2.6.2 **Argue** why these protest actions are necessary and / or unnecessary. You need to argue both view points from the perspective of –

Farm workers

Farm owners

(4x2) (8)

[14]

Farm workers	Farm owners
Low salaries High living cost Workers live in poor conditions To improve working conditions – with minimum salaries demanded	Lower income Lower profit margin – has to lay-off workers Less workers – lower production Lower – production lower income and has to sell farm Violence associated with strike Export less – lower income Damage to vineyards and farm buildings – high cost to repair

2.7 Look at the following advert, for a house on sale in McGregor

2.7.1 **Account** for the relatively high price being asked for this cottage in McGregor (2x2) (4)

**Prestigious to live in McGregor / popular holiday or retirement town /
upmarket spacious residence with many amenities**

2.7.2 **Elaborate** on the advantages of living in an a small town like McGregor (3x2) (6)

Peaceful and quiet / beautiful surroundings with vineyards and mountains

[10]

SUB TOTAL: 75