



**Western Cape
Government**

Education

FOR YOU

COMMON TRIAL EXAM

GRADE 12

**GEOGRAPHY PAPER 1
06 SEPTEMBER 2023**

Stanmorephysics

MARKS: 150

TIME: 3 hours

This paper consists of 18 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections:

SECTION A:
QUESTION 1: CLIMATE AND WEATHER (60)
QUESTION 2: GEOMORPHOLOGY (60)

SECTION B:
QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES (30)
2. Answer all THREE questions.
3. All diagrams are included in the QUESTION PAPER.
4. Leave a line between the subsections of questions answered.
5. Start each question at the top of a NEW page.
6. Number the answers 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, e.g. 1 020 hPa, 14 °C and 45 m.
11. You may use a non-programmable calculator.
12. You may make use of a magnifying glass.
13. Write neatly and legibly.

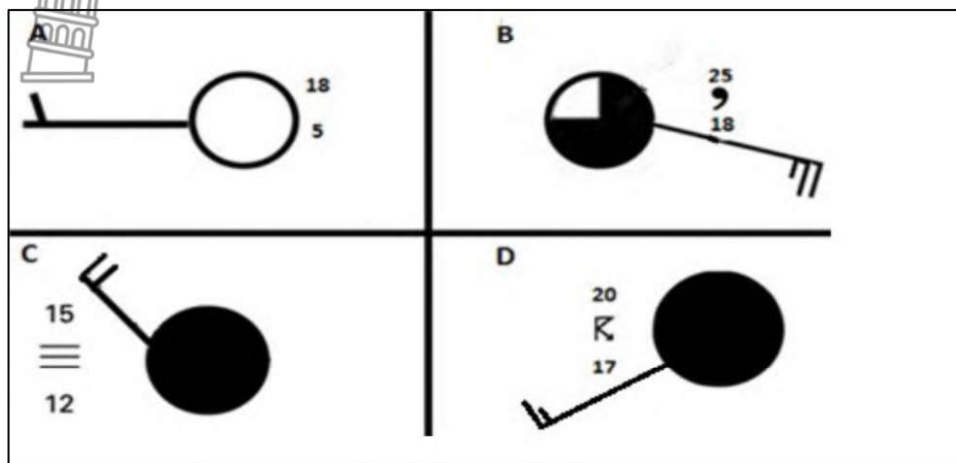
SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

14. A 1 : 50 000 topographical map 2729DC MONT PELAAN and a 1 : 10 000 orthophoto map 2729DC 3 MONT PELAAN 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 this.

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1 The source below shows FOUR weather stations. Match the statements below with weather stations **A** to **D**. Write only the letter (A–D) next to the question number (1.1.1 – 1.1.8) in the ANSWER BOOK, for example 1.1.9 A.



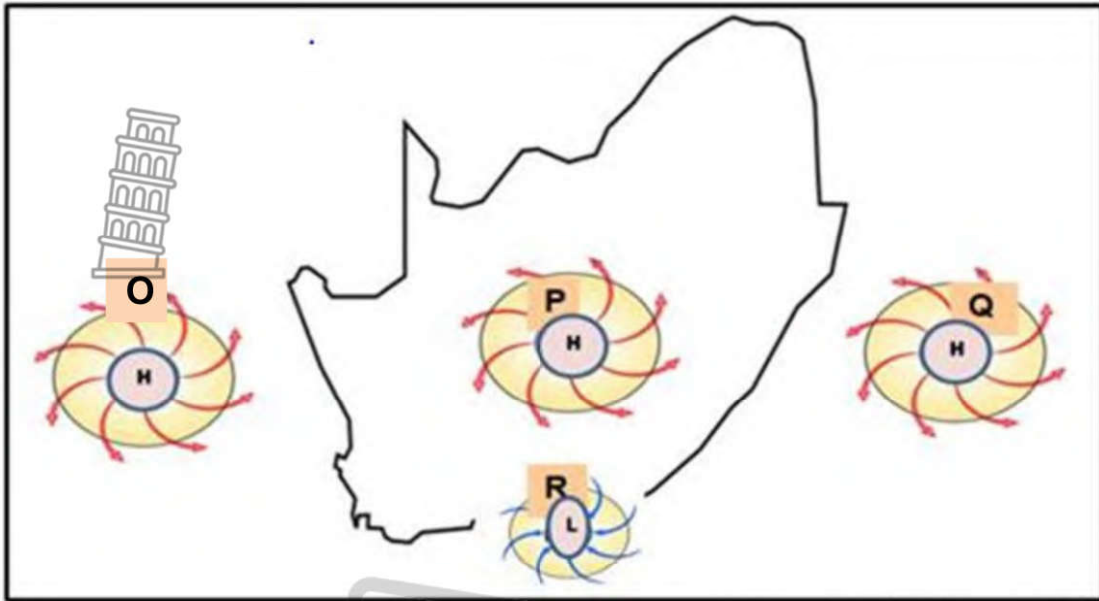
[Source: South African Weather Service]

- 1.1.1 Thunderstorms are likely to be experienced.
- 1.1.2 Wind speed is 25 knots.
- 1.1.3 Indicates clear skies.
- 1.1.4 Wind direction is south-westerly.
- 1.1.5 Associated with stable conditions over the interior in winter.
- 1.1.6 Conditions that prevail on the west coast of South Africa in winter.
- 1.1.7 The expected precipitation is drizzle.
- 1.1.8 It indicates the wind direction when a place is lying in the warm sector of the cold front.

(8 x 1) (8)



1.2 Refer to the map on cyclones and anticyclones below.



[Source: From <https://www.coolgeography.co.uk/GCSE/AQA/WaterontheLand>]

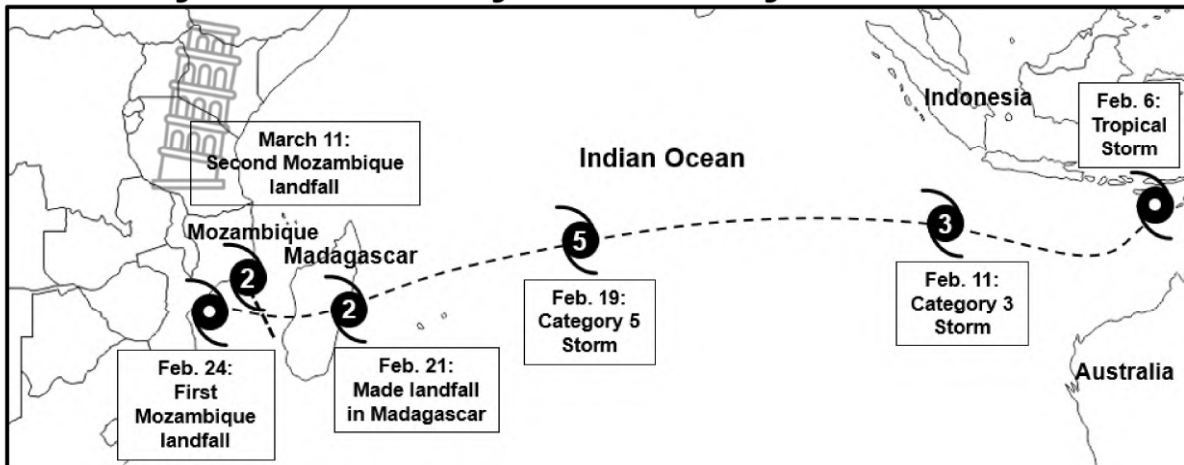
- 1.2.1 Name the high-pressure cell at **Q**.
- 1.2.2 Is the air around low pressure cell **R** sinking or rising?
- 1.2.3 Over which ocean will high pressure cell **O** be found?
- 1.2.4 Which high pressure cell is less dominant in summer?
- 1.2.5 The low-pressure cell at **R** moves from ... to east along the coast of southern Africa.
- 1.2.6 Identify the high-pressure cell that is also known as a blocking high.
- 1.2.7 This high-pressure cell ridges and carries moisture from the South Indian ocean to the South Eastern coastal areas.

(7 x 1) (7)



1.3 Refer to the map below showing the track history of tropical cyclone Freddy.

Freddy Track History: 6 February – 13 March 2023

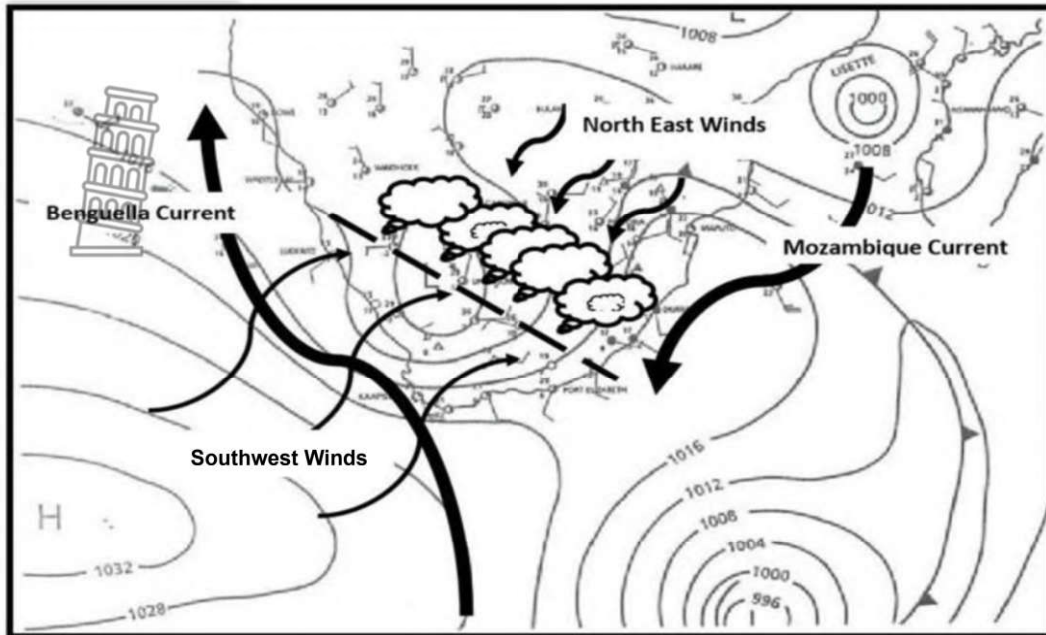


[Source: Examiner's own map]

- 1.3.1 Give evidence that this tropical cyclone is in the Southern Hemisphere. (1 x 1) (1)
- 1.3.2 Name TWO conditions that were necessary for the development (formation) of tropical cyclone Freddy. (2 x 1) (2)
- 1.3.3 Give ONE reason for the downgrade of tropical cyclone Freddy to a category 2 when it made landfall in Madagascar. (1 x 2) (2)
- 1.3.4 Why is the Mozambique channel usually ideal for the increase in temperature within the tropical cyclone? (1 x 2) (2)
- 1.3.5 Cyclone Freddy made a second landfall in Mozambique on 11 March 2023. In a paragraph of EIGHT lines, explain strategies that could be put in place to reduce this impact. (4 x 2) (8)



1.4 Refer to the map below showing a line thunderstorm over South Africa.

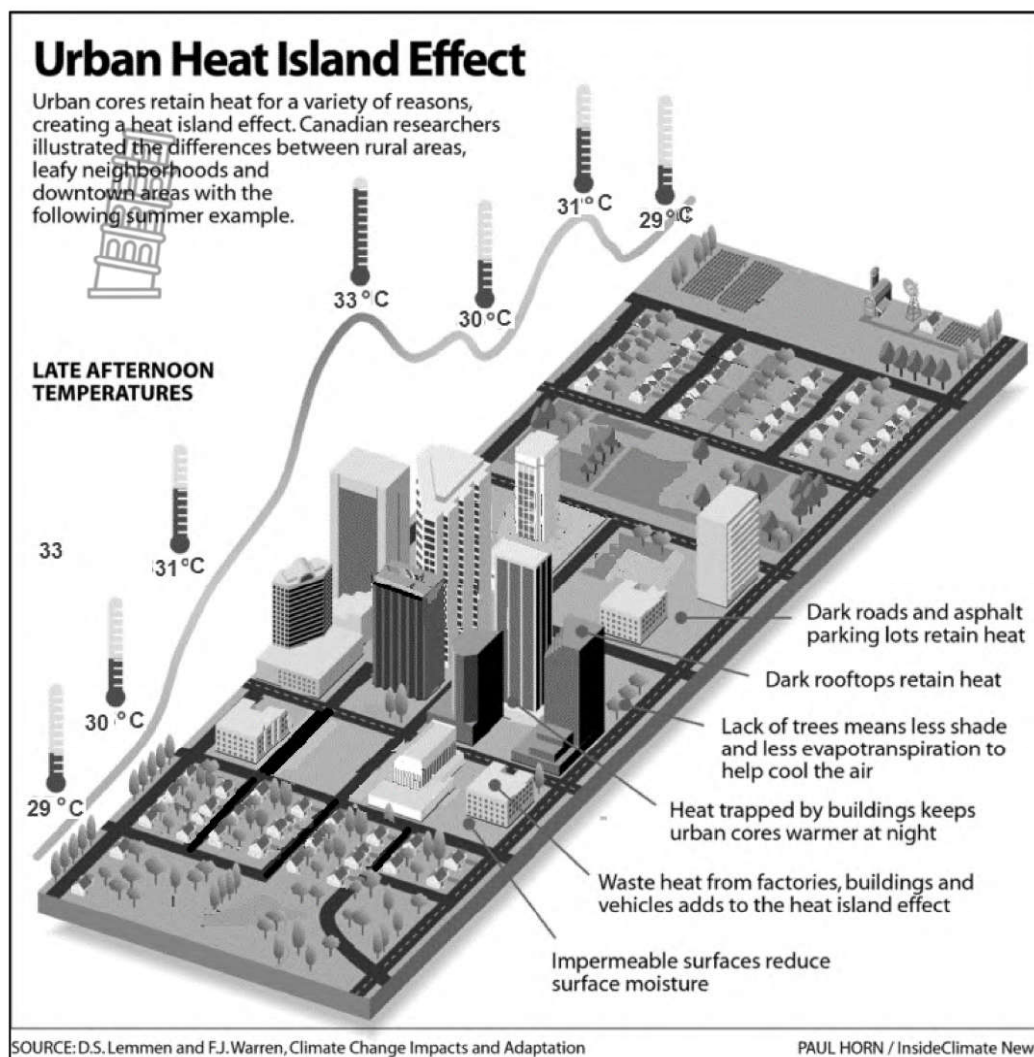


Source adapted from <http://www.google.co.za/images>

- 1.4.1 Name the front over the interior where line thunderstorms develop. (1 x 1) (1)
- 1.4.2 What type of air is carried by the north easterly winds to the interior? (1 x 1) (1)
- 1.4.3 Name TWO forms (types) of precipitation associated with line thunderstorm. (2 x 1) (2)
- 1.4.4 During which season do line thunderstorms develop in South Africa? (1 x 1) (1)
- 1.4.5 Give ONE evidence from the map for your answer to QUESTION 1.4.4. (1 x 2) (2)
- 1.4.6 Describe the processes involved in the development (formation) of line thunderstorms. (2 x 2) (4)
- 1.4.7 Discuss TWO negative impacts of line thunderstorms on the natural environment in the interior of South Africa (2 x 2) (4)



1.5 Refer to the infographic showing the microclimate of a city.



- 1.5.1 Define the term *urban heat island*. (1 x 2) (2)
- 1.5.2 What is the temperature variance (difference) between the urban and rural area? (1 x 1) (1)
- 1.5.3 With reference to the infographic, give TWO ways in which cities contribute to an urban heat island. (2 x 1) (2)
- 1.5.4 Why are rural areas cooler than urban areas? (2 x 2) (4)
- 1.5.5 Discuss sustainable strategies to reduce the effects of an urban heat island. (3 x 2) (6)



[60]

QUESTION 2: GEOMORPHOLOGY

2.1 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 (2.1.1 to 2.1.8) in the ANSWER BOOK, for example 2.1.9 C.

2.1.1 Refers to the main river and its tributaries:

- A Drainage basin
- B Confluence
- C Catchment area
- D River system

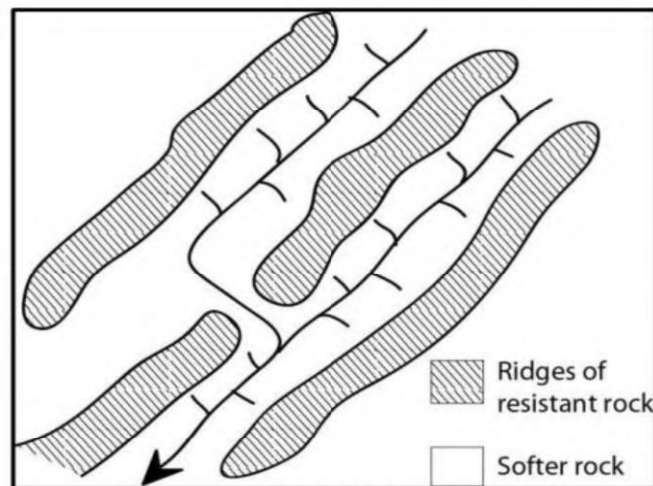
2.1.2 Rivers that only flow in the rainy season are called ... rivers.

- A exotic
- B periodic
- C episodic
- D perennial

2.1.3 The flow of water in a mountainous stream is likely to be ...

- A laminar.
- B smooth.
- C turbulent.
- D layered.

Refer to the drainage pattern below to answer questions 2.1.4 to 2.1.6.



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

2.1.4 The drainage pattern is known as the ... pattern.

- A trellis
- B centripetal
- C parallel
- D radial



2.1.5 This pattern develops on the following underlying rock structure:

- (i) Rock with uniform resistance to erosion
- (ii) Folded mountains
- (iii) Areas where volcanoes erupted
- (iv) Hard and soft rock formations

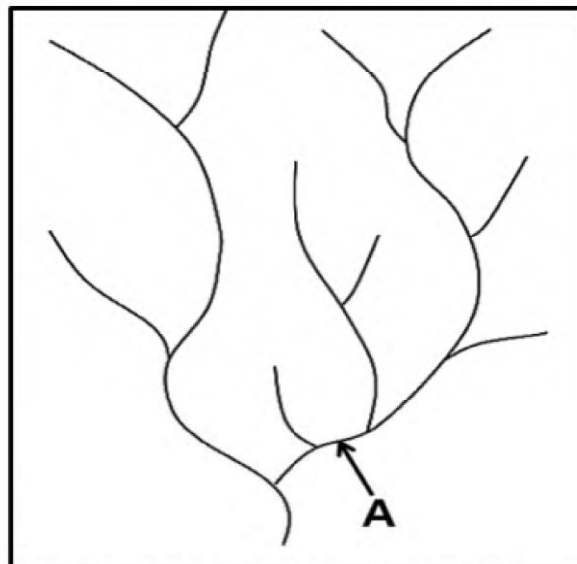
- A (i) and (ii)
- B (i) and (iii)
- C (ii) and (iii)
- D (ii) and (iv)



2.1.6 The tributaries join the mainstream at ... angles.

- A acute
- B right
- C oblique
- D obtuse

Refer to the dendritic drainage pattern to answer questions 2.1.7 and 2.1.8.



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

2.1.7 The stream order at A is ...

- A 1
- B 2
- C 3
- D 4



2.1.8 This drainage pattern usually flows on ... slopes and in ... valleys.

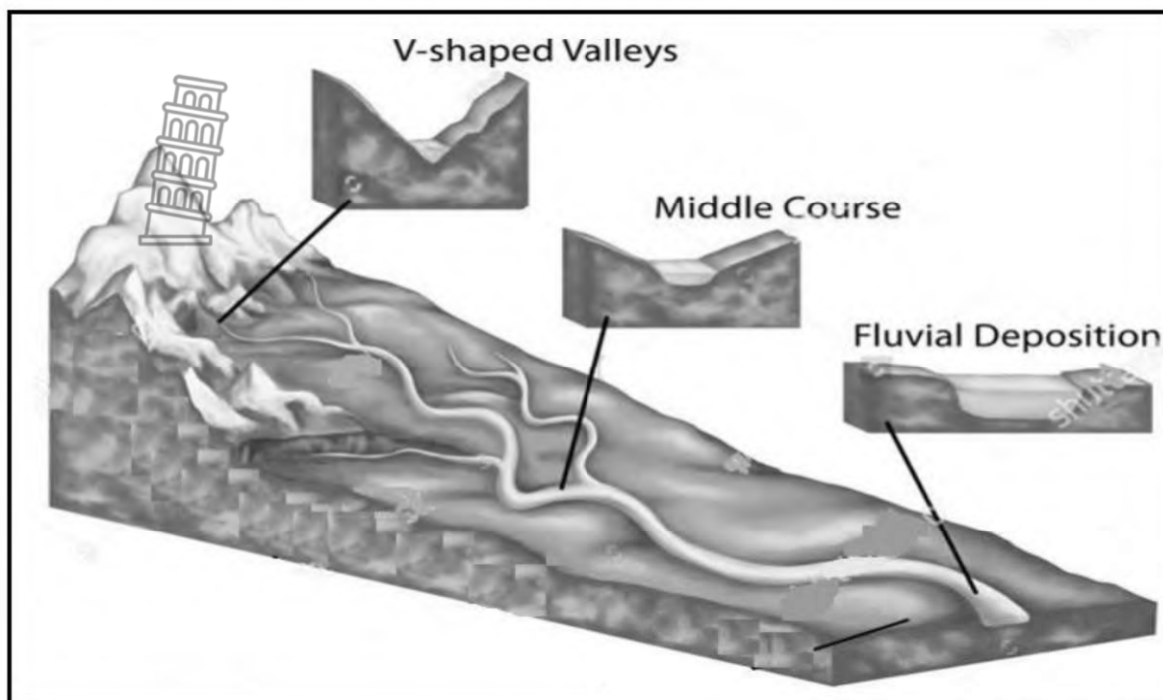
- (i) gentle
- (ii) steep
- (iii) V-shaped
- (iv) U-shaped

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

(8 x 1) (8)



2.2 Refer to the sketch, which shows river profiles. 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 2.2.8) in the ANSWER BOOK, example 2.2.9 Y.



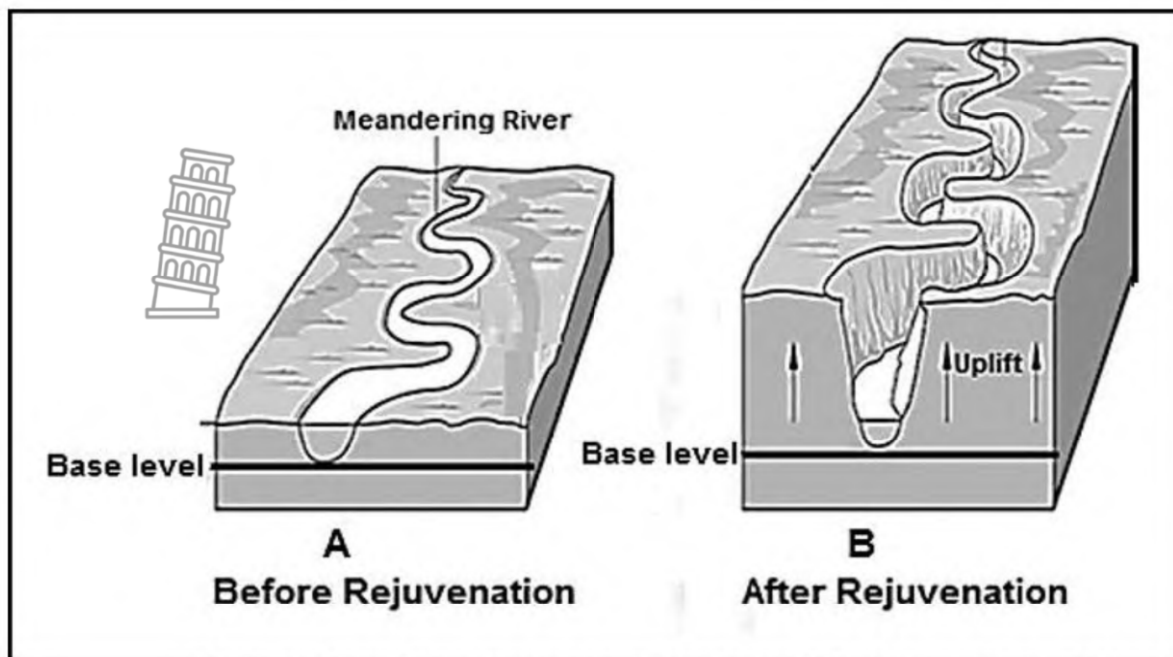
[Source: shutterstock.com]

COLUMN A		COLUMN B	
2.2.1	Cross profiles show ...	Y:	a side view of the river
		Z:	a view from bank to bank
2.2.2	The dominant fluvial process in the middle course is ...	Y:	lateral erosion
		Z:	vertical erosion
2.2.3	Fluvial landform that encourages farming.	Y:	floodplain
		Z:	waterfall
2.2.4	The volume of water in the upper course is ...	Y:	high
		Z:	low
2.2.5	The source of a river can be found in the ...	Y:	upper course
		Z:	lower course
2.2.6	The area drained by a river and its tributaries, are known as the ...	Y:	river system
		Z:	drainage basin
2.2.7	V-shaped valleys in the upper course are caused by ...	Y:	vertical erosion
		Z:	lateral erosion

(7x1) (7)



2.3 Refer to the diagram below which shows features of river rejuvenation.

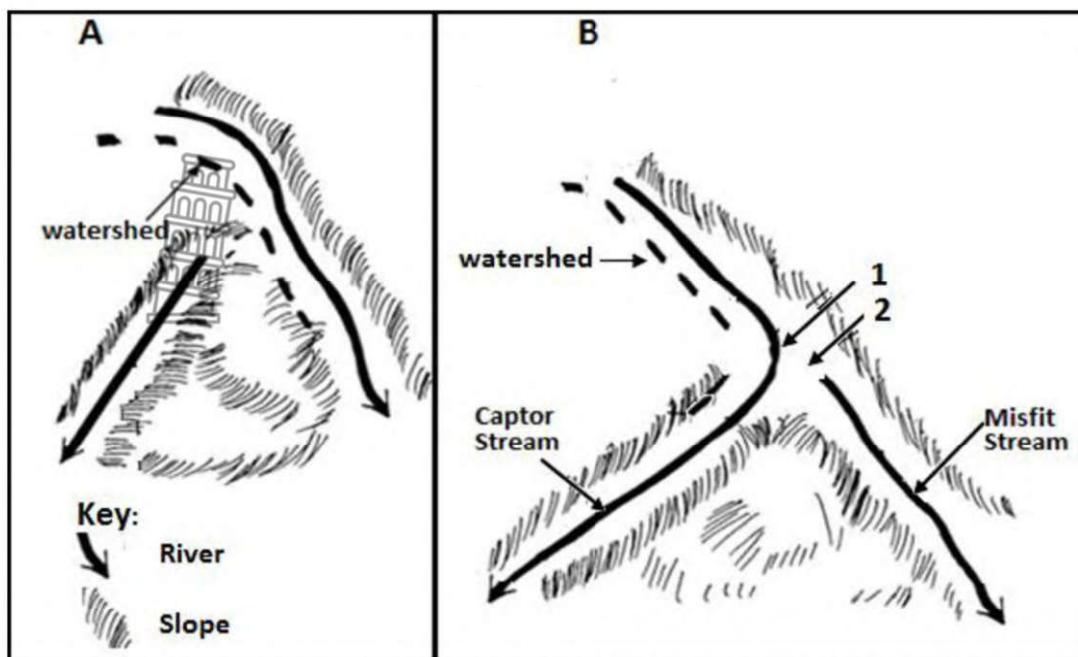


[Adapted from <https://www.google.com/search?q=rejuvenation+of+rivers:>]

- | | | | |
|-------|---|---------|-----|
| 2.3.1 | Define the concept <i>river rejuvenation</i> . | (1 x 2) | (2) |
| 2.3.2 | What type of erosion is associated with river rejuvenation? | (1 x 1) | (1) |
| 2.3.3 | What evidence indicates that river rejuvenation has taken place? | (1 x 1) | (1) |
| 2.3.4 | Identify the force of upliftment associated with rejuvenation. | (1 x 1) | (1) |
| 2.3.5 | Why is rejuvenated land not suitable for human activity? | (2 x 2) | (4) |
| 2.3.6 | Explain how rejuvenation could change the fluvial features (landforms) downstream of the point of rejuvenation. | (3 x 2) | (6) |



2.4 Refer to the sketches below which shows river capture (stream piracy).



[Adapted from <https://revision.co.ke/marking-schemes/kcse-cluster-tests-3/geography>]

- 2.4.1 Define the concept *river capture* as shown in sketch **B**. (1 x 2) (2)
- 2.4.2 Identify features **1** and **2** of river capture in sketch **B**. (2 x 1) (2)
- 2.4.3 What could have caused the captor stream to erode through the watershed? (1 x 1) (1)
- 2.4.4 Explain the process that resulted in the formation of the misfit stream. (2 x 2) (4)
- 2.4.5 Describe the changes in the flow characteristics of the captor stream. (3 x 2) (6)



2.5 Refer to the infographic below on catchment and river management.

Jukskei River monitoring sites

Hartbeespoort Dam
Crocodile River

Jukskei River
Kyalami
Buccleuch
Marlboro
Alfred Nzo
Lyndhurst
St Andrews
Morninghill
Bruma

Johannesburg City

Jukskei River poisoned with sewerage
Residents who use it as a dumping site and toilet, said they did not have waste and rubbish management in the area.

The Jukskei River in Alexandra after heavy rains in Johannesburg and other areas, 25 April 2019.

One of Gauteng's largest rivers, the Jukskei, flows northwards, meandering through Bedfordview, flowing into the highly eutrophic Hartbeespoort Dam. Its roughly 50 km course through the city inexorably marks it as a casualty of Johannesburg's massive urbanisation, its eroded waterways a repository for the city's torrent of sewage, stormwater, litter, industrial waste and building rubble. For water expert Dr Anthony Turton, not only is the Jukskei one of the country's most polluted rivers, it is also one of the "saddest". Its demise, he believes, is a metaphor for "all that is wrong in our society."

[Source: <https://www.citizen.co.za/news/south-africa/2920185/iukskei-river-poisoned-with-sewage/>]

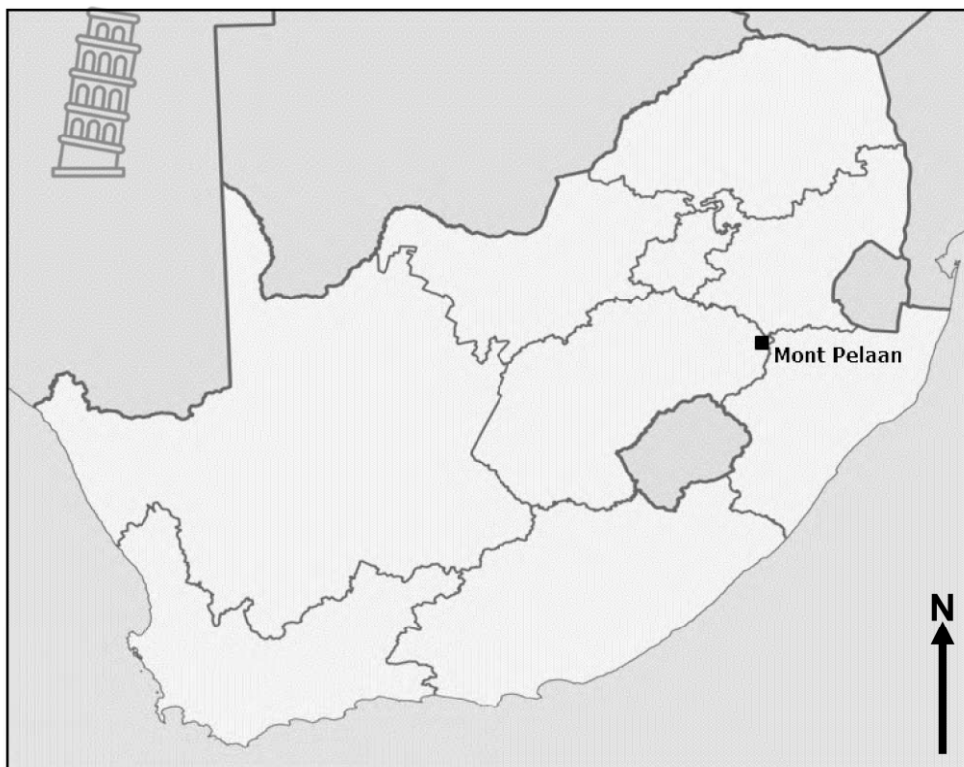
- 2.5.1 Define the concept *river catchment area*. (1 x 2) (2)
- 2.5.2 Of which river is the Jukskei River a tributary? (1 x 1) (1)
- 2.5.3 "The water quality of the Jukskei River is deteriorating". Substantiate the statement by referring to the infographic. (2 x 2) (4)
- 2.5.4 In a paragraph of approximately EIGHT lines, suggest possible sustainable strategies that can be implemented in order to maintain the quality of water in the Jukskei River. (4 x 2) (8)

[60]



QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON MONT PELAAAN



Coordinates: $27^{\circ}45'S$; $29^{\circ}37'E$

Mont Pelaar is situated in the north eastern corner of the Free State, bordering Mpumalanga and Kwazulu-Natal.

Mont Pelaar has an altitude between 1 600 and 2 000 metres and is part of an inland plateau region consisting of plains with a moderate relief to closed hills.

It receives an annual rainfall of 800 mm which falls mainly in summer and autumn. It is a cold and misty area while frost is common in the winter months.

The area is drained to the north by the Klip River which meanders freely in a small alluvial floodplain.

Die volgende Engelse terme en hul Afrikaanse vertalings word op die topografiese kaart getoon:

ENGLISH

Cutline
Mean magnetic declination
Mean annual change
West of True North

AFRIKAANS

Kaplyn of voorbrand
Gemiddelde magnetiese deklinasie
Gemiddelde jaarlikse verandering
Wes van Ware Noord



3.1 MAP SKILLS AND CALCULATIONS

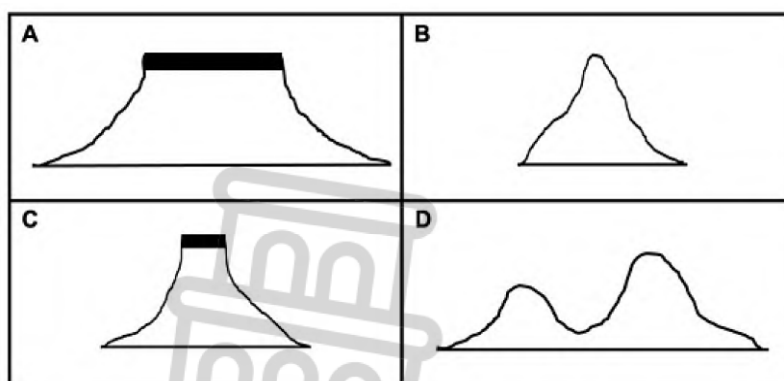
3.1.1 Orthophoto map ... is southwest of 2729DC 3 according to the orthophoto map index below.



1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

- A 2729DA 04
 - B 2729DC 04
 - C 2729DA 09
 - D 2729DC 09
- (1 x 1) (1)

3.1.2 Match the landform in block **F6** on the topographical map to the correct freehand cross-section below.



(1 x 1) (1)

3.1.3 The height value of the index contour line in block **K6** on the topographical map is ... metres.

- A 1 920
 - B 1 900
 - C 1 902
 - D 1 860
- (1 x 1) (1)

Refer to the demarcated area in RED on the topographical map.

3.1.4 Use the demarcated area to calculate the surface area of the orthophoto map in km².

Use the following: Length: 1 900 m
Width: 2 100 m



FORMULA: Length x Breadth (3 x 1) (3)

3.1.5 Explain why the area covered by the orthophoto map on the topographical map appear smaller than the orthophoto map. (1 x 2) (2)

3.1.6 Calculate the current (2023) magnetic declination of 2729DC MONT PELAAN.

Use the following headings:

Difference in years:

Mean annual change:

Total change:

Magnetic declination for 2023: (4 x 1) (4)

3.2 MAP INTERPRETATION

Refer to the settlements Giddy's Home in block **C6** and Meulstroom in block **E7** on the topographical map.

3.2.1 Which settlement will experience higher day temperatures, Giddy's Home or Meulstroom? (1 x 1) (1)

3.2.2 Give ONE reason for your answer to QUESTION 3.2.1. (1 x 2) (2)

Refer to blocks **E8** and **E9** on the topographical map.

3.2.3 Identify the green feature on the slopes in blocks **E8** and **E9**. (1 x 1) (1)

3.2.4 Explain your answer to QUESTION 3.2.3. (1 x 2) (2)

Refer to the orthophoto map and topographical map.

3.2.5 What is the name of the main river that appears in the RED demarcated area on the topographical map? (1 x 1) (1)

3.2.6 Identify ONE fluvial landform that appears on the orthophoto map. (1 x 1) (1)

3.2.7 Explain the development (formation) of the landform you gave as an answer to QUESTION 3.2.6. (1 x 2) (2)



3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.3.1 Which component of GIS is the orthophoto map and the topographical map? (1 x 1) (1)

Refer to block **H7** on the topographical map.

3.3.2 Is the information represented in block **H7** raster data or vector data? (1 x 1) (1)

3.3.3 Identify the polygon (area) feature in block **H7**. (1 x 1) (1)

3.3.4 Name ONE attribute of the polygon (area) feature mentioned in your answer to QUESTION 3.3.3. (1 x 2) (2)

The orthophoto map shows a high resolution and has been created from vertical aerial photographs obtained by remote sensing.

3.3.5 Give evidence that the orthophoto map has a high resolution. (1 x 1) (1)

3.3.6 Define the term *remote sensing*. (1 x 2) (2)

[30]

TOTAL: 150





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GRADE 12

**GEOGRAPHY PAPER 1
06 SEPTEMBER 2023
MARKING GUIDELINES**

Stanmorephysics

MARKS: 150

TIME: 3 hours



These marking guidelines consists of 16 pages.

MARKING PRINCIPLES FOR GEOGRAPHY- SEPTEMBER 2023

The following marking principles have been developed to standardise marking in the provinces.

MARKING

- ALL questions MUST be marked, irrespective of whether it is correct or incorrect
- Where the maximum marks have been allocated for a particular question, place an **M** over the remainder of the text to indicate the maximum marks have been achieved.
- A clear, neat tick must be used: ✓
 - If ONE mark is allocated, ONE tick must be used: ✓
 - If TWO marks are allocated, TWO ticks must be used: ✓✓
 - The tick must be placed at the FACT that a mark is being allocated for
 - Ticks must be kept SMALL, as various layers of moderation may take place
- Incorrect answers must be marked with a clear, neat cross: ✕
 - Use MORE than one cross across a paragraph/discussion style questions to indicate that all facts have been considered
 - Do NOT draw a line through an incorrect answer
 - Do NOT underline the incorrect facts

For the following action words, ONE word answers are acceptable: **list, name, state, identify**

For the following action words, a FULL sentence must be written: **describe, explain, evaluate, analyse, suggest, differentiate, distinguish, define, discuss, why, how**

The following action words need to be read within its context to determine whether a ONE- word answer or FULL sentence is required: **provide, what, tabulate and give**

NOTE THE FOLLOWING

- If the numbering is incorrect or left out, as long as the sequence of answers to questions is followed candidates can be credited.
- Spelling errors if recognisable, award the marks provided the meaning is correct.
- Be sensitive to the sense of an answer, which may be stated in a different way
- In questions where a letter is the accepted response, but the learner writes the actual answer- award marks.
- There will be additional guidelines for the marking of certain questions. (*)

TOTALLING AND TRANSFERRING OF MARKS

- Each sub-question must be totalled
 - Questions in **Section A** has five sub-sections, therefore five sub-totals per question required. Section B has three sub-sections and three sub-totals.
 - Sub-section totals to be written in the right-hand margin at the end of the sub-section and underlined
 - Sub-totals must be written legibly
 - Leave room to write in moderated marks on different levels
- Total sub-totals and transfer total to top left-hand margin next to question number
- Transfer total to cover of answer book

EXAMPLE OF MARKING

30

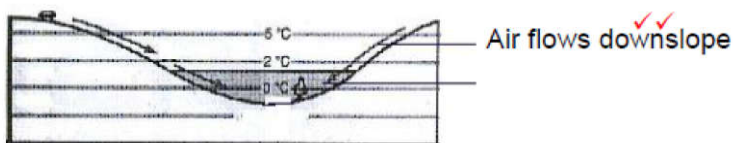
QUESTION 1

- 1.1.1 A (South Atlantic High) (1) ✓
- 1.1.2 B (Kalahari High) (1) ✓
- 1.1.3 B (South Indian) (1) ✗ 2

- 1.2.1 Melting snow ✓
- 1.2.2 Mouth ✗
- 1.2.3 Third order ✓ 2

- 1.3.1 Katabatic ✗
- 1.3.2 1 occurs during the day while 2 occurs at night ✓✓

1.3.3 Cold air rolls down into the valley and forms an inversion



- 1.4.1 Shape of front concave ✗
- Steep gradient of front ✓ 6

1.4.2 Warm air undercuts the cold air ✗

1.4.3 Air behind the cold front is colder than the air in front. Cold air moves faster than warm air ahead of it. Cold front catches up with the warm front. 7

1.5.1 (a) A river that only flows all year round ✗

(b) The river channel is wide ✗

(c) Regularity of rainfall and the soil type over which the streams flow. ✓✓

1.5.2 Gauteng and the Eastern Cape ✗

1.5.3 The cost of food production will increase as it is costly to buy purified water. Farmers will have to buy more chemicals to purify water. Chemicals cost a lot and this will increase production costs. It will be costly to purify water for use in electricity generation. These costs will be included in electricity prices. Costs will increase the price of electricity during production. There will be less clean water to generate hydro- electricity.

13



SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1.1	D (1)		
1.1.2	B (1)		
1.1.3	A (1)		
1.1.4	D (1)		
1.1.5	A (1)		
1.1.6	C (1)		
1.1.7	B (1)		
1.1.8	C (1)		
		(8 x 1)	(8)

1.2.1	South Indian High pressure cell (1)		
1.2.2	Rising (1)		
1.2.3	Atlantic Ocean (1)		
1.2.4	P (Kalahari High) (1)		
1.2.5	West (1)		
1.2.6	Q (South Indian High) (1)		
1.2.7	O (South Atlantic High) (1)		
		(7 x 1)	(7)

1.3.1	Date (6 February – 13 March) indicates summer (1) Mozambique (1) Madagascar (1) Indonesia (1) Mozambique channel (1) Australia (1) Located over the South Indian Ocean (1) South westerly movement (1) Clockwise circulation movement (1) Tropical cyclone Freddy (1) Map of Southern Africa (1) [ANY ONE]		
		(1 x 1)	(1)

1.3.2	Sea surface temperature of 27° C (1) Coriolis force (1) Warm, moist air which will create unstable conditions (1) Rapid large-scale evaporation of moisture over ocean / High humidity (1) Light variable winds / Calm conditions (1) Surface air convergence (1) Extensive upper air divergence of winds [ANY TWO]	(2 x 1)	(2)
1.3.3	Increased frictional drag decrease the wind speed (2) Source of moisture is reduced as it moves over land (2) Decrease in moisture levels / Dry air enters the system (2) Decrease in latent heat (2) [ANY ONE]	(1 x 2)	(2)
1.3.4	Mozambique channel located close to the equator (2) Mozambique channel is in the Indian ocean which is warmer (2) High temperatures/warm (+26.5°C) over the ocean (Indian ocean) results in increased evaporation (2) Increased condensation results in the release of latent heat (2) Release of latent heat provides more energy to the system (2) [ANY ONE]	(1 x 2)	(2)
1.3.5	Monitor the development of tropical cyclones (2) Good forecasting/ Use of media to update regularly (2) Sandbags to reduce flooding (2) Reinforcing existing infrastructure (2) Awareness and education programmes (2) Evacuation protocols and drills (2) Improve accessibility to evacuate people (2) Stocking up of emergency supplies and necessities (2) Build above flood lines/ coastal zoning (2) Improve accessibility to evacuate people (2) Development of good rescue and emergency services (2) Rescue personnel, police, medical personnel on standby (2) Storage/ provision of clean water and food supplies (2) Maintain coastal vegetation to act as a buffer against storm surges (2) [ANY FOUR – ACCEPT EXAMPLES]	(4 x 2)	(8)



1.4.1	Moisture front (1)	(1 x 1)	(1)
1.4.2	Warm, moist air (1)	(1 x 1)	(1)
1.4.3	(Heavy) rainfall (1) Thunderstorms (1) Hail (1) [ANY TWO]	(2 x 1)	(2)
1.4.4	Summer (1)	(1 x 1)	(1)
1.4.5	(Thermal) low pressure cell over the interior in summer (2) Presence of trough over the interior in summer (2) Tropical cyclone (Lisette) in Indian ocean (2) Position of South Atlantic high pressure cell and South Indian high pressure cell further south (2) [ANY ONE]	(1 x 2)	(2)
1.4.6	Convergence of warm moist air and cold dry air (2) Moisture front develops (2) Cold dry air undercuts the warm moist air (2) Condensation occurs in the eastern side of the moisture front (2) Cumulonimbus clouds develop (2) [ANY TWO]	(2 x 2)	(4)
1.4.7	Torrential (heavy) rain can cause (flash) floods (2) Wildlife can drown due to floods (2) Widespread soil erosion/loss of fertile soil due to heavy rainfall (accept examples) (2) Mudslides due to flooding (2) Flooding will destroy ecosystems (2) Declining ecosystems will disrupt food chains and food web networks (2) Habitats will be destroyed by flooding (2) Loss of biodiversity due to destructive nature of the rain (2) Lighting can cause fires and burn down plants and natural vegetation (2) Strong winds can uproot trees (2) Aesthetic beauty of the natural environment reduced (2) [ANY TWO]	(2 x 2)	(4)



1.5.1	The city with higher temperatures surrounded by rural areas with lower temperatures (2) [CONCEPT]	(1 x 2)	(2)
1.5.2	$33(^{\circ}\text{C}) - 29(^{\circ}\text{C}) = 4^{\circ}\text{C}$ (1) (units must be shown in final answer)	(1 x 1)	(1)
1.5.3	Nature of building materials (accept examples on infographic) (1) Tall buildings trap heat (1) Heat from vehicles (1) Waste heat from factories (1) Lack of trees in cities (1) [ANY TWO]	(2 x 1)	(2)
1.5.4	Rural areas have more natural surfaces which cause less absorption of heat (accept examples) (2) Concentration of greenhouse gasses are less causing atmosphere to be cooler (2) Natural surfaces lose heat slowly causing the air to be cooler (2) Some of the sun's energy is used for photosynthesis (2) There is more water in vegetated rural areas / Soil allows for more infiltration of rainwater (2) [ANY TWO]	(2 x 2)	(4)
1.5.5	Plant more trees to absorb carbon dioxide (2) Establish roof gardens/vertical gardens on high rise buildings (2) Create parks/greenbelts in the urban area (2) Reduce building density (2) Use of reflective paint on buildings and roofs (2) Replace concrete/tar surfaces with cobble stones which allow infiltration of water and cooling through evaporation (2) Increase the number of water features (lakes, fountains) to cool the city (2) Encourage the use of public transport/cycling to reduce the number of vehicles on the roads (2) Promote carpools (2) Introduce park-and-ride schemes (2) Decentralisation of commercial activities to attract less shoppers to the city (2) Decentralisation of industrial activities (2) Filters in chimneys of factories to reduce air pollution (2) [ANY THREE]	(3 x 2)	(6)

[60]

QUESTION 2 GEOMORPHOLOGY

2.1.1	D/ River system (1)		
2.1.2	B/ periodic (1)		
2.1.3	C/turbulent (1)		
2.1.4	A/trellis (1)		
2.1.5	D/(ii) and (iv) (1)		
2.1.6	B/ right (1)		
2.1.7	C/3 rd (1)		
2.1.8	B/(i) and (iv) (1)		
		(8 x 1)	(8)

2.2.1	Z		
2.2.2	Y		
2.2.3	Y		
2.2.4	Z		
2.2.5	Y		
2.2.6	Z		
2.2.7	Y		
		(7 x 1)	(7)



2.3.1	A river becomes active again and the downward erosive power is renewed (2) [CONCEPT]	(1 x 2)	(2)
2.3.2	Vertical (Accept downward) (1)	(1 x 1)	(1)
2.3.3	Upliftment (1) Entrenched/Incised meanders (1) [ANY ONE]	(1 x 1)	(1)
2.3.4	Isostatic uplift/Tectonic forces (1)	(1 x 1)	(1)
2.3.5	Steeper slopes make it unsuitable for human living (2) Deeper gorges make farming activity impossible (2) Building infrastructure will be more expensive (2) More specialised farming machinery will be needed (2) Water will not be easily accessible for human usage (2) Narrow floodplains reduce fertile farming land (2) [ANY TWO]	(2 x 2)	(4)
2.3.6	A knickpoint will develop between the old and the new point of erosion (2) Waterfalls develop at the knickpoint where there is a sharp change in gradient (2) Vertical (accept downward) erosion results in (paired) terraces (2) Valleys within valleys develop as a result of a new valley floor (2) Meanders deeply erode to form entrenched or incised meanders (2) Floodplains are narrowed (2) [ALSO ACCEPT THE FOLLOWING] Higher velocity may remove some braided streams (2) Higher velocity may break through the levees (2) Higher velocity may wash the existing deltas away (2) Higher velocity may result in more oxbow-lakes (2) [ANY THREE]	(3 x 2)	(6)



2.4.1	Process in which one river captures/robs the headwaters of another river (2) [CONCEPT]	(1 x 2)	(2)
2.4.2	1 – elbow of capture (1) 2 – wind/dry gap (1)	(2 x 1)	(2)
2.4.3	Flowing over a steeper gradient (accept examples) (1) Flowing over softer rocks (1) Increase in the volume of water (accept examples) (1) Headward erosion (1) [ANY TWO]	(1 x 1)	(1)
2.4.4	Headwaters of the misfit stream was cut off by the captor stream through the process of headward erosion (2) It continued to flow (after the wind/dry gap) with a reduced supply of water (2)	(2 x 2)	(4)
2.4.5	Volume of water in the river will increase (2) Velocity (speed) of the river increases (2) Increases the erosive power of the river (2) Ability to transport a bigger load (2) Rate of deposition is lowered (2) Possibility of flooding increases (2) River discharge is turbulent (2) [ANY THREE]	(3 x 2)	(6)



2.5.1	An area from where a river receives all its water/The area of land from which water flows into the river (2) [CONCEPT]	(1 x 2)	(2)
2.5.2	Crocodile/Krokodil River (1)	(1 x 1)	(1)
2.5.3	Sewerage flows into water sources and pollutes the water. (2) Water pollution causes waterborne diseases. (2) Accept examples. Pesticides and insecticides in water wash into the river. (2) Industrial waste flows into rivers. (2) Chemicals wash into reservoirs killing aquatic life and the ecosystem. (2) Litter washes into the river and reduces the water quality. (2) [Any TWO]	(2 x 2)	(4)
2.5.4	Reuse, recycle before disposing of waste. (2) Educate people on environmental awareness. (2) Repair broken sewerage without delay. (2) Introduce by-laws to curb water and land pollution. (2) Cleaning campaigns to clear waste (2) Awareness programmes using all forms of the media. (2) Policing catchment areas to deal with by-law violators (2) Spot checks on companies to ensure compliance with the law (2) Improve general waste management. (2) Implement buffer areas close to the rivers. (2) Effective sewerage management (2) Plant trees near water sources. (2) Incentives for community clean-up programmes (2) [Any FOUR]	(4 x 2)	(8)


[60]



SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 MAP SKILLS AND CALCULATIONS

<p>3.1.1</p>	<p>Orthophoto map ... is southeast of 2729DC 3 according to the orthophoto map index below.</p>  <table border="1" data-bbox="550 448 965 694"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr> </table> <p>D 2729DC 09 ✓</p>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	<p>(1 x 1)</p>	<p>(1)</p>
1	2	3	4	5																								
6	7	8	9	10																								
11	12	13	14	15																								
16	17	18	19	20																								
21	22	23	24	25																								
<p>3.1.2</p>	<p>Match the landform in block F6 on the topographical map to the correct freehand cross-section below.</p> <p>D ✓</p>	<p>(1 x 1)</p>	<p>(1)</p>																									
<p>3.1.3</p>	<p>The height value of the index contour line in block K6 on the topographical map is ... metres.</p> <p>B 1 900 ✓</p>	<p>(1 x 1)</p>	<p>(1)</p>																									
<p>3.1.4</p>	<p>Use the demarcated area to calculate the surface area of the orthophoto map in km².</p> <p>2,1 ✓ km x 1,9 ✓ km (correct substitution & conversion) = 3,99 km² ✓ [UNIT]</p> <p>OR</p> $\frac{2\ 100}{1\ 000} \checkmark \times \frac{1\ 900}{1\ 000} \checkmark$ <p>= 3,99 km² ✓ [UNIT]</p> <p>[ANY ONE]</p>	<p>(3 x 1)</p>	<p>(3)</p>																									



3.1.5	<p>Explain why the area covered by the orthophoto map on the topographical map appear smaller than the orthophoto map.</p> <p>The orthophoto map has a larger scale ✓✓ The topographical map has a smaller scale ✓✓ Scale of orthophoto map is 5 times larger than the topographical map's scale ✓✓ Scale of topographical map is 5 times smaller than the scale of orthophoto map ✓✓ Scale of orthophoto map is 1 : 10 000 and the scale of the topographical map is 1 : 50 000 ✓✓</p> <p>[ANY ONE] [Concept] [CANDIDATES MUST REFER TO THE SCALE]</p>	(1 x 2)	(2)
3.1.6	<p>Calculate the current (2023) magnetic declination of 2729DC MONT PELAAN.</p> <p>Difference in years: 2023 – 2016 = 7 years ✓</p> <p>Mean annual change: 8' West / Westwards</p> <p>[ANSWER & DIRECTION]</p> <p>Total change: 7 x 8' = 56' West / Westwards ✓</p> <p>[ANSWER & DIRECTION]</p> <p>Magnetic declination for 2023:</p> $ \begin{array}{r} 21^{\circ} 51' \\ + \checkmark \quad \underline{56'} \\ \hline \phantom{21^{\circ}} 107' \quad 1^{\circ} 47' \end{array} $ <p>= 22° 47' West of True North ✓</p> <p>[ANSWER & DIRECTION]</p>	(4 x 1)	(4)



3.2 MAP INTERPRETATION			
3.2.1	Which settlement will experience higher day temperatures, Giddy's Home or Meulstroom? Giddy's Home ✓	(1 x 1)	(1)
3.2.2	Give ONE reason for your answer to QUESTION 3.2.1. Giddy's Home is north facing ✓✓ Aspect is North ✓✓ Meulstroom is south facing ✓✓ [ANY ONE]	(1 x 2)	(2)
3.2.3	Identify the green feature on the slopes in blocks E8 and E9 . Woodland ✓ Beboste Gebied ✓ [ENIGE EEN]	(1 x 1)	(1)
3.2.4	Explain your answer to QUESTION 3.2.3. Slope is South facing, less direct insolation ✓✓ Slope is in shadow zone ✓✓ [ANY ONE]	(1 x 2)	(2)
3.2.5	What is the name of the main river that appears in the RED demarcated area on the topographical map? Kliprivier ✓	(1 x 1)	(1)
3.2.6	Identify ONE fluvial landform that appears on the orthophoto map. Meanders ✓ Oxbow lake ✓ Meander scar ✓ Floodplain ✓ [ANY ONE]	(1 x 1)	(1)

3.2.7	<p>Explain the development (formation) of the landform you gave as an answer to QUESTION 3.2.6.</p> <p>EXPLANATION MUST REFER TO ANSWER IN QUESTION 3.2.6:</p> <p><u>Meanders:</u> Flat area, contours are far apart ✓✓ Stage of the river is the middle course ✓✓ Erosion of the outer bank, deposition on the inner bank ✓✓</p> <p><u>Oxbow lake:</u> Meander neck narrows, river breaks through meander neck and cuts meander off ✓✓</p> <p><u>Meander scar:</u> Water in oxbow lake evaporated and dried up ✓✓</p> <p><u>Floodplain:</u> River overflows banks and alluvium is deposited for the formation of floodplain ✓✓</p> <p>[ANY ONE]</p>	(1 x 2)	(2)
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3.3		GEOGRAPHICAL INFORMATION SYSTEMS (GIS)	
3.3.1	Which component of GIS is the orthophoto map and the topographical map? Data ✓	(1 x 1)	(1)
3.3.2	Is the information represented in block H7 raster data or vector data? Vector data ✓	(1 x 1)	(1)
3.3.3	Identify the polygon (area) feature in block H7 . Cultivated Land ✓ Bewerkte Land ✓ [ANY ONE]	(1 x 1)	(1)
3.3.4	Name ONE attribute of the polygon (area) feature mentioned in your answer to QUESTION 3.3.3. ATTRIBUTE MUST REFER TO CROP: Type of crop, e.g. Maize ✓✓ Harvest time of crops, e.g. Date ✓✓ Poisons sprayed on crops ✓✓ Date when crops were planted ✓✓ Area under cultivation [ANY ONE]	(1 x 2)	(2)
3.3.5	Give evidence that the orthophoto map has a high resolution. All features are clear ✓	(1 x 1)	(1)
3.3.6	Define the term remote sensing. Observing the earth from a distance using satellites to gather information without having direct contact with an area ✓✓ [CONCEPT]	(1 x 2)	(2)



[30]

TOTAL: 150