Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjhabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

JUNE 2025

GEOGRAPHY

MARKS: **150**

TIME: **3 hours**

* J G E O G E *

This question paper consists of 19 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO SECTIONS.

   SECTION A:
   QUESTION 1: CLIMATE AND WEATHER (40)
   QUESTION 2: GEOMORPHOLOGY (40)
   QUESTION 3: SETTLEMENTS (40)

   SECTION B:
   QUESTION 4: GEOGRAPHICAL SKILLS AND TECHNIQUES (30)

2. Answer all FOUR questions.

3. ALL diagrams are included in the QUESTION PAPER.

4. Leave a line between subsections of questions answered.

5. Start EACH question at the top of a NEW page.

6. Number the questions correctly according to the numbering system used in this question paper.

7. Do NOT write in the margins of the ANSWER BOOK.

8. Draw fully labelled diagrams when instructed to do so.

9. Answer in FULL SENTENCES, except when you have to state, name, identify or list.

10. Units of measurement MUST be indicated in your final answer, for example. 1 020 hPa, 14 °C and 45 m.

11. You may use a non-programmable calculator.

12. You may use a magnifying glass.

13. Write neatly and legibly.

SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

14. A 1 : 50 000 topographical map 2820CB AUGRABIES and a 1 : 10 000 ORTHOPHOTO MAP 2820CB 7 AUGRABIES are provided.

15. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.

16. Show ALL calculations. Marks will be allocated for steps in calculations.

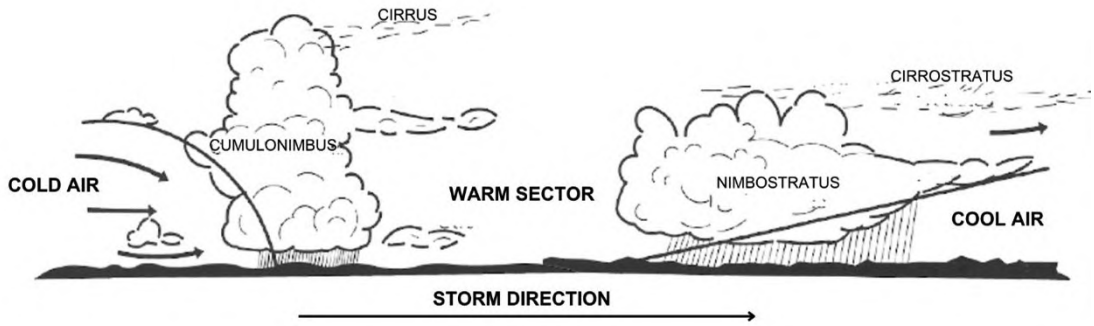
17. You must hand in the topographical and the orthophoto map to the invigilator at the end of this examination session.

SECTION A

QUESTION 1: CLIMATE AND WEATHER

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.5) in the ANSWER BOOK, for example. 1.1.6 D.

MID-LATITUDE CYCLONE IN THE SOUTHERN HEMISPHERE



[Adapted from http://www.bom.gov.au/climate]

1.1.1 The sketch shows the … stage of a mid-latitude cyclone.

A initial
B mature
C occluded
D degenerative

1.1.2 … clouds form along the cold front.

A Nimbostratus
B Cirrostratus
C Cirrus
D Cumulonimbus

1.1.3 The cold front has a … pressure gradient and moves … than the warm front.

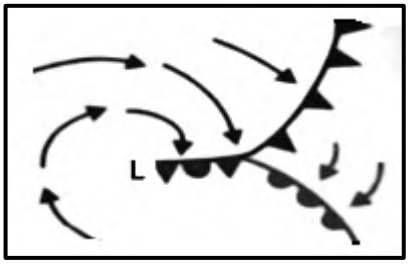
(i) steeper
(ii) gentler
(iii) slower
(iv) faster

A (i) and (iii)
B (ii) and (iii)
C (i) and (iv)
D (ii) and (iv)

1.1.4 The warm sector causes air pressure to … and humidity to …

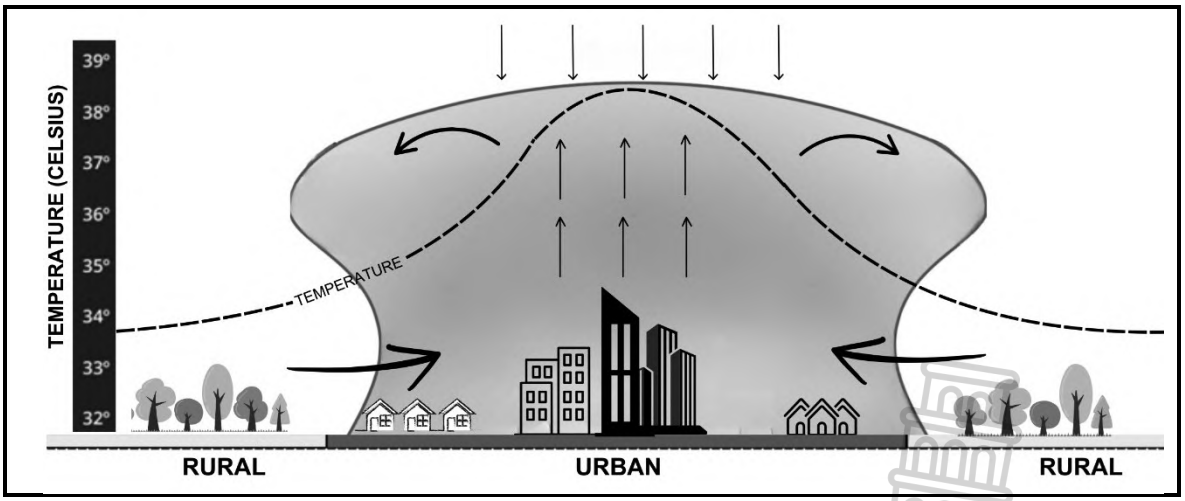
A decrease; decrease.
B increase; increase.
C decrease; increase.
D increase; decrease.

1.1.5 The sketch below shows an occlusion that formed because …



A the cold air was uplifted along the warm front.
B the warm air was uplifted along the cold front.
C the warm front undercut the cold front.
D the warm air was uplifted along the warm front. (5 x 1) (5)

1.2 The sketch below shows the local climate of an urban area. Select the correct option between brackets so that each statement reads correctly.



[Adapted from https://www.carbonbrief.org/rural-buffer-ring]

1.2.1 The air pressure will generally be (higher/lower) in the urban area than in the rural areas.

1.2.2 The temperature difference between the city centre and the rural area is approximately (34°C/5°C).

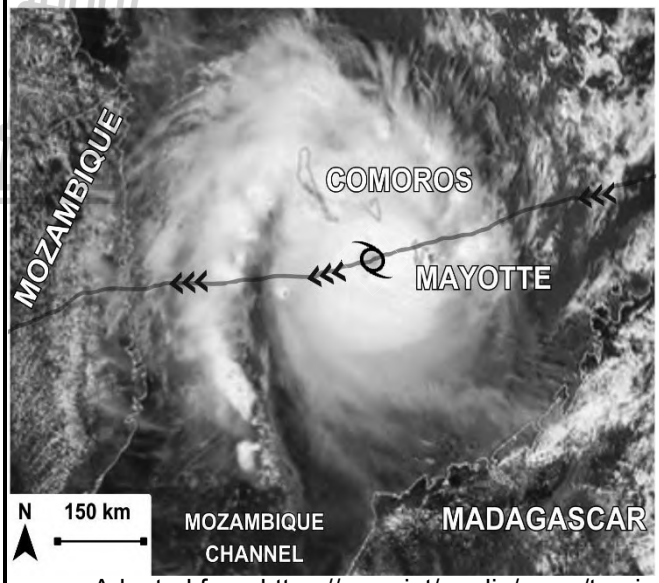
1.2.3 The sketch shows typical (day/night) time conditions.

1.2.4 (Cool/Warm) air moves in from the rural area to replace the rising air.

1.2.5 The great vertical dimension of the heat island shape is influenced by the strong (subsiding/rising) air. (5 x 1) (5)

1.3 Refer to the infographic on Tropical Cyclone Chido.

SATELLITE IMAGE: THE PATH OF TROPICAL CYCLONE CHIDO



Adapted from https://wmo.int/media/news/tropical-cyclone-chido

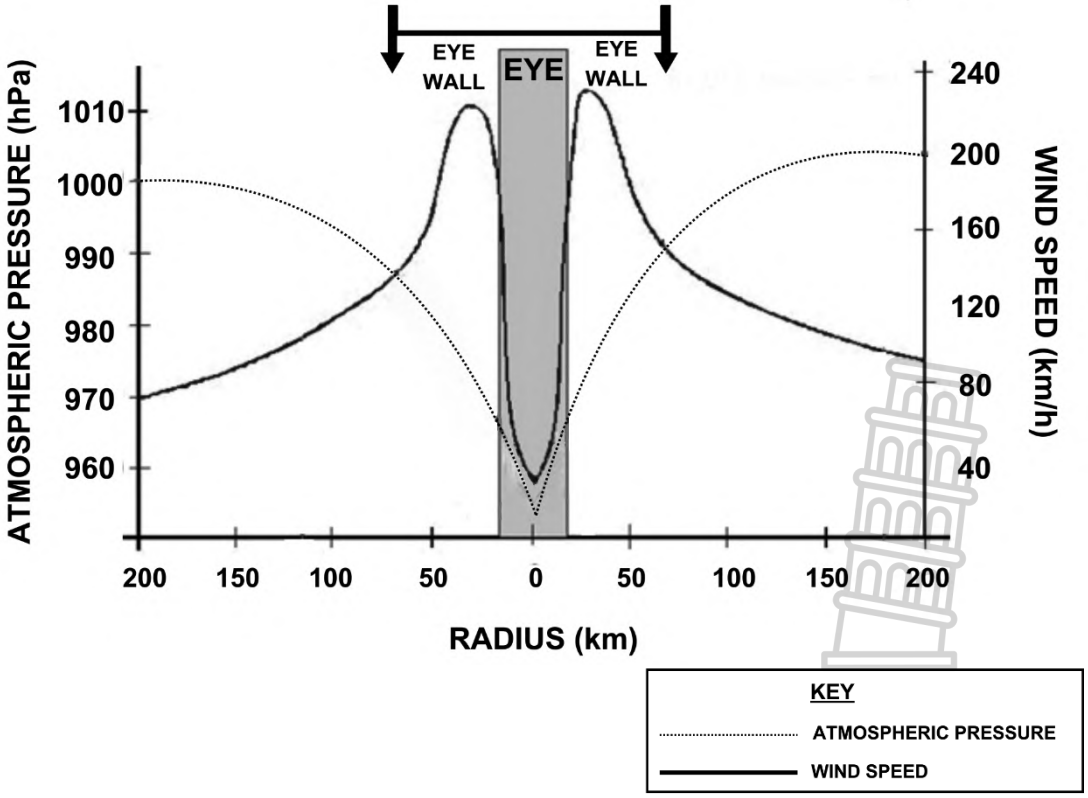
TROPICAL CYCLONE CHIDO

Tropical Cyclone Chido caused widespread devastation across the SW Indian Ocean.

Forming on 5 December 2024, Chido intensified rapidly with the development of torrential rainfall (176 mm in 12 hours) and strong winds (exceeding 200 km/hr).

The cyclone passed north of Madagascar, before striking Mayotte on 14 December. Chido continued its path, making landfall in Mozambique on 15 December before dissipating on 16 December.

CONDITIONS ASSOCIATED WITH TROPICAL CYCLONE CHIDO



[Adapted from https://www.imperial.ac.uk/grantham/research/climate]

1.3.1 According to the extract, over which ocean did Tropical Cyclone Chido develop? (1 x 1) (1)

1.3.2 During which season did Tropical Cyclone Chido develop? (1 x 1) (1)

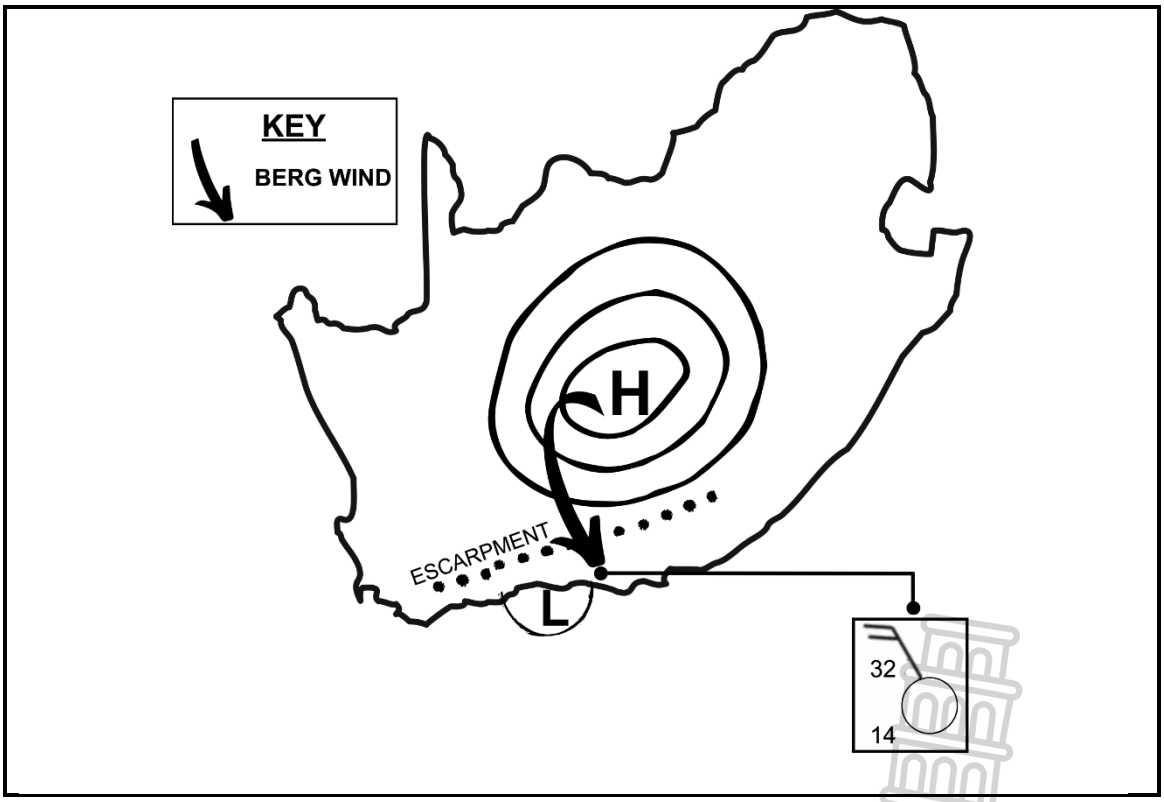
1.3.3 Calculate the life span (duration) of Tropical Cyclone Chido. (1 x 1) (1)

1.3.4 Refer to the satellite image and explain the reason for the direction of Tropical Cyclone Chido's path. (1 x 2) (2)

1.3.5 Refer to the graph and state why the eye of the tropical cyclone is calm and clear. (2 x 2) (4)

1.3.6 Explain how the moisture content and high temperatures over the ocean contribute to the formation of heavy rain in the eye walls. (3 x 2) (6)

1.4 Refer to the sketch below showing a South African berg wind.



[Source: Examiner's Own Sketch]

1.4.1 Why is the coastal low referred to as a travelling disturbance? (1 x 2) (2)

1.4.2 Refer to the station model. What is the maximum temperature? (1 x 1) (1)

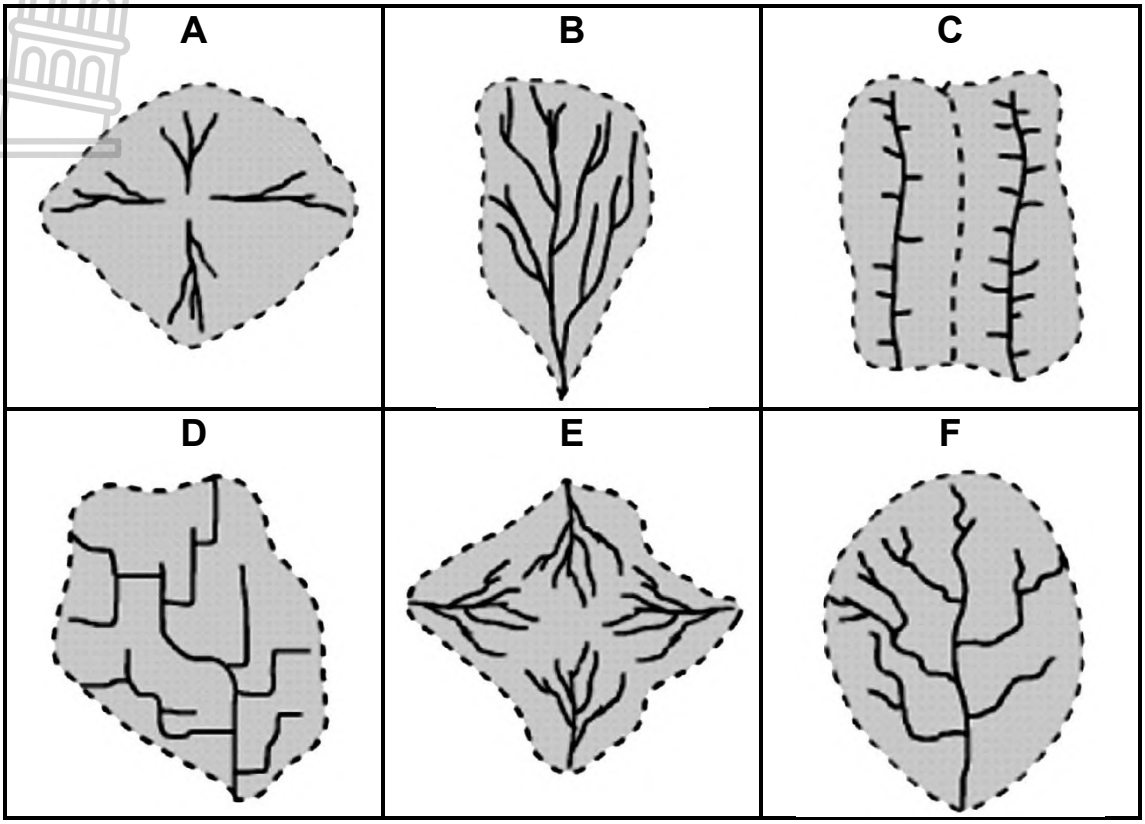
1.4.3 What causes the berg wind to be a warm offshore wind? (2 x 2) (4)

1.4.4 In a paragraph of approximately EIGHT lines, explain the negative physical impact of berg winds on farmers in the area. (4 x 2) (8)

[40]

QUESTION 2: GEOMORPHOLOGY

2.1 Match each type of drainage pattern (A to F) below with the descriptions that follow. Write only the letter (A to F) of the drainage basin next to the question numbers (2.1.1 to 2.1.5) in the ANSWER BOOK, for example. 2.1.6 A.



[Adapted from www.sciencedirect.com/topics/earth-and-planetary-sciences/drainage-pattern]

2.1.1 Rivers flow away in all directions from the peak which is a central elevated point like a hill or dome.

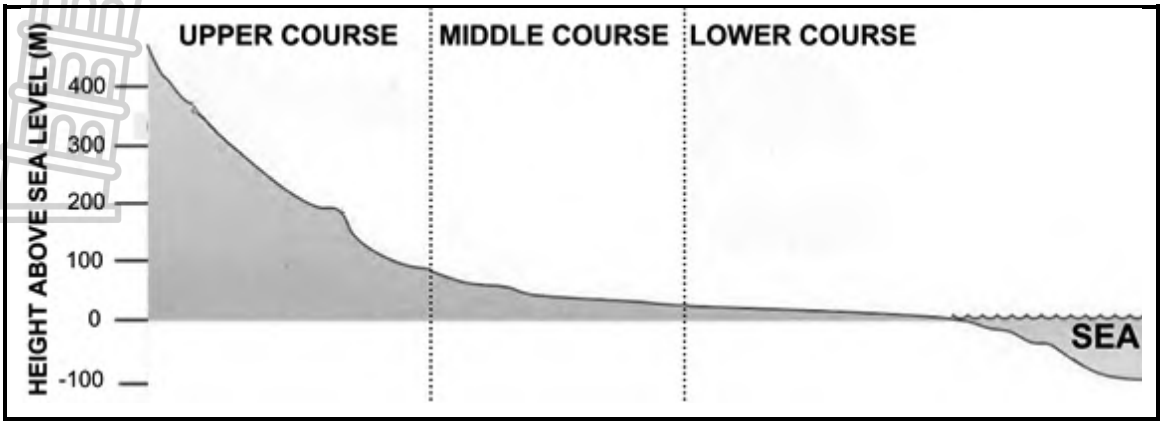
2.1.2 Main rivers run parallel to one another and have short tributaries that join at 90°.

2.1.3 Tributaries that join the main river at acute angles and which form on rock that is uniformly resistant to erosion.

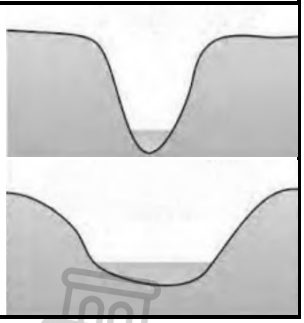
2.1.4 Forms in highly jointed rocks where the main river and its tributaries have right-angle bends.

2.1.5 Rivers and tributaries flowing in roughly parallel lines on a slope with a steep gradient. (5 x 1) (5)

2.2 Refer to the sketch of different river profiles below. Complete the statements in COLUMN A with the options in COLUMN B. Write only **Y** or **Z** next to the question numbers (2.2.1 to 2.2.5) in the ANSWER BOOK, for example. 2.2.6 Y.

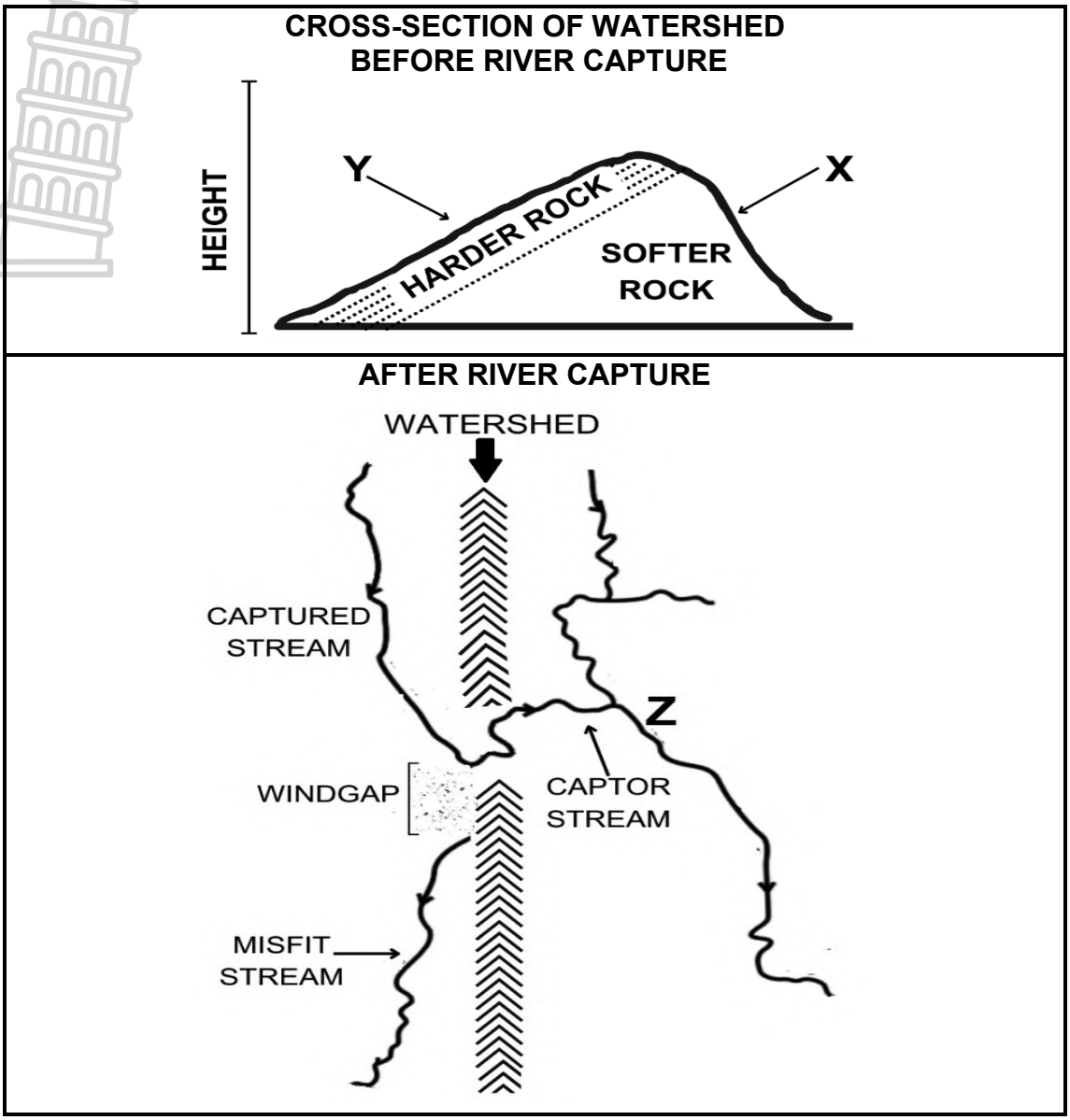


[Adapted from https://images.app.goo.gl/RzdoDMGoskh2GYCb8]

COLUMN A		COLUMN B	
2.2.1	Deposition is the main fluvial process in the … course.	**Y** **Z**	upper lower
2.2.2	The middle course is dominated by … erosion.	**Y** **Z**	lateral vertical
2.2.3	Fluvial landforms in the lower course.	**Y** **Z**	levees rapids
2.2.4	The permanent base level of erosion is at … metres above sea level.	**Y** **Z**	200 0
2.2.5	A transverse profile representing the middle course.	**Y** **Z**	

(5 x 1) (5)

2.3 Refer to the sketches showing river capture.



[Adapted from www.researchgate.net/figure/Summary-of-the-river-capture-model]

2.3.1 What is a *watershed?* (1 x 2) (2)

Refer to the cross-section of the watershed.

2.3.2 Would the captor stream flow on slope **X** or slope **Y**? (1 x 1) (1)

2.3.3 Give a reason for your answer to QUESTION 2.3.2. (1 x 2) (2)

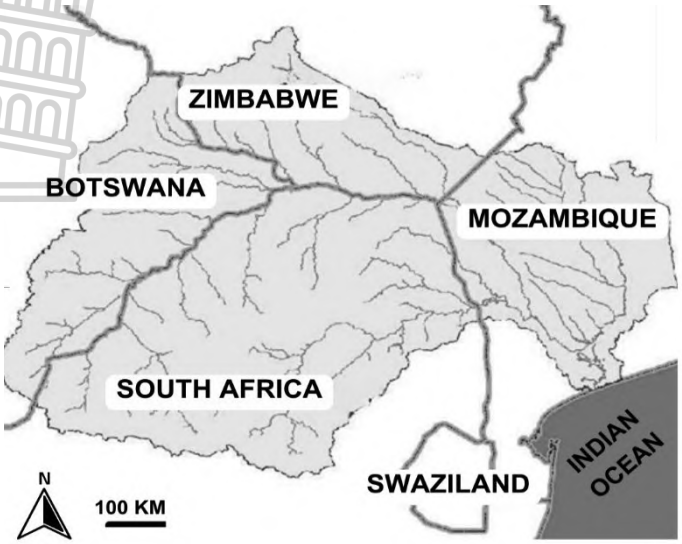
Refer to the sketch showing conditions after river capture.

2.3.4 How did the misfit stream form? (1 x 2) (2)

2.3.5 In a paragraph of approximately EIGHT lines, explain how the flow characteristics, downstream of **Z,** will change after river capture. (4 x 2) (8)

2.4 Refer to the infographic on the Limpopo River Basin (LRB) catchment and river management.

LIMPOPO RIVER BASIN (LRB)



[Source: researchgate.net/figure/Limpopo-River-basin]

ALLOCATION (%) OF LRB WATER RESOURCES

[Adapted from https://waterdialogue.ucr.edu/limpopo-river-basin]

THE NEED FOR INTEGRATED WATER RESOURCE MANAGEMENT

The Limpopo River Basin (LRB) is the fourth largest international basin in southern Africa with a total catchment area of approximately 408 250 km². The basin intersects (crosses) four countries and supports over 18 million people who have a wide variety of water demands.

Located in a region that is classified as arid to semi-arid, the water resources (both surface and underground sources) are under severe pressure because of negative impacts associated with climate change and constant increase in water demands from various sectors.

In addition, there is deterioration of water quality. Both polluted agricultural runoffs and mining and industrial effluents released into the river system have all contributed to the deterioration of water quality in the river.

Given the Limpopo River Basin's vulnerability, efficient transboundary water resources management, between the four countries, is required.

[Adapted from https://waterdialogue.ucr.edu/limpopo-river-basin]

2.4.1 Identify TWO of South Africa's neighbouring countries that are part of the Limpopo River Basin's catchment area. (2 x 1) (2)

2.4.2 According to the extract, suggest ONE human and ONE physical factor that threatens the Limpopo River Basin's (LRB) water quantity. (2 x 1) (2)

2.4.3 What percentage of the Limpopo River Basin's (LRB) water is allocated to the agricultural sector? (1 x 1) (1)

2.4.4 Explain how agricultural runoff negatively impacts the water quality in the Limpopo River Basin (LRB). (2 x 2) (4)

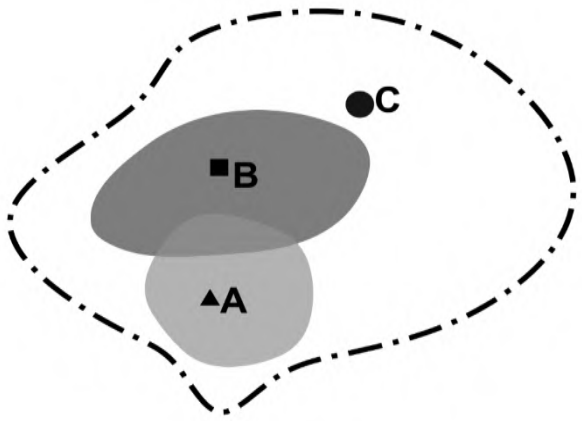
2.4.5 Suggest THREE sustainable water resource management strategies that could be implemented to ensure healthy water quality is maintained in the drainage basin. (3 x 2) (6)

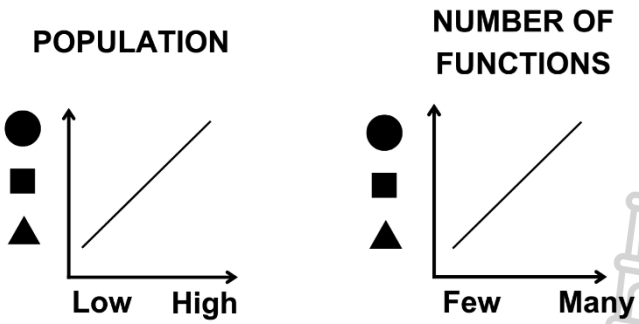
[40]

QUESTION 3: SETTLEMENTS

3.1 Refer to the sketch and graphs showing various settlements. Match each description (QUESTION 3.1.1 to 3.1.5) with the correct settlement (A, B or C). Write only the letter (A, B or C) next to the question numbers (3.1.1 to 3.1.5) in the ANSWER BOOK, for example. 3.1.6 A.

THE SPHERE OF INFLUENCE FOR SETTLEMENTS A, B AND C





[Adapted from https://www.researchgate.net]

3.1.1 The settlement that has the largest sphere of influence.

3.1.2 The settlement with the smallest range.

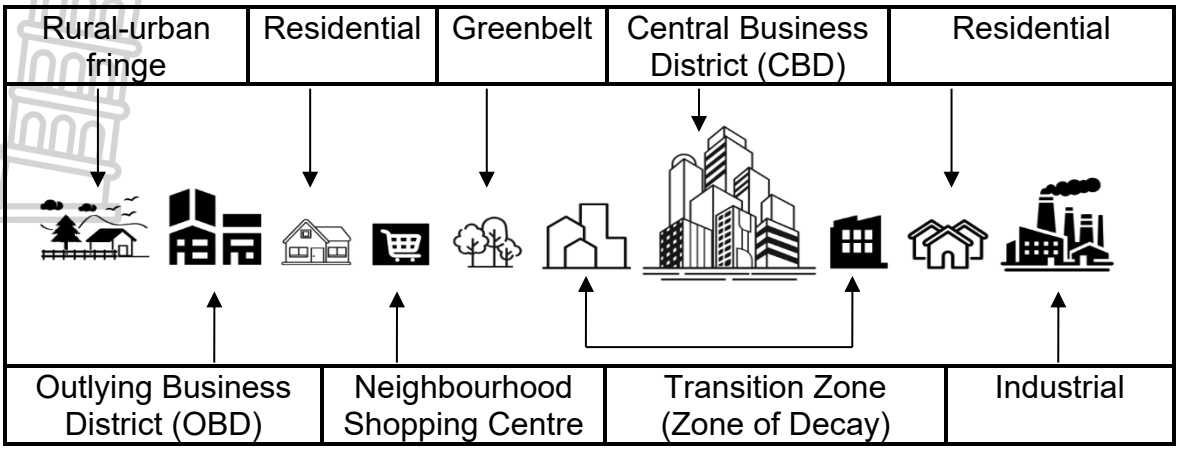
3.1.3 The settlement that offers the least low-order services.

3.1.4 The settlement with the second smallest population.

3.1.5 The settlement that has the most number of high-order functions.

(5 x 1) (5)

3.2 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (3.2.1 to 3.2.5) in the ANSWER BOOK, for example. 3.2.6 D.



[Source: Examiner's own sketch]

3.2.1 The urban profile shows the … of a city.

A street pattern
B population density
C side view
D physical development

3.2.2 The Central Business District (CBD) is characterised by:

A High building density
B Low land value
C Low concentration of commercial activity
D Low degree of accessibility

3.2.3 The transition zone has … and is characterised by …

(i) mostly high-order functions
(ii) mixed-land use
(iii) invasion and succession.
(iv) commercial centralisation.

A (i) and (iii)
B (ii) and (iii)
C (i) and (iv)
D (ii) and (iv)

3.2.4 … is a factor that determines the location of a heavy industrial land-use zone.

A The proximity to the greenbelt to improve air quality
B The expensive land on the outskirts
C Functional prestige being close to residential areas
D Located close access to bulk transport facilities

3.2.5 Urban sprawl causes a physical change in the … land-use zone.

A rural-urban fringe
B greenbelt
C industrial
D CBD (5 x 1) (5)

3.3 Refer to the photographs and extract on the rural decline of Putsonderwater.

ABANDONED BUILDINGS IN PUTSONDERWATER

RAILWAY STATION

GENERAL DEALER (SHOP)

RURAL DEPOPULATION IN PUTSONDERWATER

Putsonderwater, a once-thriving little rural railway town in the Northern Cape has experienced significant rural decline and depopulation, resulting in rural decay and it being labelled a "ghost town".

The town's decline began after the collapse of its primary industries, particularly agriculture and mining, which once supported its population. The migration of people resulted in a steady population decline which eventually led to the town being deserted.

The once-bustling community is now characterised by abandoned buildings and it no longer functions as a local service centre but stands as a symbol of rural South Africa's broader struggle with urbanisation and economic decline.

[Adapted from https://karoospace.co.za/putsonderwater-station/]

3.3.1 What is *rural depopulation*? (1 x 2) (2)

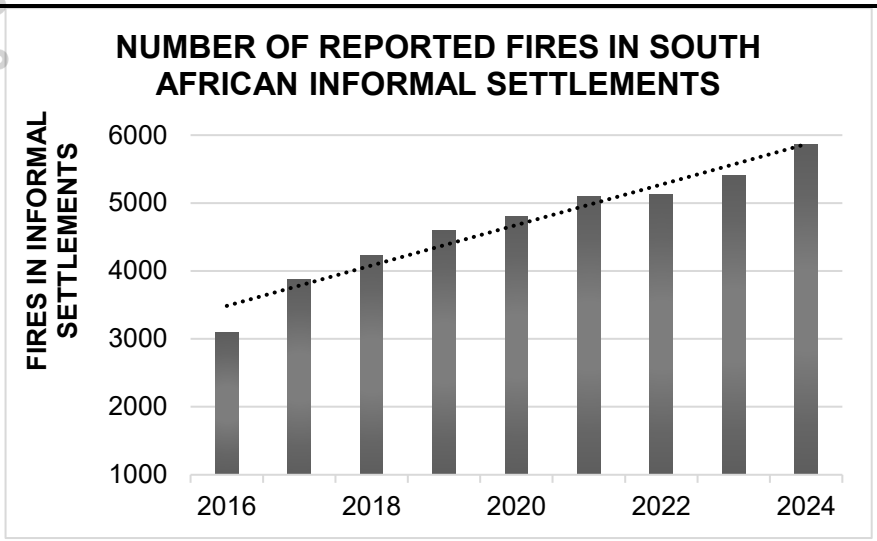
3.3.2 Give evidence from the photographs that rural depopulation has taken place. (2 x 1) (2)

3.3.3 According to the extract, name the factor that initially contributed to rural depopulation in Putsonderwater. (1 x 1) (1)

3.3.4 What are the economic consequences for rural areas when basic amenities such as the general dealer (shop) close? (2 x 2) (4)

3.3.5 Explain the negative social impact of rural depopulation on rural settlements. (3 x 2) (6)

3.4 Refer to the graph and extract on informal settlements as an urban issue.



FIRES REMAIN A CONSTANT THREAT IN INFORMAL SETTLEMENTS

There are 4 297 informal settlements across the country – which are home to more than two million households. Every year fires affect a large number of people living in these settlements.

Informal settlements are typically densely built and people's homes are built from highly combustible (flammable) materials. Fire hazards pose a constant threat when a fire breaks out, it can spread rapidly, leaving thousands of people homeless.

Beside for costing the municipalities millions of rands, fires in the informal settlements are severely hindering the upliftment of the poorest and most vulnerable members in our communities.

[Adapted from: www.researchgate.net]

3.4.1 According to the graph, state the trend of the number of fires in informal settlements from 2016 to 2024. (1 x 1) (1)

3.4.2 Give TWO reasons from the extract, why fires spread quickly through informal settlements. (2 x 1) (2)

3.4.3 How does a lack of proper infrastructure hinder emergency services from reaching informal settlements during a fire? (2 x 2) (4)

3.4.4 In a paragraph of approximately EIGHT lines, suggest measures that local municipalities can put in place to reduce the challenges associated with fires in informal settlements. (4 x 2) (8)

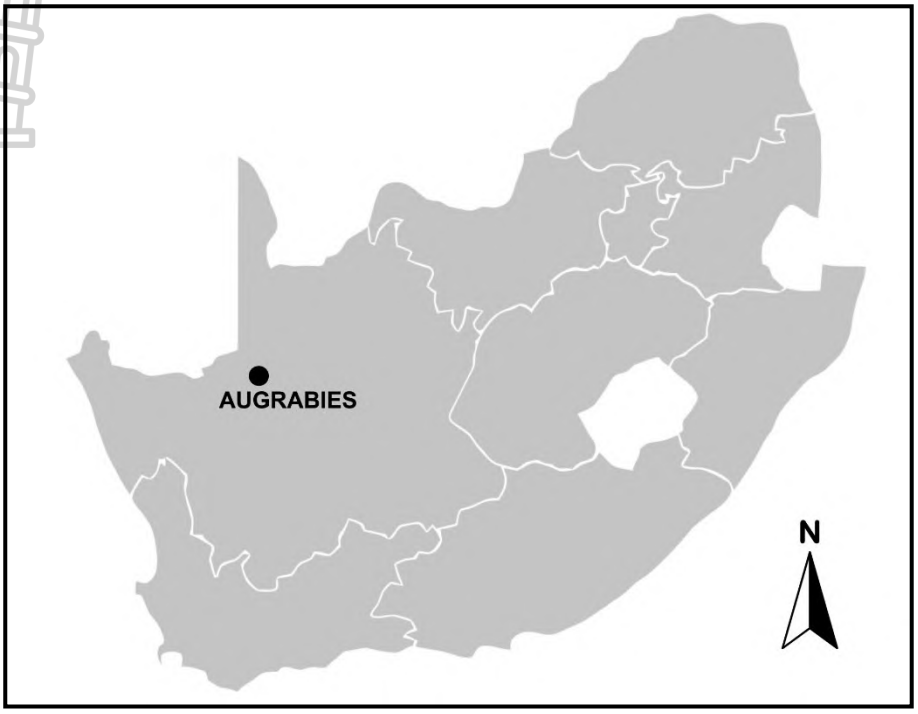
[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 4: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON AUGRABIES



Coordinates: 28°35'S; 20°20'E

Augrabies is a small town in the Northern Cape province of South Africa, situated on the south bank of the Orange River about 100 kilometres downstream from Upington. Augrabies is renowned for the impressive Augrabies Falls within the Augrabies Falls National Park. The falls, where the Orange River plunges 56 meters into a gorge, attracts both local and international tourists. Agriculture also plays a role in the economy, with grape farming and citrus production being notable in the broader region, supported by irrigation from the Orange River. The climate is arid; characterised by hot summers and mild winters, with little rainfall throughout the year, making it a semi-desert environment.

[Adapted from https://en.wikipedia.org/wiki/Augrabies,_South_Africa]

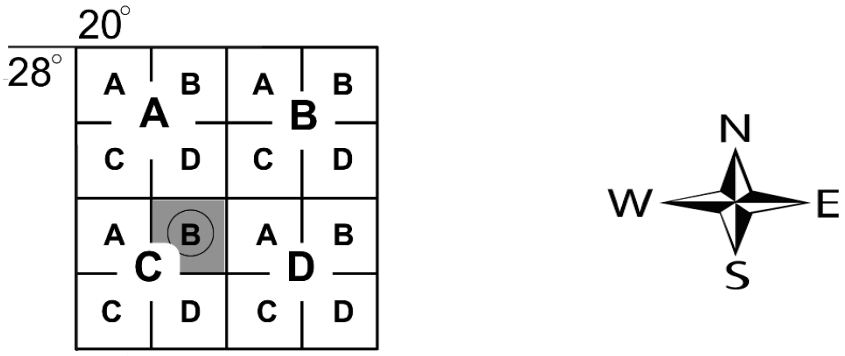
The following English terms and their translations are shown on the topographic map:

ENGLISH	AFRIKAANS
Canal	Kanaal
Diggings	Uitgrawings
Furrow	Voor
Waterfall	Waterval

4.1 MAPWORK SKILLS AND CALCULATIONS

Refer to the reference grid and information about the orthophoto map.
Four options are given for the questions below. Choose the answer and write only the letter (A–D) next to the question numbers (4.1.1 to 4.1.3) in the ANSWER BOOK for example. 4.1.4 A.

EXTRACT FROM 2820CB 7 AUGRABIES Orthophoto 1:10 000



4.1.1 The reference code of the map directly to the east:

A 2820 DA
B 2028 AD
C 2820 AD
D 2028 DA (1)

4.1.2 The photo number for the map of AUGRABIES:

A 28
B 20
C 7
D 10 000 (1)

4.1.3 The map with a scale of 1 : 10 000 shows a … area with … detail compared to the map with a 1 : 50 000 scale.

(i) smaller
(ii) larger
(iii) greater
(iv) less (1)

A (i) and (iv)
B (i) and (iii)
C (ii) and (iv)
D (ii) and (iv)

4.1.4 Refer to the orthophoto map.

(a) Calculate the distance (HE) in metres (m) from **1** (block **D3**) to **2** (block **C2**) if the distance is 7.8 cm on the map. (1 x 1) (1)

(b) Determine the difference in height (VI) between **1** (block **D3**) and **2** (block **C2**). (2 x 1) (2)

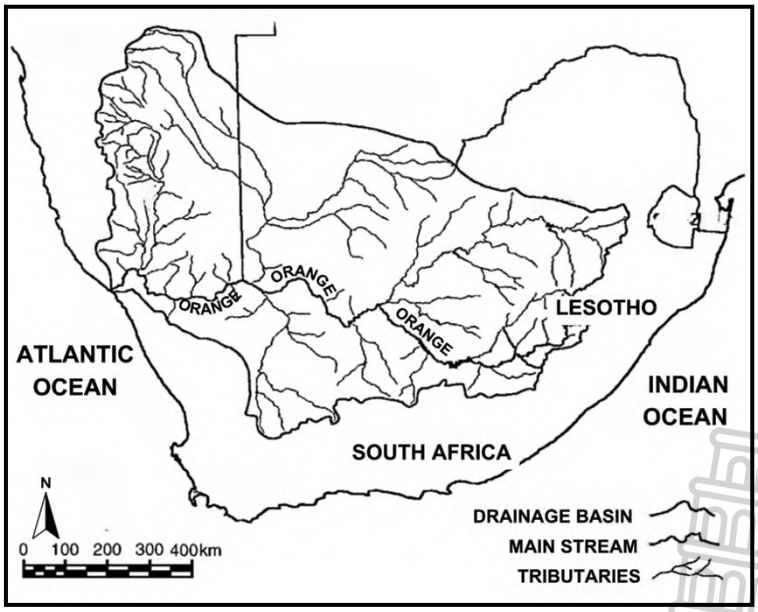
(c) Calculate the average gradient from **1** (block **D3**) to **2** (block **C2**). (2 x 1) (2)

Formula: $\textbf{Average Gradient} = \frac{\textbf{vertical interval (VI)}}{\textbf{horizontal equivalent (HE)}}$

(d) Explain how the gradient (answer to QUESTION 4.1.4 (c)) favoured the development of the holiday resort. (1 x 2) (2)

4.2 MAP INTERPRETATION

Refer to the map below that shows the Orange River's drainage basin to answer QUESTIONS 4.2.1 and 4.2.2.



[Adapted from https://www.researchgate.net/figure/Orange-River-basin-Source]

4.2.1 The Orange River is classified as an (exotic / episodic) river type. (1 x 1) (1)

4.2.2 Give a reason for your answer to QUESTION 4.2.1. (1 x 2) (2)

Refer to the topographical map.

4.2.3 Why will there be intervisibility between spot height 844 (block **A5**) and spot height 824 (block **A5**)? (1 x 1) (1)

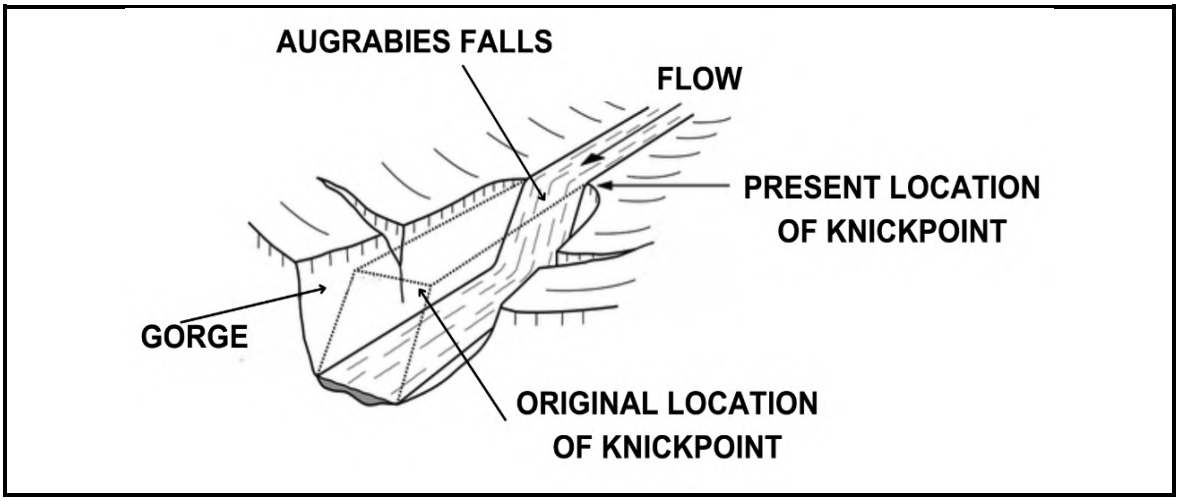
4.2.4 How does the katabatic wind form on the south-east facing slope of the ridge (**F**) in block **A5**? (2 x 1) (2)

Refer to rural settlement **(G)** in block **B4.**

4.2.5 The settlement pattern **(G)** is classified as (dispersed / nucleated). (1 x 1) (1)

4.2.6 State ONE social disadvantage of the settlement pattern (answer to QUESTION 4.2.5) (1 x 1) (1)

The Orange River flows over the edge of the Augrabies Falls (block **A1** on the topographical map and block **C3** on the orthophoto map). Refer to the maps and the sketch below to answer QUESTION 4.2.7.



[Adapted from https://link.springer.com/chapter/10]

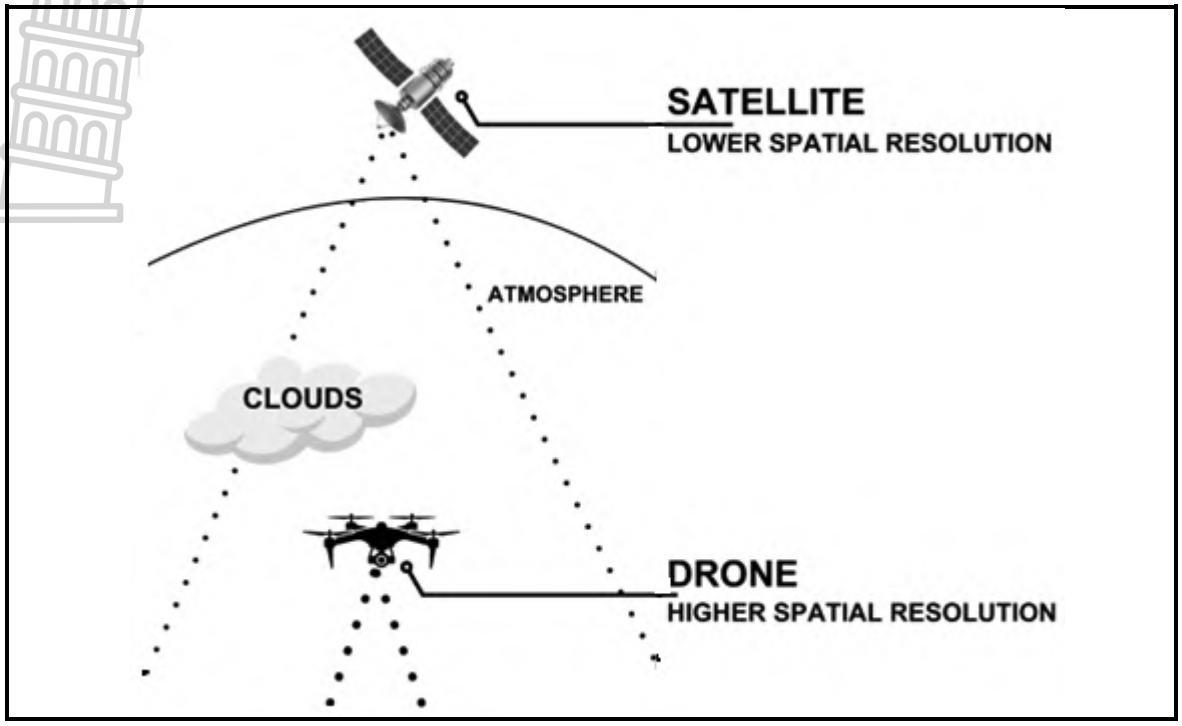
4.2.7 (a) (Upstream / Downstream) erosion is evident. (1 x 1) (1)

(b) How can erosion impact the shape of the gorge at Augrabies Falls? (1 x 2) (2)

(c) What is the economic significance of Augrabies Falls for the local community? (1 x 1) (1)

4.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

Refer to the sketch below to answer QUESTIONS 4.3.1 to 4.3.3.



[Source: Examiner's own sketch]

4.3.1 What is *remote sensing*? (1 x 2) (2)

4.3.2 Satellites and drones capture data in (raster/vector) format. (1 x 1) (1)

4.3.3 Name TWO advantages of using a drone instead of a satellite to map rock formations over Augrabies Falls. (2 x 1) (2)

Refer to block **B2** on the topographical map.

4.3.4 Provide evidence that buffering is taking place in block **B2**. (1 x 1) (1)

4.3 5 Why is buffering important along the Orange River in block **B2**? (1 x 2) (2)

[30]

TOTAL SECTION B: 30
GRAND TOTAL: 150

Province of the
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NATIONAL SENIOR CERTIFICATE

GRADE 12

JUNE 2025

GEOGRAPHY MARKING GUIDELINE

MARKS: 150

This marking guideline consists of 9 pages.

SECTION A:

QUESTION 1

1.1 1.1.1 B (1)

1.1.2 D (1)

1.1.3 C (1)

1.1.4 A (1)

1.1.5 B (1) (5 x 1) (5)

1.2 1.2.1 lower (1)

1.2.2 5°C (1)

1.2.3 day (1)

1.2.4 Cool (1)

1.2.5 rising (1) (5 x 1) (5)

1.3 1.3.1 (SW) Indian (1) (Ocean) (1 x 1) (1)

1.3.2 Summer (1) (1 x 1) (1)

1.3.3 12 days (1) (1 x 1) (1)

1.3.4 Steered by the Easterlies / Trade winds (2)
Located in the Tropical Easterly wind belt (2)
[ANY ONE] (1 x 2) (2)

1.3.5 **CLEAR SKIES:**
No condensation takes place (2)
Air subsides / descends (2)
Air heats up / adiabatic warming (2)
Evaporation of moisture /air dries out (2)
Sinking air reduces cloud formation (2)
[ANY ONE]

CALM:
Very weak pressure gradient (2)
Air descends (downwards not horizontal movement of air) (2)
Winds converge toward the eyewall (2)
Air spirals upwards in eye wall before reaching the eye (2)
[ANY ONE]
[ANY TWO – MUST GIVE ONE ON "CLEAR CONDITIONS" AND ONE ON "CALM CONDITIONS" OF THE EYE] (2 x 2) (4)

1.3.6 The rate of evaporation increases which draws more water vapour that is necessary for the formation of clouds (2)
Rising warm air causing large-scale condensation forming cumulonimbus (Cb) clouds (2)
High humidity (high moisture content) provides the moisture necessary for the formation of clouds (2)
Convection currents cause warm, moist air to rise rapidly and to cool at higher altitudes (2)
The rapid rising warm air will cool down and the moisture condenses into water droplets (clouds) (2)
Latent heat is released (through condensation) which intensifies updrafts (2)
[ANY THREE]
[NO PART MARKING – A REASON AND A QUALIFIER IS NECESSARY] (3 x 2) (6)

1.4 1.4.1 Coastal low forms off the west coast and travels east along the coast (moves across a region), influencing / changing the weather (2)
[CONCEPT] (1 x 2) (2)

1.4.2 32 °C (1) (1 x 1) (1)

1.4.3 Blows from the interior towards the coast / along pressure gradient / from an area of high pressure to an area of low pressure (2)
As the air descends (the escarpment) it warms (adiabatically) (2)
(2 x 2) (4)

1.4.4 Crops wilt or die due to insufficient water (2)
Drought conditions cause crop failure / reduced yields (2)
Availability of water reduced due to the increased rate of evaporation (2)
Livestock health issues due to heat / drought (2)
Reduces the water quality (in reservoirs, dams and rivers) (2)
Increases irrigation costs (2)
Soil more susceptible to erosion/ degradation (2)
Cost implications of fixing damaged soil (2)
Reduced crop yields because of heat stress (2)
Increases the risk of fires (destroys crops / livestock / grazing land) (2)
Farmers displaced because of fires / inhospitable conditions (2)
Loss of income / economic losses from agricultural output (2)
Scorching of crops / plants (2)
Long-term land degradation for agriculture (2)
[ANY FOUR] (4 x 2) (8)
[40]

QUESTION 2

2.1 2.1.1 E (1)

2.1.2 C (1)

2.1.3 F (1)

2.1.4 D (1)

2.1.5 B (1) (5 x 1) (5)

2.2 2.2.1 Z (1)

2.2.2 Y (1)

2.2.3 Y (1)

2.2.4 Z (1)

2.2.5 Z (1) (5 x 1) (5)

2.3 2.3.1 A high lying area that separates two drainage basins (2)
[CONCEPT] (1 x 2) (2)

2.3.2 X (1) (1 x 1) (1)

2.3.3 Slope with softer rock erodes quicker (2)
Slope with steeper slope erodes quicker (2)
[ANY ONE] (1 x 2) (2)

2.3.4 Headwaters / source of water is cut off (by the captor stream) (2)
(1 x 2) (2)

2.3.5 Increase in water volume causes **larger discharge** (2)
More water / larger discharge increases **erosive capacity** (2)
Increased **energy/ rejuvenated** river because of the increased volume / speed of water (2)
Flow velocity (speed) increases with increased water volume (2)
Increased **sediment transport capacity** because of the increased speed / volume of water (2)
Increased discharge increases the **risk of flooding** (2)
Rate of deposition is lowered because of reduced velocity / discharge (2)
River discharge can become **turbulent** because of increased energy (2)
[ANY FOUR]
[NO PART MARKING – A REASON AND A QUALIFIER IS NECESSARY] (4 x 2) (8)

2.4 2.4.1 Botswana (1)
Zimbabwe (1)
Mozambique (1)
[ANY TWO] (2 x 1) (2)

2.4.2 Human factor: increase in water demand (1)
Physical factor: climate change (1) (2 x 1) (2)

2.4.3 60 (1)% (1 x 1) (1)

2.4.4 Fertilisers / excess nutrients lead to eutrophication / promote algal boom (2)
Algal bloom causes oxygen depletion (2)
Excess sediment can cloud the water (2)
Pesticides / herbicides increase the level of toxic chemicals (2)
Run-off from livestock causes increased pathogens / harmful bacteria (2)
[ANY TWO] (2 x 2) (4)

2.4.5 Awareness / education campaigns (2)
Buffering rivers /establish buffer strips (2)
Preserve riparian zone (2)
Protect wetlands (2)
Regular testing / monitoring of water quality (2)
Ensure EIAs conducted (2)
Reforestation/afforestation/plant natural vegetation along river banks (2)
Reduce agricultural run-off (2)
Promote the use of organic fertiliser (2)
Ensure proper treatment of wastewater (2)
Incentives to reduce pollution (2)
Legislation to prevent pollution (2)
Enforcing fines on companies caught polluting (2)
[ANY THREE] (3 x 2) (6)

[40]

QUESTION 3

3.1	3.1.1	C (1)		
	3.1.2	A (1)		
	3.1.3	A (1)		
	3.1.4	B (1)		
	3.1.5	C (1)	(5 x 1)	(5)
3.2	3.2.1	C (1)		
	3.2.2	A (1)		
	3.2.3	B (1)		
	3.2.4	D (1)		
	3.2.5	A (1)	(5 x 1)	(5)
3.3	3.3.1	The decrease in the number of people in rural areas (2) **[CONCEPT]**	(1 x 2)	(2)
	3.3.2	Broken structures (doors / windows) (1) Faded facades / peeling paint (1) Abandoned buildings (1) Overgrown vegetation (1) Absence of human activity (1) Railway station is not operating (1) **[ANY TWO]**	(2 x 1)	(2)
	3.3.3	Collapse of primary industries (particularly agriculture and mining) (1)	(1 x 1)	(1)
	3.3.4	Decrease in employment opportunities / job losses (2) Increased poverty (2) Reduced local spending (2) Decline in value of property (2) Less appealing place for investors (2) Increased travel costs to access goods (2) Increased prices due to limited competition (2) Decline in local tax revenue (2) **[ANY TWO]**	(2 x 2)	(4)

3.3.5 Migration disrupts family structures (2)
Birth rate declines (2)
Brain drain (2)
Ageing population (2)
Decline in services (2)
Social insolation (2)
Increase in crime / social ills (2)
Erosion of community identity (2)
Decease in quality of life (2)
Increase in poverty (2)
[ANY THREE] (3 x 2) (6)

3.4 3.4.1 Increasing (1) (1 x 1) (1)

3.4.2 Densely built (1)
Highly flammable materials (1) (2 x 1) (2)

3.4.3 Poor accessibility (2)
Access is limited / restricted (2)
Restricts / denied entry (2)
Difficult to navigate (2)
Takes longer / delays response time (2)
Ineffective response (too late) (2)
[ANY TWO] (2 x 2) (4)

3.4.4 Provide better services (accept examples) (2)
Access to better emergency services (accept examples) (2)
Map settlement to create clear layout to help navigation (2)
Educate residents about fire hazards (2)
Design an evacuation plan (2)
Provide stronger building material (2)
Promote the use of less flammable building materials (2)
Access to proper housing (accept examples) (2)
Promote spacing between houses (2)
Provide better infrastructure (accept examples) (2)
Fix faulty electrical wiring / connections (2)
Install fire alarms / community alert systems (2)
Establish emergency shelters / relief funds (2)
[ANY FOUR] (4 x 2) (8)
[40]

SECTION B:

QUESTION 4

4.1	4.1.1	A (1)	(1 x 1)	(1)
	4.1.2	C (1)	(1 x 1)	(1)
	4.1.3	B (1)	(1 x 1)	(1)
	4.1.4	(a) 780 m (1)	(1 x 1)	(1)
		(b) 625 (m) – 615 (m) (1) = 10 m (1)	(2 x 1)	(2)
		(c) VI = 10 (m) (1) (Correct substitution) HE = 780 (m) 1 : 78 (1)	(2 x 1)	(2)
		(d) Cheaper to build on a gentle slope (2) Easier to build on a gentle slope (2) Better accessibility for construction vehicles (2) Safer to construct on a flatter land (2) **[ANY ONE]**	(1 x 2)	(2)
4.2	4.2.1	Exotic (1)	(1 x 1)	(1)
	4.2.2	River source in a wet area; flows through dry regions (2) Flows through a region that receives little rain but has a substantial flow or water (2) **[ANY ONE]**	(1 x 2)	(2)
	4.2.3	No obstruction between the two points (1) Spot height 844 is visible from spot height 824 (1) **[ANY ONE]**	(1 x 1)	(1)
	4.2.4	The air at the top cools faster than the air at the bottom of the ridge / a significant temperature difference is created (1) The dense cold air flows down the slope / gravity pulls the dense air down the slope (1)	(2 x 1)	(2)
	4.2.5	Dispersed (1)	(1 x 1)	(1)
	4.2.6	Limited access to services (1) Lack of social interaction (1) Limited community support (1) Vulnerable to crime / security concerns (1) Unable to share resources (1) **[ANY ONE]**	(1 x 1)	(1)

4.2.7 (a) Upstream (1) (1 x 1) (1)

(b) Downcutting / vertical erosion makes the gorge deeper (2)
Headward erosion making waterfall retreat upstream, lengthening the gorge (2)
Lateral erosion makes the gorge wider (2)
Erosion can create a more rugged / steeper slope (2)
[ANY ONE] (1 x 2) (2)

(c) Attract tourists / tourism-related businesses (accept examples) (1)
Provides jobs (1)
[ANY ONE] (1 x 1) (1)

4.3 4.3.1 The process of gathering information about an area from a distance / without making physical contact (2)
[CONCEPT] (1 x 2) (2)

4.3.2 Raster (1) (1 x 1) (1)

4.3.3 Has higher spatial resolution (1)
Less affected by cloud cover / obstructions (1)
Cheaper (1)
[ANY TWO] (2 x 1) (2)

4.3.4 Protected area (1)
Row of trees (1)
No development/limited human activities (accept examples) near river (1)
[ANY ONE] (1 x 1) (1)

4.3.5 Protects the water quality (2)
Reduces pollution (2)
Reduces sediment runoff (2)
Erosion control (2)
Stabilises the riverbank (2)
Flood management (2)
Maintains aquatic processes (2)
Safeguards river ecosystem (2)
[ANY ONE] (1 x 2) (2)
[30]

TOTAL SECTION B: 30
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