



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2019

GEOGRAPHY: PAPER I

Time: 3 hours

200 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

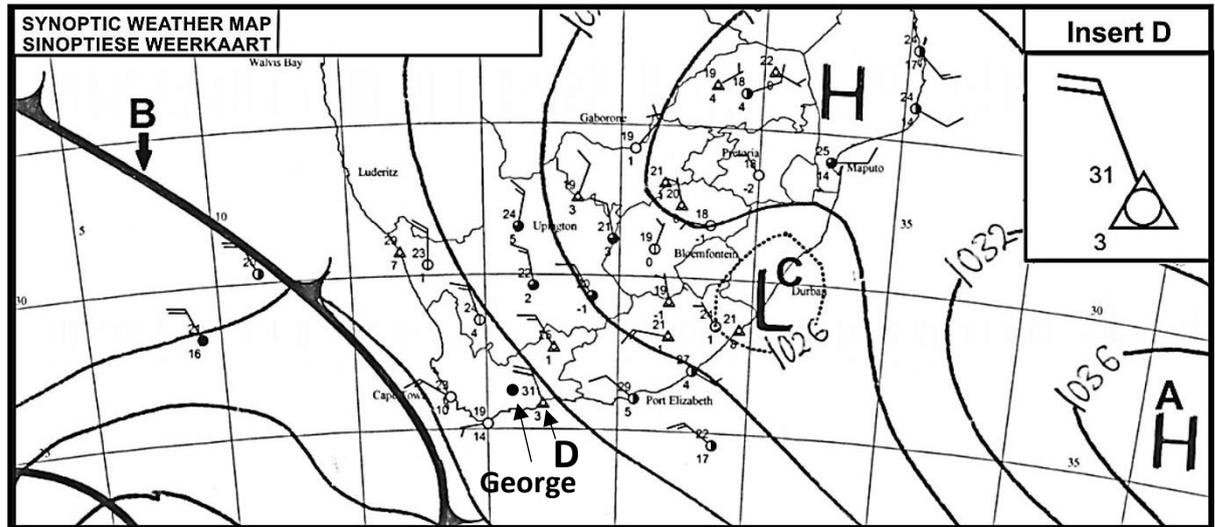
1. This question paper consists of 19 pages. Please check that your question paper is complete.
 2. Read the questions carefully.
 3. **ALL THREE QUESTIONS ARE COMPULSORY.**
 4. Credit will be awarded for the following:
 - interpretation
 - explanation
 - evidence of personal observations where this is appropriate to the question.
 5. You are encouraged to use sketch maps, diagrams and other explanatory drawings to support your answers wherever relevant.
 6. Pay attention to the mark allocation.
 7. Number your answers exactly as the questions are numbered.
 8. It is in your own interest to write legibly and to present your work neatly.
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QUESTION 1 INTEGRATED QUESTION: THE GEOGRAPHY OF THE SOUTH WESTERN CAPE – GEORGE AND SURROUNDS

1.1 Subtropical anticyclones and associated weather conditions

Study Figure 1, a synoptic chart extract produced by the South African Weather Service (SAWS).

Figure 1 – Synoptic chart extract



[Source: SAWS]

1.1.1 Select the correct term, from those shown in bold, to make the statement TRUE. Write only the number of the question and the correct term.

- (a) The **South Atlantic anticyclone / South Indian anticyclone / Interior Kalahari anticyclone** (labelled A) is found to the east of South Africa on the synoptic chart. (1)
- (b) A **cold front / warm front / occluded front** (labelled B) is approaching South Africa from the west. (1)
- (c) The low pressure (labelled C) is known as a **mid-latitude cyclone / thermal low / coastal low**. (1)
- (d) The weather station D at Knysna (see insert D) is experiencing **valley winds / katabatic flow / berg winds**. (1)

1.1.2 Identify TWO pieces of evidence to prove that this is a winter synoptic chart. (2)

1.1.3 List TWO weather conditions that are going to change for Knysna in the next 48 hours as the front passes over. (2)

1.1.4 Using the table below as a reference, list the weather conditions being experienced in Knysna (see insert **D**). (5)

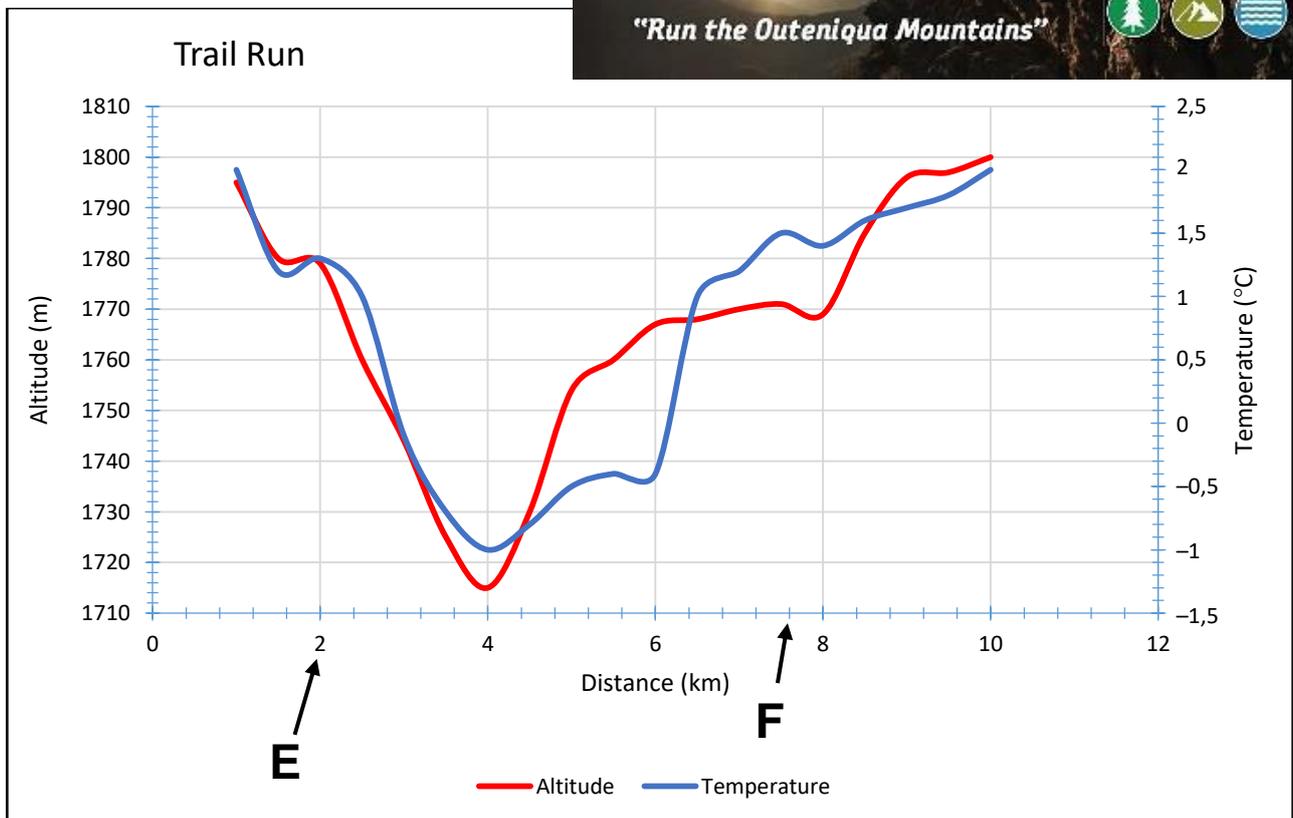
Air temperature	
Dew-point temperature	
Wind speed	
Wind direction	
Atmospheric pressure	

1.1.5 Draw a diagram to explain how the wind identified in Question 1.1.1 (d) originates over George and Knysna. (5)

1.2 Valley climates

The George Mountain Ultra Trail Run is a popular winter event in the region. As a competitor runs through a valley in the early morning, their fitness device records the following information (Figure 2).

Figure 2 – Recording from a fitness device



[Source: Garmin fitness device]

- 1.2.1 Give the temperature at **E**. (1)
- 1.2.2 Account for the temperature variation at **E** and at **F**. (2)
- 1.2.3 Why did the runner experience frost at the bottom of the valley? (2)
- 1.2.4 Name the wind the runner could possibly experience whilst running in the valley at 6 a.m. (1)

1.3 **Fluvial terminology**

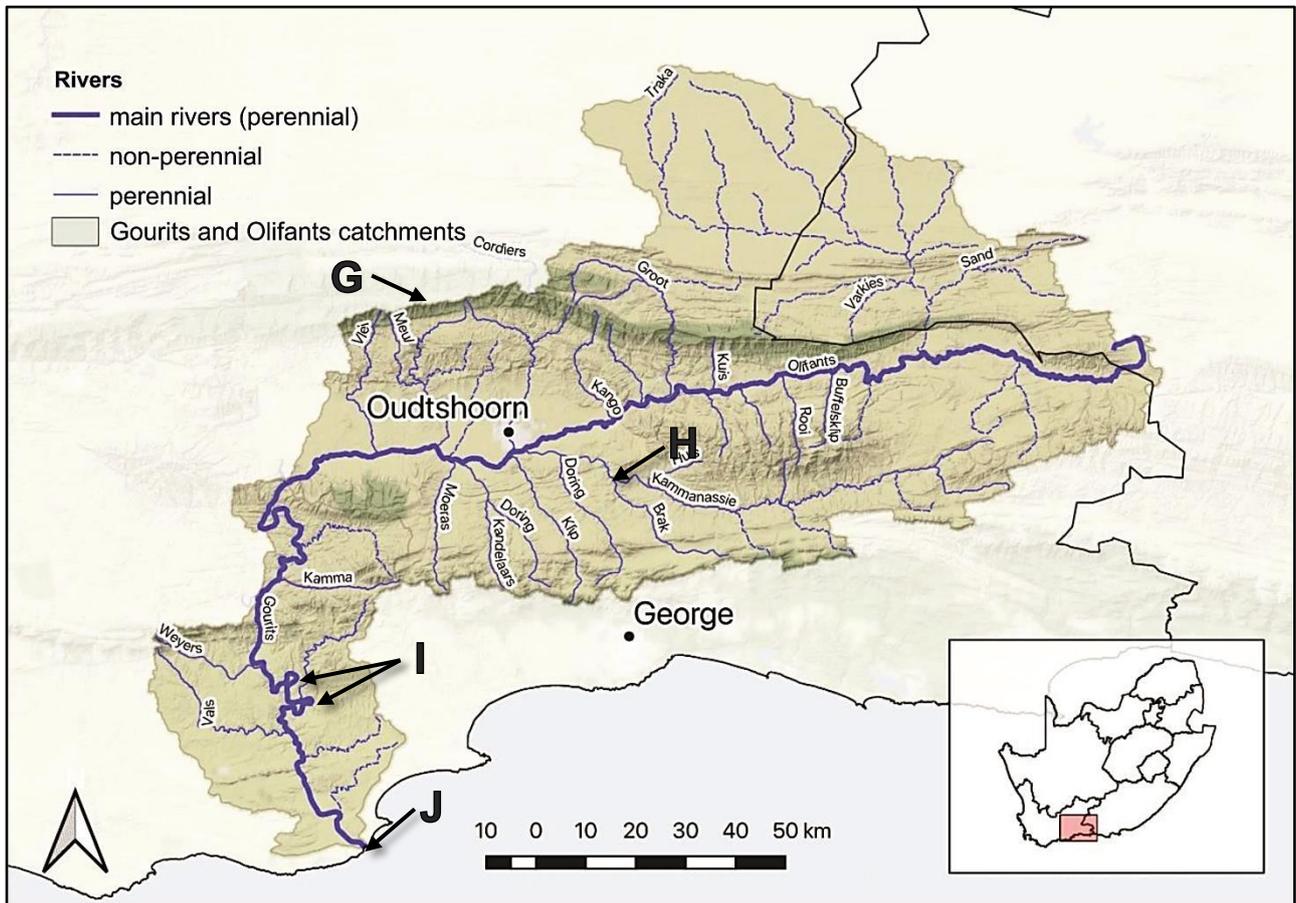
State whether the following statements are TRUE or FALSE. Write only the number of the question and whether it is true or false. E.g. 1.3.0 False.

- 1.3.1 Infiltration is the capture of precipitation by the plant canopy. (1)
- 1.3.2 The Hjulström curve is a graph used by hydrologists and geologists to determine whether a river will erode, transport or deposit sediment. (1)
- 1.3.3 Surface run-off is the flow that is sustained between precipitation events and fed to streams by delayed pathways. (1)
- 1.3.4 Deposition velocity is the point at which a river can no longer support a load and begins to deposit it on the riverbed. (1)
- 1.3.5 Aquifers are rocks that contain significant quantities of water. (1)

1.4 Fluvial processes

The Gourits and Olifants catchments are the main drainage regions in the south-western Cape near George. Study the map of the Gourits and Olifants catchments (Figure 3) and answer the questions that follow.

Figure 3 – Gourits and Olifants catchments



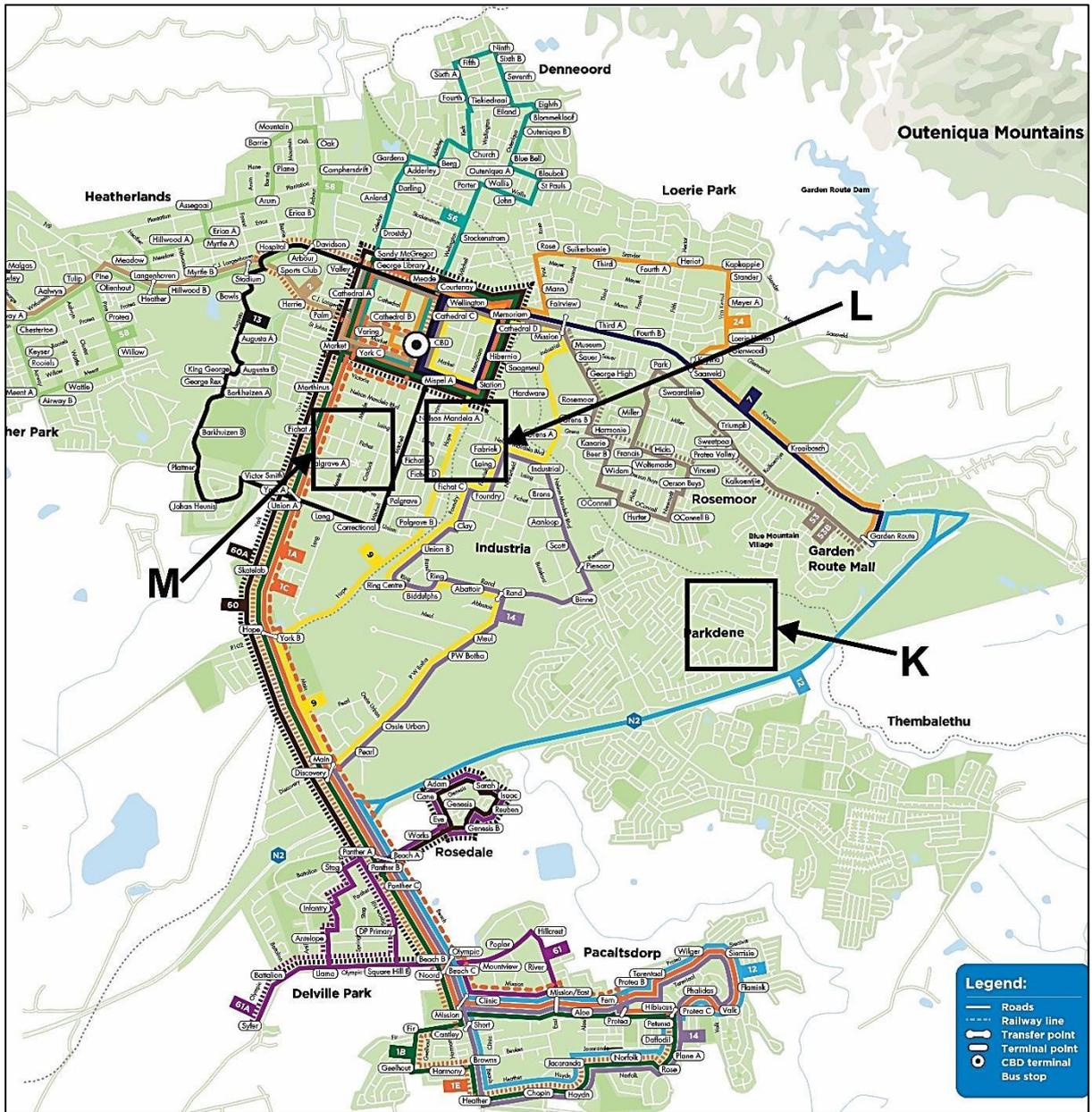
[Source: Kartoza with data from DWS and Stamen]

- 1.4.1 Identify the fluvial features labelled **G**, **H**, **I** and **J**. (4)
- 1.4.2 The Gourits River is an example of a superimposed drainage pattern. Explain what that means. (2)
- 1.4.3 Many rivers in the northern parts of these catchments are periodic rivers. With the aid of a diagram, explain the difference between a permanent and a periodic river. (4)
- 1.4.4 The Olifants River, which flows through Oudtshoorn, has a trellis drainage pattern. Explain why rivers form a trellis drainage pattern. (2)
- 1.4.5 Provide TWO factors that will affect the infiltration rate of a drainage basin. (2)
- 1.4.6 Discuss TWO benefits of building dams along a river system. (4)

1.5 Urban structure and patterns

Study Figure 4, the map for the Go George bus transport system, and answer the questions that follow.

Figure 4 – The Go George bus transport system map



[Source: Go George]

- 1.5.1 Identify the street patterns for areas K and L. (2)
- 1.5.2 Discuss ONE advantage of each of the street patterns identified in Question 1.5.1 above. (2)
- 1.5.3 The area labelled M is the CBD.
 - (a) List TWO characteristics of the CBD. (2)
 - (b) Why do CBDs have the tallest buildings in an urban area? (2)

1.5.4 This is an example of a GIS-generated map.

- (a) Name TWO data layers used on the map. (2)
- (b) Identify ONE possible attribute for a bus stop and for a road. (2)

1.5.5 George is an apartheid-planned city. The Go George was designed to provide effective transport to Delville Park residents (a previously disadvantaged region).

- (a) Explore TWO benefits that this Go George bus system has for the residents of Delville Park. (4)
- (b) Explain what it means to be an apartheid-planned city. (4)

1.6 Urban structure and patterns

Study the photograph of a business in George (Photograph 1). The buildings were originally residential homes.

Photograph 1 – Business in George



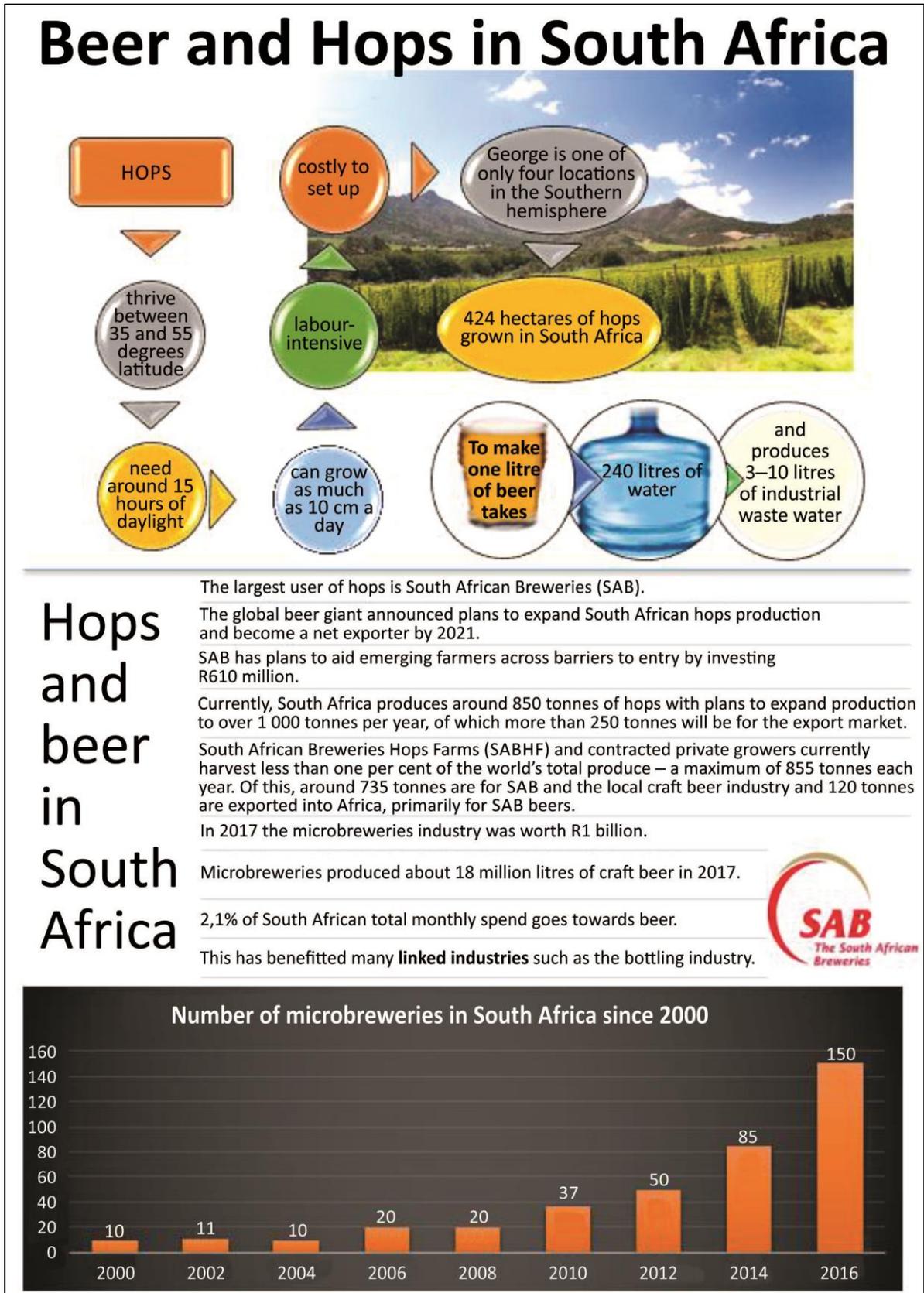
[Source: Examiner's photograph]

- 1.6.1 Name the term used to describe the change of function of a property. (1)
- 1.6.2 Comment on TWO reasons why functions and land use change in an urban environment. (4)
- 1.6.3 Discuss TWO consequences of such changes to the people living near the property. (4)

1.7 Agriculture

Study Figure 5, an infographic on hops farming and the beer-brewing industry in South Africa.

Figure 5 – An infographic on hops and beer in South Africa



The beer-brewing industry in South Africa is a major contributor to the GDP. Write a report in which you explore and discuss the main aspects of hops farming and the beer-brewing industry of South Africa.

- Discuss the importance of hops agriculture to the South African economy.
- Explain how the growth of local hops production will boost linked industries.
- Analyse some of the challenges faced by hops farmers and beer brewing companies.
- Discuss the importance of the brewing industry to the South African economy.

Note: You may draw on any examples you have studied to support your report discussion. Use the rubric below to guide the planning and structure of your report.

CRITERIA	MARKS
<p>Writing skills</p> <ul style="list-style-type: none"> • Take into consideration structure and presentation. • Use of brief introduction and conclusion. • Logical discussion and use of sub-headings. 	5
<p>Content knowledge</p> <ul style="list-style-type: none"> • Correct use of geographical terminology and concepts. • Adherence to topic and sub-headings. 	14
<p>Supporting evidence – analysis and understanding</p> <ul style="list-style-type: none"> • The ability to analyse and evaluate the topic is assessed in this category. • Reference made to case study material/ fact file/ source material provided. • If appropriate, reference must be made to familiar/ local or other examples. 	5

100 marks

QUESTION 2 CLIMATE, WEATHER AND GEOMORPHOLOGY

2.1 Climate concepts

Match the descriptions in Column B to the terms in Column A. Write only the number and the letter corresponding to your answer in your Answer Book, e.g. 2.1.6 H

Column A		Column B	
2.1.1	albedo	A	a difference in wind speed and direction over a relatively short distance in the atmosphere
2.1.2	trough	B	built-up areas that are hotter than nearby rural areas
2.1.3	rainfall variability	C	the extent to which a surface reflects light
2.1.4	heat island	D	an elongated area of relatively high pressure
2.1.5	wind shear	E	the degree to which rainfall varies from the average, over a number of years
		F	an elongated area of low atmospheric pressure
		G	a strong ground-level wind system that emanates from a point source above and blows radially

(5)

2.2 Tropical Cyclones – Hurricane Michael October 2018

Study Figure 6, a thematic map of Hurricane Michael's track, and Figure 7, an image showing some of the destruction caused to Mexico Beach by Hurricane Michael, and answer the questions that follow.

Figure 6 – A thematic map of Hurricane Michael



[source: <www.news4jax.com>]

Figure 7 – Map of buildings damaged on Mexico Beach



[Source: <http://www.waff.com>]

- 2.2.1 (a) Draw a basic, labelled cross-section of Hurricane Michael from points **N** to **O** in Figure 6. (4)
- (b) What is the wind direction at Panama City? (2)

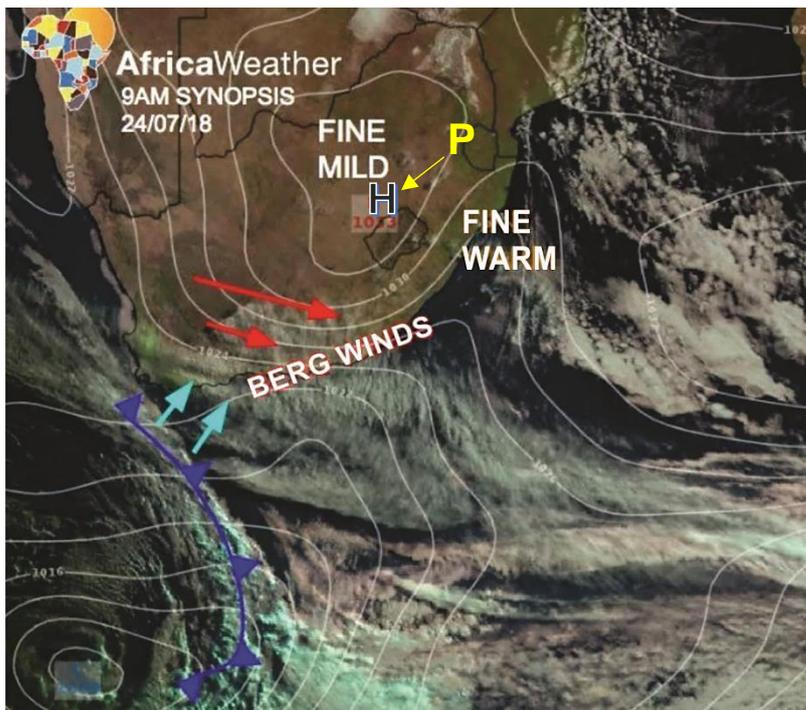
2.2.2 Hurricane Michael was one of the strongest storms to hit mainland USA in many years.

- (a) Identify ONE feature that tells you that Hurricane Michael is a mature system. (1)
- (b) Explain why hurricanes and tropical cyclones only occur over oceans where the water is warmer than 26 °C. (2)
- (c) Name and describe TWO hazards that caused the buildings to be classified as gone or as having substantial damage, as shown in Figure 7. (4)

2.3 Subtropical anticyclones and associated weather conditions

Study Photograph 2, a satellite image of a typical winter's day across South Africa, and answer the questions that follow.

Photograph 2 – Typical winter's day over South Africa



[Source: AfricaWeather]

- 2.3.1 Define the temperature inversion at **P** in Photograph 2. (1)
- 2.3.2 Name the high-pressure system at **P** that is associated with the inversion layer over South Africa. (1)
- 2.3.3 Draw a simple cross-section to show the position of the temperature inversion at **P** during winter in South Africa. (4)
- 2.3.4 Explain why the position of the inversion layer varies between winter and summer. (2)

2.4 Fluvial terminology

Match the terms in the box with one of the descriptions. Write only the number of the question and the correct term.

bankfull	knickpoint	sinuosity
valley	interfluve	abrasion
antecedent drainage	hydraulic action	source

- 2.4.1 The erosion of the river bottom and the riverbank by the material carried in the river. (1)
- 2.4.2 The water level, or stage, at which a stream, river or lake is at the top of its banks and any further rise would result in water moving into the flood plain. (1)
- 2.4.3 A ridge or area of land dividing two river valleys within a drainage basin. (1)
- 2.4.4 A term to describe a location in a river or channel where there is a sharp change in channel slope. (1)
- 2.4.5 A measurement of the amount of bending or curving shape of a river channel. (1)

2.5 Fluvial processes

Study the image (Photograph 3) of the river channel.

Photograph 3 – Picture of a river channel



[Source: <<http://www.travellesotho.com>>]

- 2.5.1 Give ONE piece of evidence, visible in Photograph 3, that the river has been rejuvenated. (1)
- 2.5.2 Discuss how river velocity and sediment characteristics influence the transportation and deposition of sediment at **Q**. (6)

2.6 Catchment and river management

Read the following article and study Photograph 4 of a flash flood in Durban.

Photograph 4 – The after effects of a flash flood near Durban

<p>Residents of an informal settlement in Durban's Clare Estate were left homeless after a flash flood swept away several shacks and damaged others along the Palmiet River on Tuesday.</p>	
<p>Shacks built along the river banks were washed away during the night's heavy downpour. Torrents of water swept debris, including plastic bottles, litter and tree branches, through the Quarry Road informal settlement, forcing residents to move to higher ground.</p>	

[Source: IOL]

- 2.6.1 Describe TWO likely impacts of flooding in the area shown in Photograph 4. (2)
- 2.6.2 List TWO methods that can be used to reduce flooding in the Quarry Road informal settlement. (2)
- 2.6.3 Suggest how accurately flooding can be predicted in the informal settlement in Photograph 4. (2)
- 2.6.4 River pollution is a threat to the environment. Explain how community projects, remote sensing and GIS mapping are being used to reduce this threat and improve the quality of water in rivers such as the Palmiet River in Photograph 4. (6)

50 marks

QUESTION 3 RURAL AND URBAN SETTLEMENT AND ECONOMIC GEOGRAPHY OF SOUTH AFRICA**3.1 Settlement concepts**

Select the correct term for the given description. Write the number of the question and the letter corresponding with your answer. Example 3.1.0 A.

3.1.1 A settlement site on dry land surrounded by low, wet ground.

- A wet-point site
- B break of bulk
- C dry-point site
- D isolated farmstead (1)

3.1.2 A specialised town, located between hills, that develops at a natural passage on a route that leads to other centres.

- A industrial town
- B port town
- C bridge town
- D gap town (1)

3.1.3 A town on the outskirts of a large city from which people commute to work in the city.

- A hamlet
- B small country town
- C dormitory town
- D edge city (1)

3.1.4 Ranking a settlement according to its population size and function of the settlement.

- A counter urbanism
- B settlement classification
- C settlement pattern
- D settlement shape (1)

3.1.5 The range of a settlement or business refers to ...

- A the total number of people needed to be able to survive.
- B the area from which a settlement will draw its customers.
- C the maximum distance people are willing to travel for a service.
- D the income level of the market area. (1)

3.2 Rural settlements

Study Photograph 5 of a rural settlement in the Western Cape.

Photograph 5 – A settlement in the rural–urban fringe of Stellenbosch in the Western Cape



[Source: Examiner's photograph]

- 3.2.1 Define the term *rural–urban fringe*. (1)
- 3.2.2 Identify ONE factor that influences the sites of rural settlements. (1)
- 3.2.3 Provide TWO pieces of evidence to prove that the settlement in Photograph 5 is a commercial farm. (2)
- 3.2.4 Analyse TWO consequences of rural depopulation on rural areas in South Africa. (4)
- 3.2.5 Suggest TWO ways in which rural development strategies are important for South Africa's economy. (4)

3.3 Urban settlement issues

Study Photograph 6 of a typical informal settlement in South Africa.

Photograph 6 – Informal settlement



[Source: Examiner's photograph]

- 3.3.1 Describe the general location of informal settlements in South African towns and cities. (1)
- 3.3.2 Discuss ONE reason for the rapid growth of informal settlements in South Africa. (2)
- 3.3.3 Assess TWO ways in which South Africa could address the social justice issues surrounding informal settlements. (4)

3.4 Economic terminology

Match a term in Column B with the description in Column A. Write only the question number and the term's corresponding letter, e.g. 3.4.0 A.

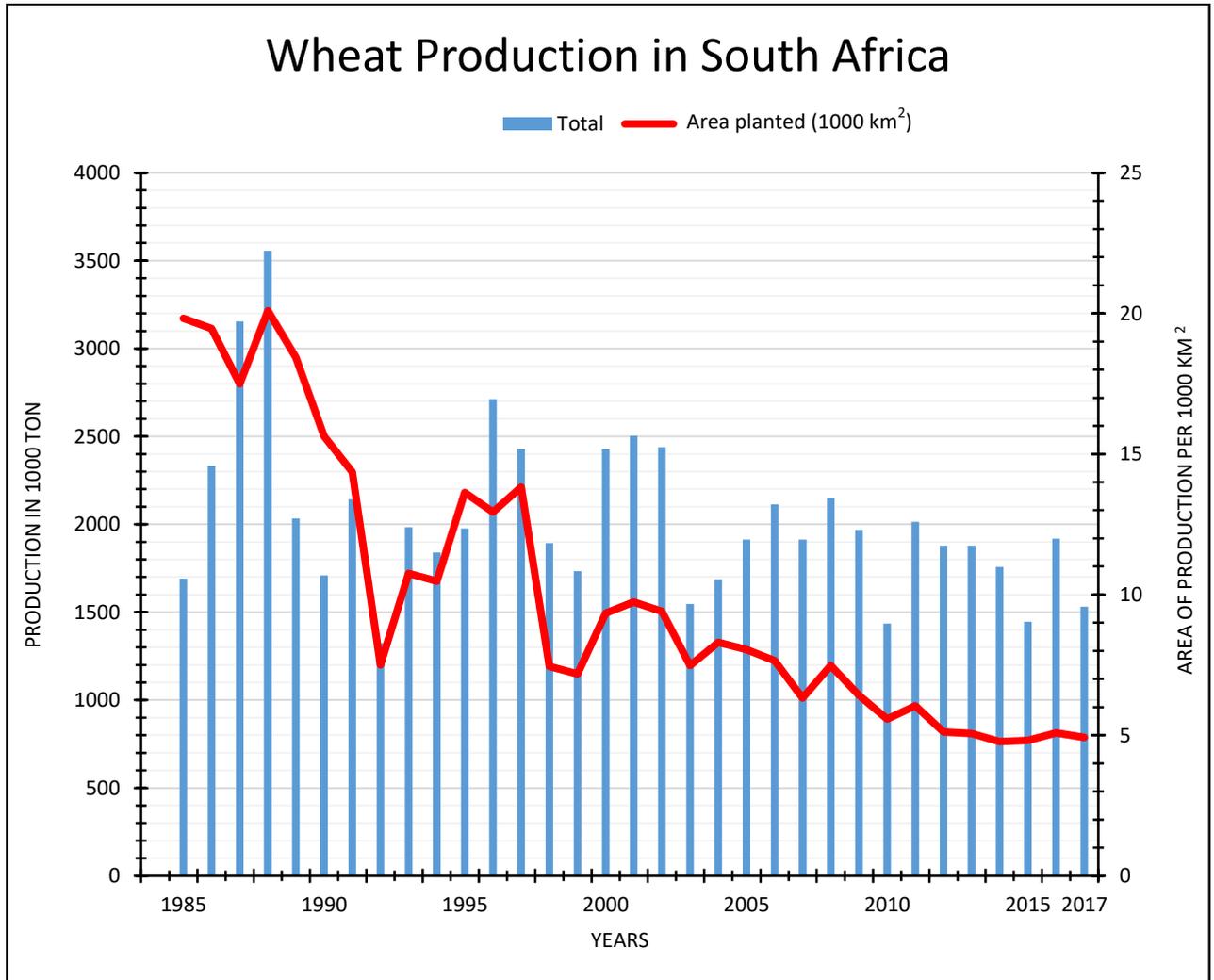
Column A		Column B
3.4.1	a trade that is run without being registered and usually pays no tax	A. net exports
3.4.2	a tax on goods produced abroad and sold domestically	B. trade balance
3.4.3	a purpose-built industrial estate linked to an international seaport or airport that leverages fixed direct investments in value-added and export-oriented manufacturing industries	C. market industry D. tariff
3.4.4	placed and located independent of factors of production such as resources, land, labour, capital and enterprise	E. IDZ F. informal sector
3.4.5	difference between the monetary value of a nation's exports and imports over a certain period	G. footloose industry H. value-added tax

(5)

3.5 Structure of the economy

Study the graph (Figure 8) produced by the Department of Agriculture, Forestry and Fisheries showing the production of wheat in South Africa between 1984 and 2017.

Figure 8 – Wheat production in South Africa



[Source: <www.daff.gov.za>]

3.5.1 State the total area of land used to grow wheat in:

(a) 1986 (1)

(b) 2016 (1)

3.5.2 What trend is shown on the graph for the area planted? (1)

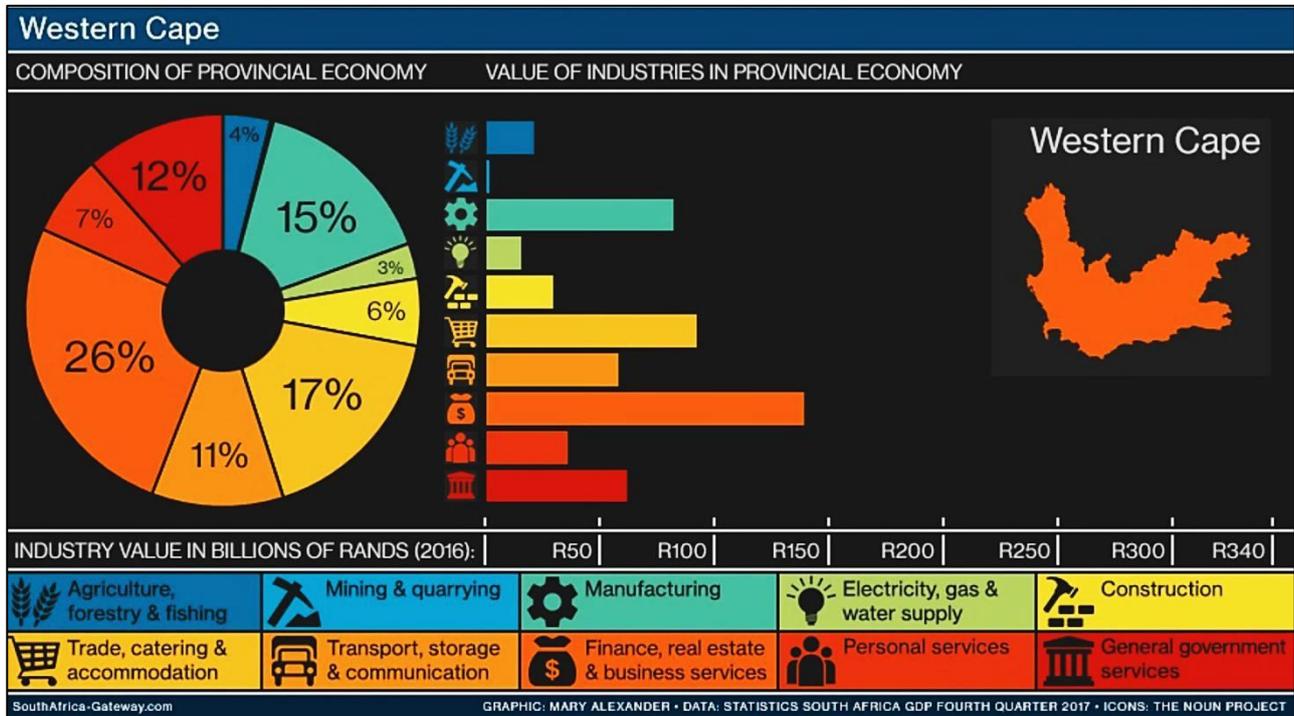
3.5.3 Evaluate ONE reason that South Africa is using less land, yet is still maintaining its wheat production. (2)

3.5.4 Give TWO reasons why wheat is so important to the food security of South Africa. (4)

3.6 Secondary and tertiary sectors

Study the infographic (Figure 9) showing the different sectors of the Western Cape economy.

Figure 9 – Western Cape economy in 2018



[Source: <<https://southafrica-info.com>>]

3.6.1 From the infographic (Figure 9), list:

- (a) The largest economic activity of the Western Cape. (1)
- (b) The value of manufacturing in the Western Cape. (1)

3.6.2 In a table, compare and contrast THREE things that would hinder and THREE things that would promote industrial development in the Western Cape. (6)

3.6.3 Discuss the impact that the *fourth industrial revolution** is going to have on the economy of the Western Cape. (4)

*The current and developing environment in which disruptive technologies and trends such as the Internet of Things (IoT), robotics, virtual reality (VR) and artificial intelligence (AI) are changing the way we live and work.

50 marks

Total: 200 marks