

SECTION A INTEGRATED QUESTION: THE GEOGRAPHY OF THE BIEDOU VALLEY IN THE WESTERN CAPE

QUESTION 1 PHYSICAL GEOGRAPHY

Study Figure 1, a map showing rivers in South Africa on the Biedou River Valley.

Figure 1



[Source: Examiner's map]

1.1 Geographical Terms and Skills

Study Figure 1. Tick the correct answer.

1.1.1 The general direction in which the Olifants River is flowing is ...

A	north.	
B	south.	
C	east.	
D	west.	

(1)

1.1.2 The ocean into which the Olifants River flows is the ...

A	Indian Ocean.	
B	Pacific Ocean.	
C	Southern Ocean.	
D	Atlantic Ocean.	

(1)

1.1.3 The ocean current that flows past Saldanha is the ...

A	Benguela Current.	
B	Eastern Current.	
C	Agulhas Current.	
D	Atlantic Current.	

(1)

1.1.4 The point where rivers merge to form a larger one is called a/an...

A	delta.	
B	confluence.	
C	tributary.	
D	estuary.	

(1)

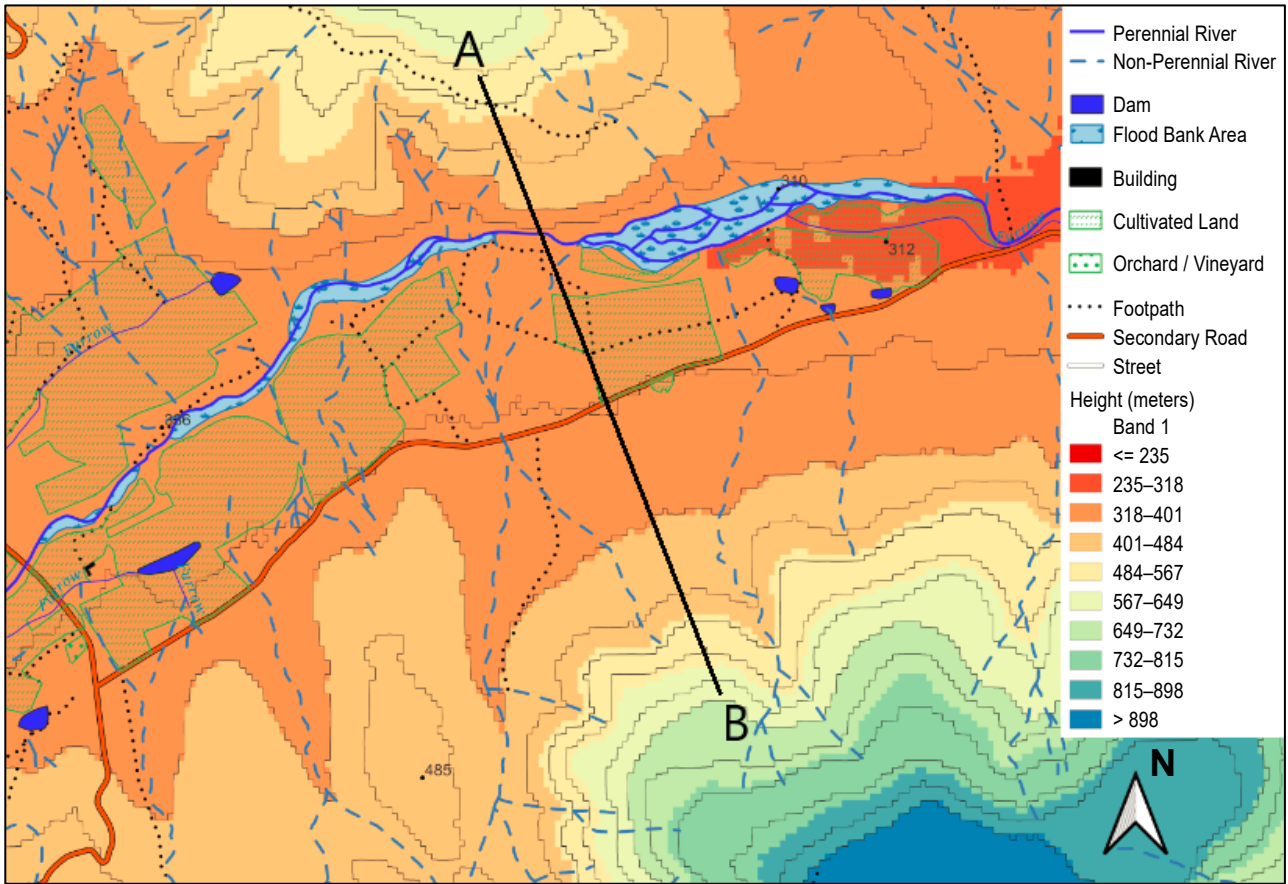
1.1.5 Give ONE geological and ONE climatic factor that might have played a role in the stream piracy event in the Biedou Valley.

(2)

1.2 Microclimate

Study Figure 2, a topographic map extract of the Biedou River Valley (Biedou Valley).

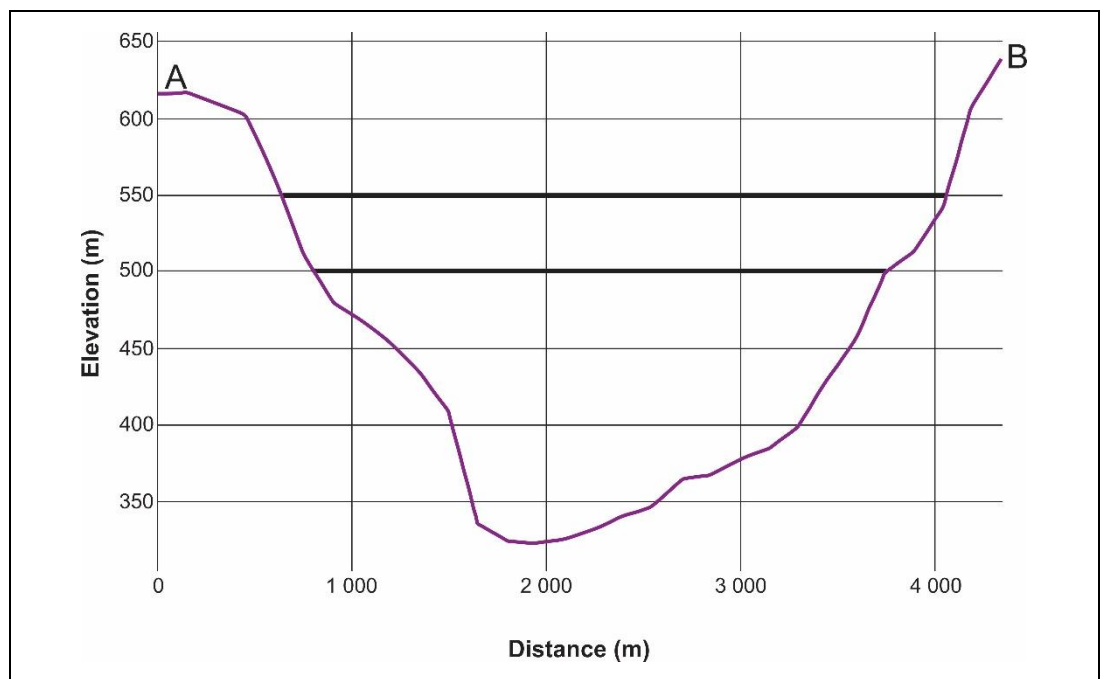
Figure 2



[Source: Examiner]

1.2.1 The elevation profile, Figure 3, below shows a cross-section from A to B.

Figure 3



[Source: Examiner]

On Figure 3 on page 4, include the following:

- (a) Draw an arrow that represents a katabatic wind. (1)
- (b) Label the inversion layer. (1)

1.2.2 Explain how katabatic winds form.

(2)

1.2.3 Name ONE climatic feature that forms as a result of the katabatic wind.

(1)

1.2.4 Explain ONE importance of understanding microclimates for agriculture in valley regions.

(2)

1.2.5 Evaluate the impact of radiation fog forming in valleys such as the Biedou Valley.

(4)

1.3 **Mid-latitude Cyclones**

Read Article 1, 'Chill out: Temperatures to drop as double cold front to hit SA over weekend'.

Article 1

Chill out: Temperatures to drop as double cold front to hit SA over weekend

Stock up on some firewood and pull out your furry jerseys! A series of cold fronts is expected to hit parts of the country from Friday. The weather office has warned that residents can expect very cold temperatures, as well as wet and windy conditions.

A second cold front, making landfall on Saturday, is expected to bring snowfall in high-lying areas in the Western Cape. SA Weather Service forecaster, Venetia Phakula, said that this would result in a drop in temperatures in the Western Cape and southern parts of the Northern Cape.

'We see the Western Cape and the Eastern Cape and the southern parts of the Northern Cape falling under very cold temperatures. It might even extend to the southern parts of the Free State where they will experience very cold temperatures,' Phakula said.

[Source: Adapted from <<https://ewn.co.za>>]

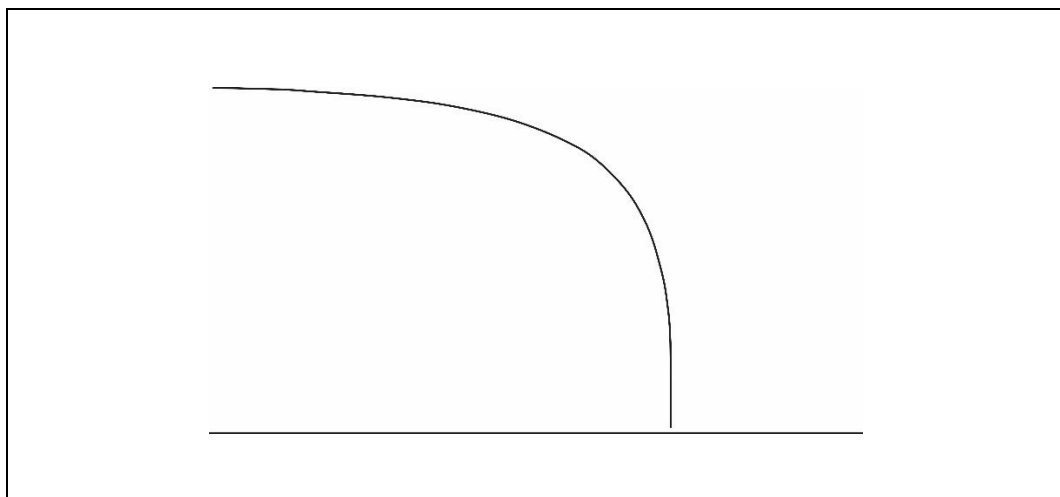
1.3.1 Define the term *front*.

(1)

1.3.2 On the diagram below, add the following labels:

- Clouds.
- Cold sector.
- Movement of the cold front.
- Where heavy rainfall would take place.

Cross section of a cold front



(4)

1.3.3 The text box below lists phrases that describe temperature or precipitation. Choose the best phrase to describe temperature and precipitation of a cold front at the specific times in the table. Write the words or phrase in the space provided.

TEXTBOX

Very warm due to the effects of the Berg wind	Light rainfall due to cumulonimbus clouds	Very cold conditions
Heavy rain due to cumulonimbus clouds	Heavy rain due to cirrus clouds	No temperature change
Dew point temperature is high	No rainfall	Dew point temperature is low

	Directly before a cold front	During a cold front
Temperature		
Precipitation		

(4)

1.3.4 Describe the possible impact of the series of cold fronts on agriculture.

(4)

[30]

QUESTION 2 HUMAN GEOGRAPHY

2.1 Settlement

Match the term/concept in Column A to the definition in Column B. Write your answers in the space provided.

Column A		Column B	
2.1.1	Rural depopulation	A	A type of rural settlement where houses are clustered together.
2.1.2	Nucleated settlement	B	Efforts to maintain and protect traditional customs, beliefs, and practices.
2.1.3	Cultural preservation	C	A type of rural settlement characterised by buildings arranged in a line along a road or river.
2.1.4	Dispersed settlement	D	Basic physical and organisational structures and facilities needed for the operation of a society.
2.1.5	Agricultural decline	E	A system of interconnected roads designed to accommodate wheeled road going vehicles and pedestrian traffic.
2.1.6	Sustainable development	F	Initiatives aimed at enhancing the capabilities, strengths, and influence of individuals and communities.
2.1.7	Linear settlement	G	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
2.1.8	Land degradation	H	The reduction in agricultural productivity or output leading to economic decline in rural areas.
2.1.9	Infrastructure	I	A type of rural settlement where houses are spread out across the landscape.
2.1.10	Community empowerment	J	Deterioration of land quality, often due to human activities like deforestation or overgrazing.
		K	The degree of unity and harmony within a society or community.
		L	The decline in a population due to migration to urban centres.

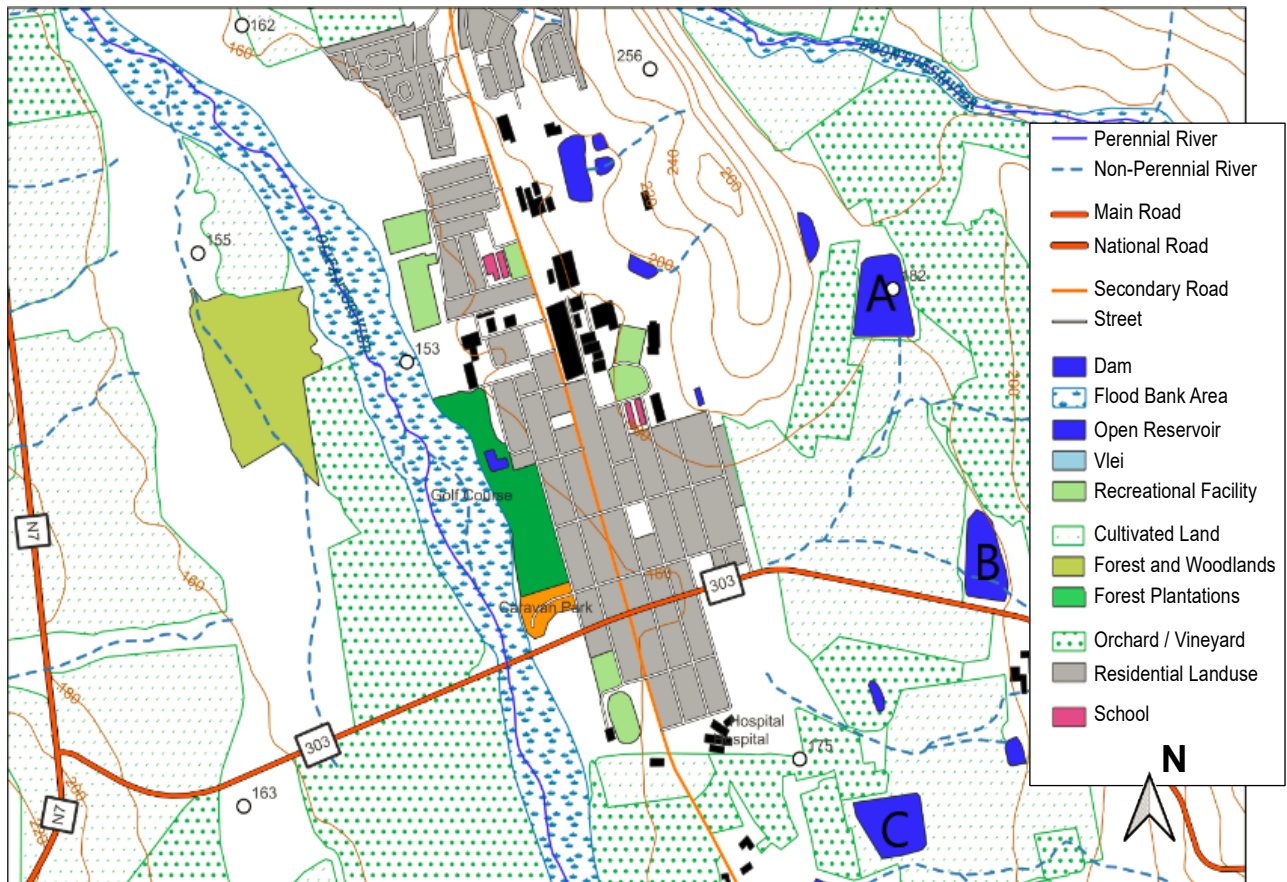
2.1.1	2.1.2	2.1.3	2.1.4	2.1.5	2.1.6	2.1.7	2.1.8	2.1.9	2.1.10

(10)

2.2 Study Figure 4, a topographic map extract of Citrusdal.

Figure 4 – Extract of Citrusdal

Scale: 1:50 000



[Source: Examiner]

2.2.1 Choose ONE word from each text box that best describes the settlement in Figure 4. Tick the answer.

Settlement Type		Street Pattern		Function	
Village	<input type="checkbox"/>	Planned, irregular	<input type="checkbox"/>	Rural	<input type="checkbox"/>
Town	<input type="checkbox"/>	Radial	<input type="checkbox"/>	Urban	<input type="checkbox"/>
City	<input type="checkbox"/>	Grid-Iron	<input type="checkbox"/>	Suburban	<input type="checkbox"/>
Site Features		Situation Features		Primary Activity	
Coastal location	<input type="checkbox"/>	Distance from national border	<input type="checkbox"/>	Fishing	<input type="checkbox"/>
River access	<input type="checkbox"/>	Access to a main road	<input type="checkbox"/>	Farming	<input type="checkbox"/>
Marshy soil	<input type="checkbox"/>	Direct access to international trade routes	<input type="checkbox"/>	Mining	<input type="checkbox"/>

(6)

Refer to Figure 4 and study Figure 5, an aerial photograph of a restaurant along with a Trip Advisor review.

Figure 5



●●●●○ Reviewed 28 October 2023 via mobile

What a pleasant surprise this country restaurant gave us.

We ate at Salome's twice for lunch and a farewell breakfast before leaving for home. The variety of meals we had were very different and superbly cooked and presented. I created my own breakfast which was a first and truly delicious with the homemade bread.

Date of visit: October 2023

[Source: <<https://www.tripadvisor.co.za>>]

2.2.2 Choose ONE word from each text box that best describes Salome's Grapevine. Tick the answer.

Salome's Grapevine Restaurant location on topographic map		Sphere of influence of Salome's Grapevine		Complexity of Salome's Grapevine Restaurant	
Location A		Very large. Country-wide		Simple	
Location B		Small. Citrusdal and surrounds		Complex	
Location C					

(3)

2.2.3 Name ONE natural feature that impacts the shape of Citrusdal.

_____ (1)

2.2.4 Explain why Citrusdal mainly offers lower order functions.

 _____ (2)

2.2.5 Identify TWO challenges related to service provision in rural areas like Citrusdal.

(2)

2.2.6 Explain ONE strategy for improving access to services in rural areas like Citrusdal.

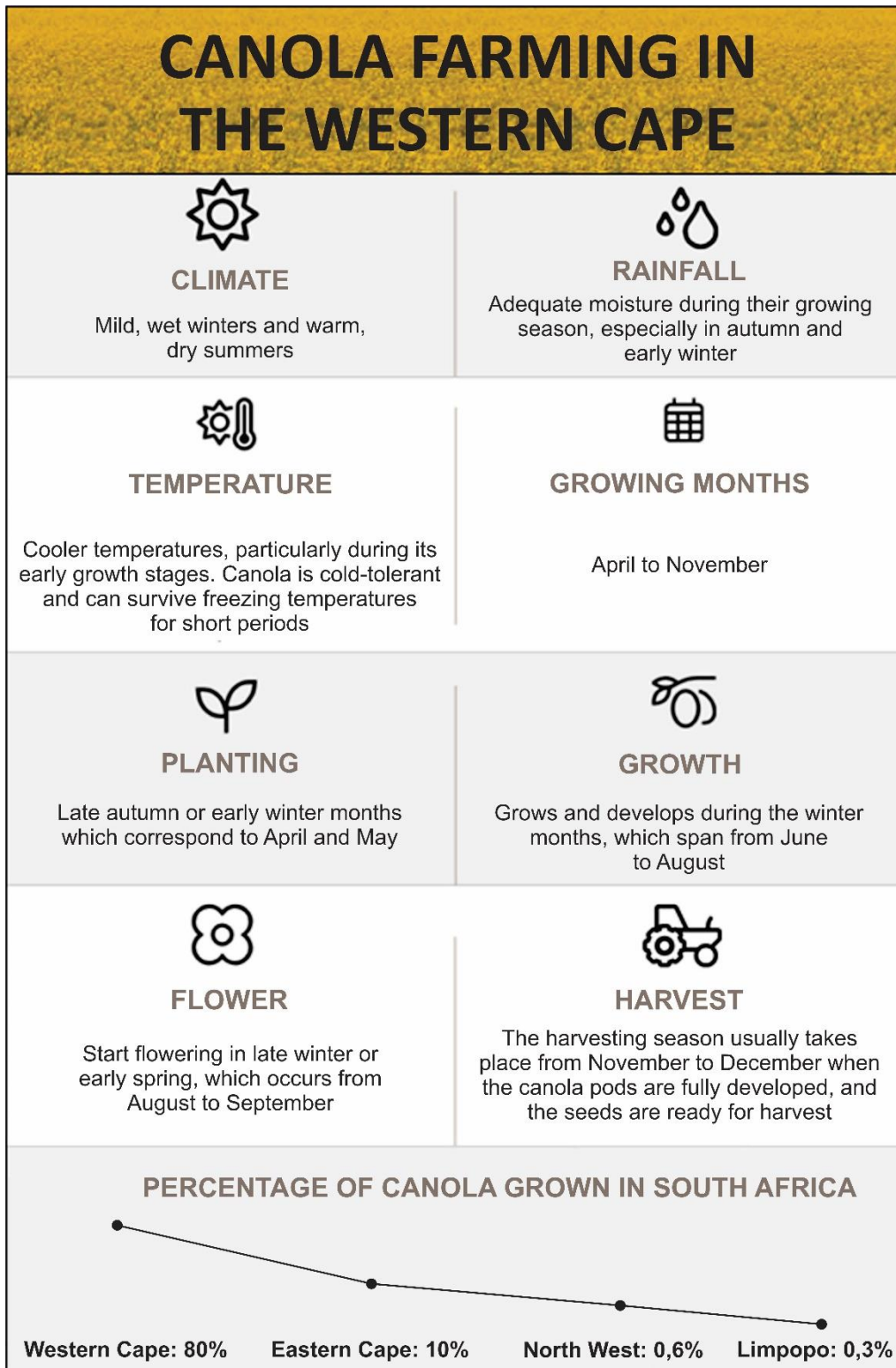
(2)

2.3 **Economy**

Canola farming in the Western Cape

Study Figure 6, an infographic on canola farming in the Western Cape, which includes national production figures.

Figure 6



[Source: Examiner's infographic]

2.3.1 Classify each activity into the appropriate economic sector. Shade in the answer.

Activity	Economic Sector Classification			
	primary	secondary	tertiary	quaternary
Harvesting	primary	secondary	tertiary	quaternary
Marketing canola	primary	secondary	tertiary	quaternary
Producing canola oil	primary	secondary	tertiary	quaternary
Selling canola oil	primary	secondary	tertiary	quaternary
Researching ways to improve the growth of canola	primary	secondary	tertiary	quaternary
Farming canola	primary	secondary	tertiary	quaternary

(6)

2.3.2 In the table below, list how canola farming contributes to local and national economic growth.

Local economic growth	National economic growth

(4)

2.3.3 Give a reason for growing canola in the Western Cape.

_____ (1)

2.3.4 State one use of canola.

_____ (1)

2.3.5 State the percentage of South Africa's total canola production from the Western Cape.

_____ (1)

2.3.6 Calculate the difference between the Western Cape and the next highest canola producing province.

 _____ (1)

2.3.7 Discuss TWO social factors that canola farming has on the community in the area.

(4)

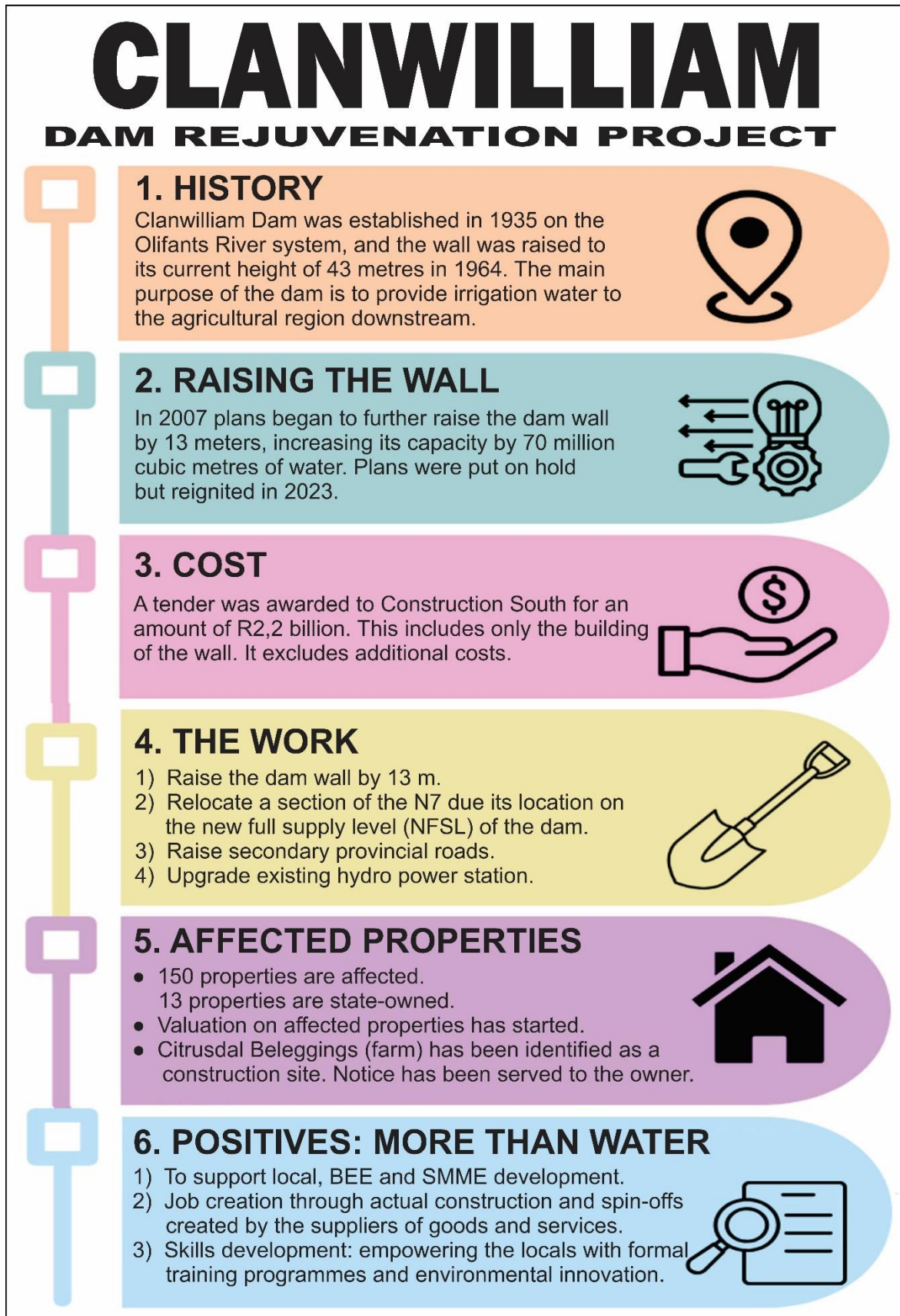
2.3.8 Discuss potential challenges for future growth in the canola industry.

(6)
[50]

QUESTION 3 EXTENDED WRITING

Refer to Figure 7, an infographic on the Clanwilliam Dam Rejuvenation Project.

Figure 7



[Examiner's Infographic]

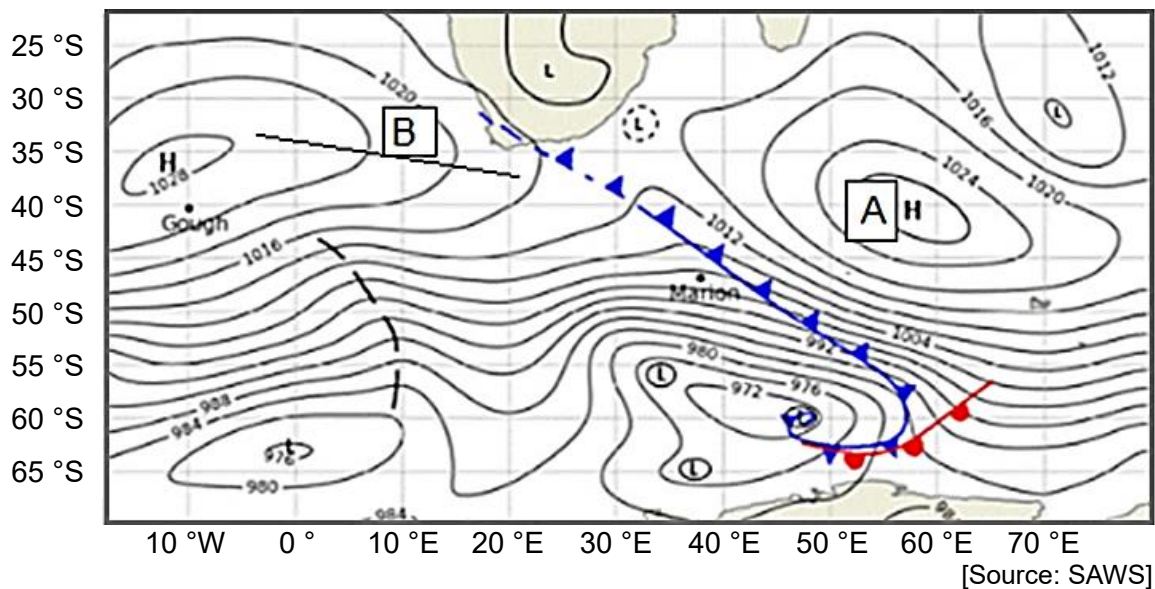
SECTION B CLIMATE, WEATHER AND GEOMORPHOLOGY

QUESTION 4 CLIMATE AND WEATHER

4.1 Anticyclonic Weather

Study Figure 8, a synoptic chart dated 7 January 2024.

Figure 8



Answer the questions that follow. Underline the correct answer.

4.1.1 The pressure system located at point A is the:

- (a) **South Atlantic High Pressure**
- (b) **South Indian High Pressure**
- (c) **Southern High Pressure** (1)

4.1.2 The term given to describe the shape of the high-pressure system at B is:

- (a) **trough**
- (b) **pressure gradient force**
- (c) **ridge** (1)

4.1.3 The anticyclone responsible for the formation of The Cape Doctor is the:

- (a) **South Atlantic High Pressure**
- (b) **South Indian High Pressure**
- (c) **Southern High Pressure** (1)

4.1.4 With the aid of a diagram, explain how the Cape Doctor is formed.



(4)

4.1.5 Explain why we experience clear and stable conditions with the presence of an anticyclone.

(4)

4.2 Tropical Cyclone

Study Figure 9 and Figure 10 with information on Tropical Storm Alvaro.

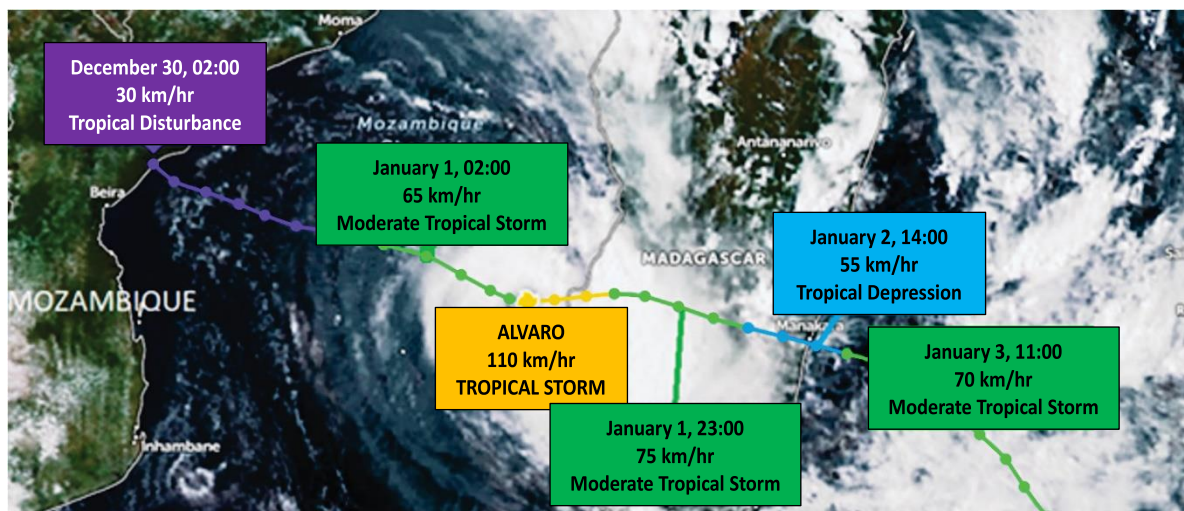
Figure 9

Madagascar: Tropical Storm Alvaro formed in The Mozambique Channel, Dec. 31

Tropical Storm Alvaro tracking eastward toward Madagascar, Dec. 31. Landfall forecast early Jan. 2 near Morombe.

[Source: <<https://crisis24.garda.com>>]

Figure 10



[Source: <<https://zoom.earth/storms/alvaro-2024/>>]

4.2.1 Fill in the missing words. Write just the word in the space provided.

The date on which this tropical storm was first recorded is (a) _____ . The atmospheric pressure was falling but was still above (b) _____ hectopascals at the centre of the (c) _____ pressure. A tropical cyclone is named in the (d) _____ stage. This tropical storm was the (e) _____ of the season and as the season progresses there will be more. This tropical storm moved in a (f) _____ direction and this is unusual.

(6)

4.2.2 State why the path of this tropical storm is very unusual.

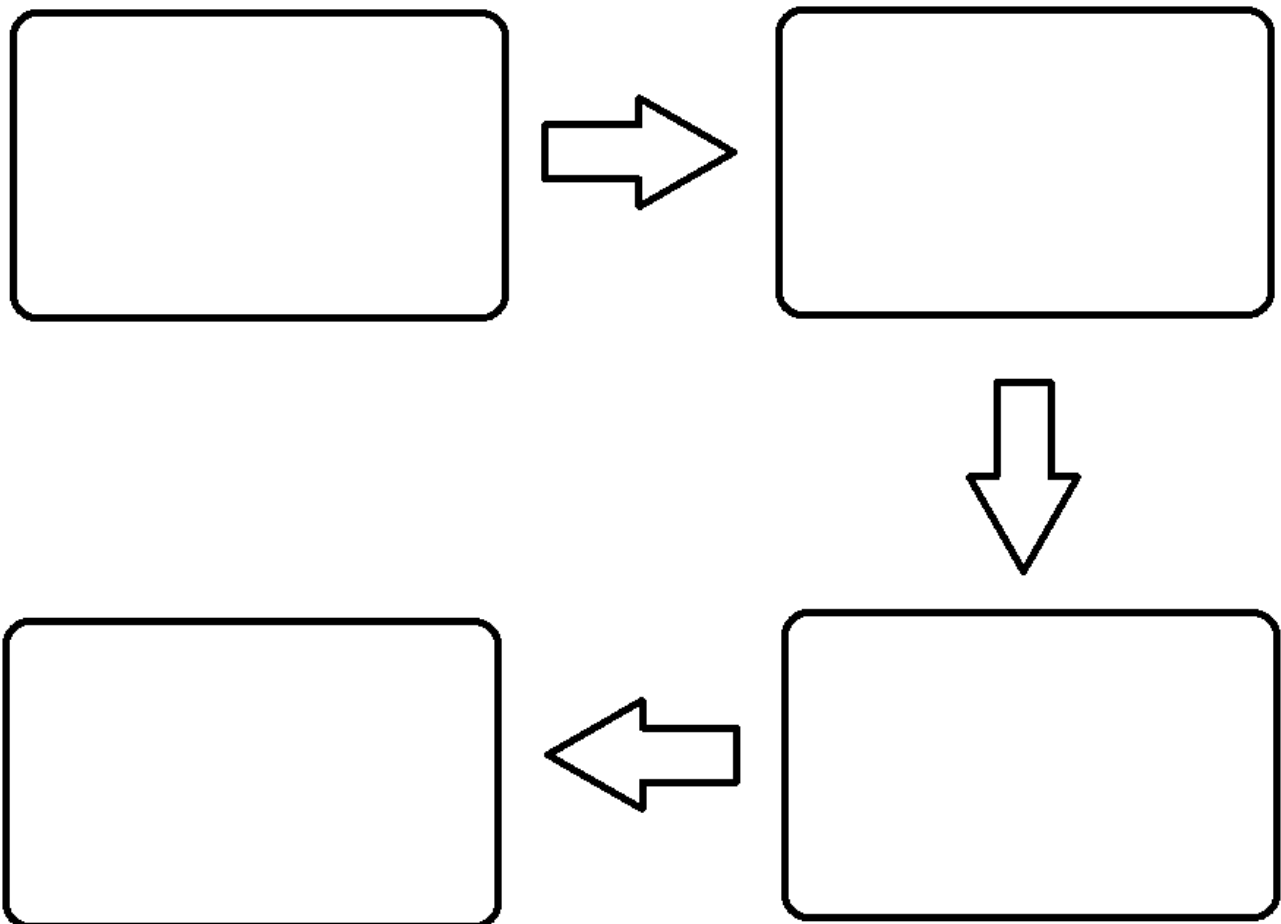
(2)

4.2.3 State TWO reasons for the formation of this tropical storm in the Mozambique Channel.

(2)

4.2.4 Complete the flow diagram below.

Explain Tropical Storm Alvaro's severity changes from January 1, 02:00, to January 3, 11:00.



(4)
[25]

QUESTION 5 GEOMORPHOLOGY

5.1 Terminology

Match the definition in Column A with the geographic term in Column B. Write your answers in the space provided.

Column A		Column B	
5.1.1	An area of high land that divides two drainage basins.	A	Turbulent flow
5.1.2	Uniform rock that allows a river to erode the landscape in a relatively consistent manner creating a tree-like drainage pattern.	B	Exotic river
5.1.3	These rivers flow only during the rainy season.	C	Watershed
5.1.4	The area drained by a river and its tributaries.	D	Velocity
5.1.5	These rivers receive rain at their source but not along their course.	E	Gradient
5.1.6	A lot of vertical mixing of water in a river.	F	Periodic river
5.1.7	A point in a river that prevents it from eroding deeper.	G	First order stream
5.1.8	The speed of flow.	H	Dendritic river
5.1.9	The steepness of a slope.	I	Drainage basin
5.1.10	Rivers with no tributaries.	J	Temporary base level
		K	Knickpoint
		L	Oxbow

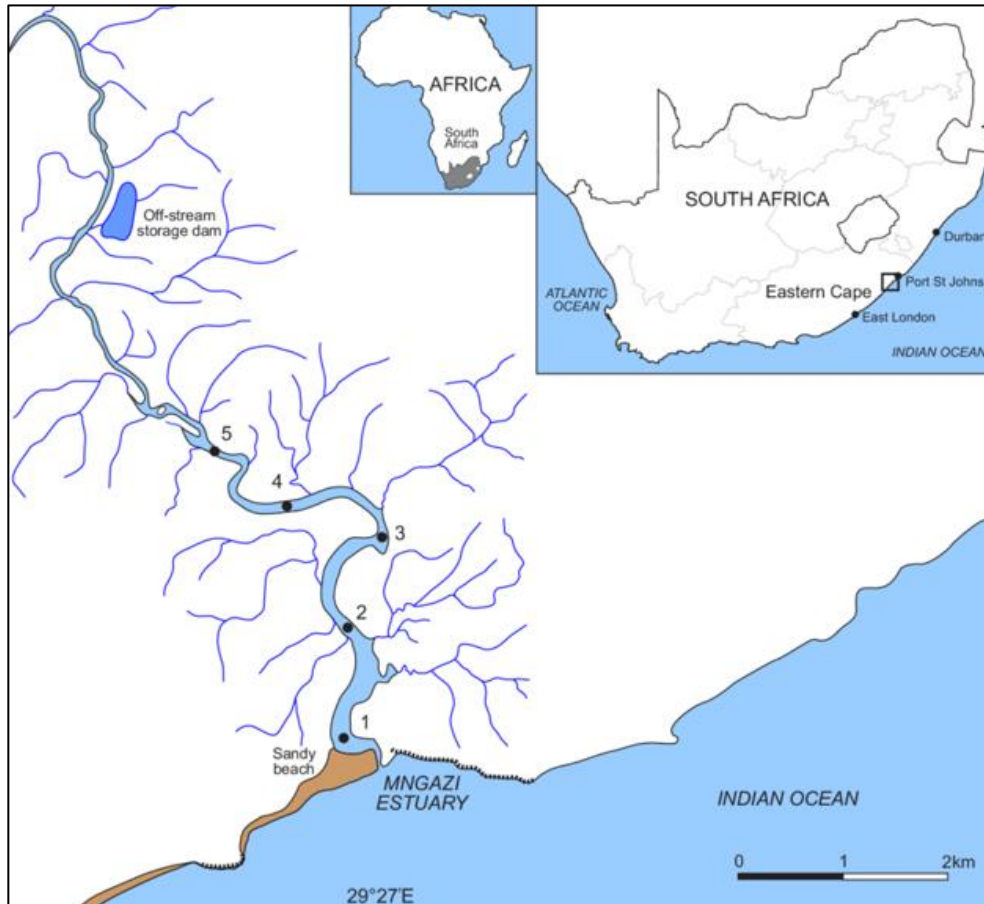
5.1.1	5.1.2	5.1.3	5.1.4	5.1.5	5.1.6	5.1.7	5.1.8	5.1.9	5.1.10

(10)

5.2 Rivers

Refer to the Figure 11 and answer the questions that follow.

Figure 11



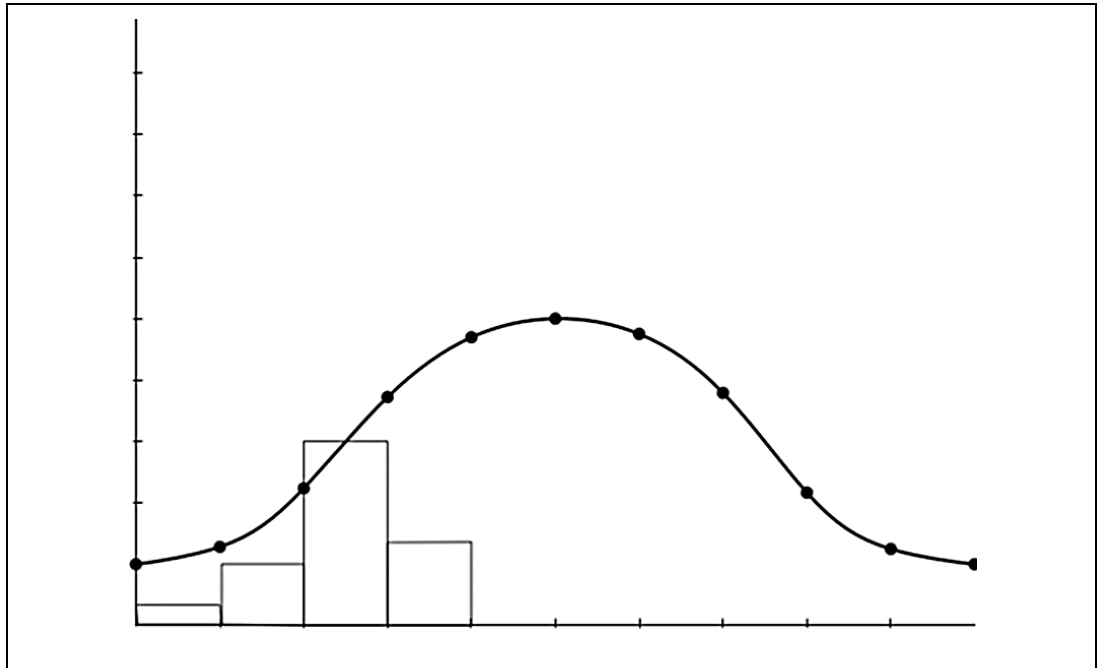
[Source: <<https://www.researchgate.net>>]

Circle the answer.

- 5.2.1 The highest stream order for the Mngazi River would be at **Point 1 / Point 3 / Point 5**. (1)
- 5.2.2 The Mngazi River at Point 1 is in its **upper / middle / lower** course. (1)
- 5.2.3 Landforms that develop in this course (answer to QUESTION 5.2.2) include **meanders / waterfalls / spurs**. (1)
- 5.2.4 Draw a plan view to show how the feature you mentioned in Question 5.2.3 forms.

(4)

5.2.5 Below is a basic storm hydrograph located at point 1 after rain upstream.



On the diagram, provide the following labels on your sketch:

- Variable on vertical axis (and unit of measurement)
- Variable on horizontal axis
- Lag time
- Peak flow
- Rising limb
- Falling limb

(6)

5.2.6 Describe how this hydrograph would change if the area became more urbanised.

(2)
[25]

50 marks

SECTION C RURAL AND URBAN SETTLEMENT AND ECONOMIC GEOGRAPHY OF SOUTH AFRICA

QUESTION 6 SETTLEMENT

6.1 Settlement

Tick the answer.

(a) The abbreviation **OBD** is commonly associated with ...

A	Operational Business Dynamics.	
B	Outlying Business Districts.	
C	Overlapping Business Domains.	
D	Outer Business Developments.	

(1)

(b) Urban areas contribute to the emergence of OBDs by ...

A	necessitating decentralisation of commercial activities due to urban social issues.	
B	promoting urban infrastructure projects.	
C	fostering centralised economic growth.	
D	encouraging urban gentrification efforts.	

(1)

(c) The characteristics of an OBD is/are ...

A	a very high population density.	
B	sparse commercial establishments.	
C	a very dense residential area.	
D	abundant recreation and shopping spaces.	

(1)

(d) OBDs play a role in urban planning by ...

A	concentrating economic activities in the city centre.	
B	relocating industrial zones to suburban areas.	
C	expanding public transportation networks within urban areas.	
D	diversifying employment opportunities beyond city limits.	

(1)

(e) The factor that assists businesses to establish a presence in OBDs is ...

A	the access to international markets.	
B	the proximity to urban entertainment hubs.	
C	the lower operating costs compared to city centers.	
D	the availability of historic landmarks and cultural sites.	

(1)

6.2 Study the information on Greylingstad and answer the questions that follow.

GREYLINGSTAD	
	<p>Greylingstad (about an hour and a half southeast of Johannesburg) has become a shadow of its former self in recent years and is almost a ghost town.</p>
	<p>The old three-storey grain mill on the left of the railway tracks is now a stripped-out shell. The area was a breadbasket, with farmers also growing soya and cabbages, and tending sheep, goats and cattle.</p>
	<p>The former co-op store in Greylingstad. During its time, Greylingstad boasted law firms, shops, a post office and a butchery that would send orders to Johannesburg every day.</p>
	<p>Small businesses began to close down soon after the national road between Durban and Johannesburg was upgraded and a bypass was built around the town.</p>

6.2.1 Match the term in Column A with the definition in Column B. Write your answers in the space provided.

Column A		Column B	
(i)	Ghost town	A	The trend of people moving away from areas, resulting in a decline in the population of those regions.
(ii)	Homelands	B	An increase in people living in urban settlements.
(iii)	Urbanisation	C	A historic town that could be haunted.
(iv)	Rural – urban migration	D	An abandoned town.
		E	Having built-up areas.
		F	Demarcated areas set aside for people of colour during Apartheid.

(i)	(ii)	(iii)	(iv)

(4)

6.2.2 Give the main reason for the start of the decline in Greylingstad's population.

(2)

6.2.3 Explore the socio-economic impact of a town transitioning from a thriving community to a 'ghost town'.

(4)

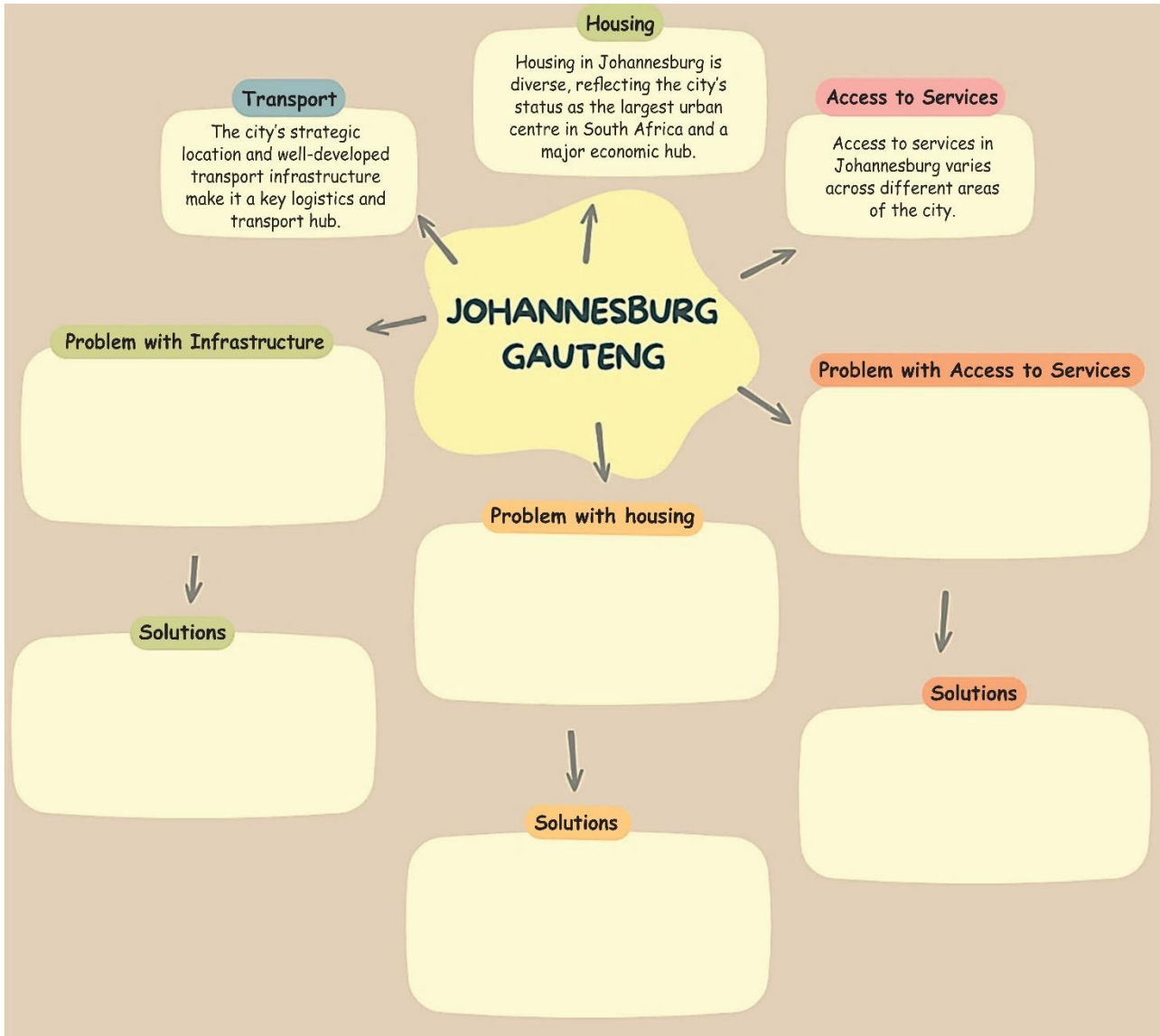
6.2.4 Describe TWO ways in which Greylingstad could be renewed.

(4)

6.3 Urban

Refer to the mind map below.

Mind Map on Johannesburg



[Source: Examiner's Mindmap]

The mind map consists of three positive points regarding the urban area of Johannesburg. On the mind map, fill in the problems associated with each of the points and provide solutions to the problem.

(6)
[25]

QUESTION 7 ECONOMY

7.1 Coal in South Africa

Study Figure 12, a table showing coal statistics in June 2023. Answer the questions that follow.

Figure 12

Province	Reserves Measured in Megatons (Mt)	Estimated Number of Years Remaining
Free State	24,99	23
KwaZulu Natal	11,14	24
Limpopo	2 584,99	86
Mpumalanga	2 484,67	27

*One megaton is equivalent to one million metric tonnes.

[Source: <<https://www.pwc.co.za>>]

Tick the answer.

7.1.1 Name the sector in which coal mining is located.

A	Primary	
B	Secondary	
C	Tertiary	
D	Quarternary	

(1)

7.1.2 Calculate the total amount of coal remaining in the four areas.

A	5105,79 Mt	
B	510579 Mt	
C	160 years	
D	5 million metric tonnes	

(1)

7.1.3 State which TWO provinces have the highest number of mines.

(2)

7.1.4 Give ONE reason for these areas having this volume of coal.

(1)

7.1.5 List TWO environmental disadvantages associated with the extraction of coal.

(2)

7.1.6 Discuss possible reasons for Mpumalanga and Limpopo having similar coal reserves but differing years remaining.

(4)

7.1.7 In the table below, outline the advantages and disadvantages of foreign investment in the coal mining industry.

Advantages of foreign investment	Disadvantages of foreign investment

(4)

7.2 Secondary and tertiary sectors

Read Article 2 below on Richards Bay and the airport expansion and answer the questions that follow.

Article 2

Richards Bay IDZ Growth



Richards Bay in KwaZulu-Natal is gearing up to strengthen its role as an economic hub by developing a new airport. The existing airport will be moved and expanded, tripling its capacity to accommodate up to 150 passengers per flight. This initiative aims to enhance accessibility to Richards Bay, which is renowned for its growing Industrial Development Zone (IDZ), deep harbour, and sizable coal terminal.

Currently, travellers typically fly into Durban before making the approximately two-hour drive to Richards Bay.

[Source: <<https://rbidz.co.za>>]

7.2.1 Explain what an IDZ is.

(2)

7.2.2 Discuss TWO effects the airport upgrade would have on the region's economy.

(4)

7.2.3 Explain how the airport's expansion would impact tertiary and quaternary activities in the area.

(4)
[25]

50 marks

Total: 200 marks

