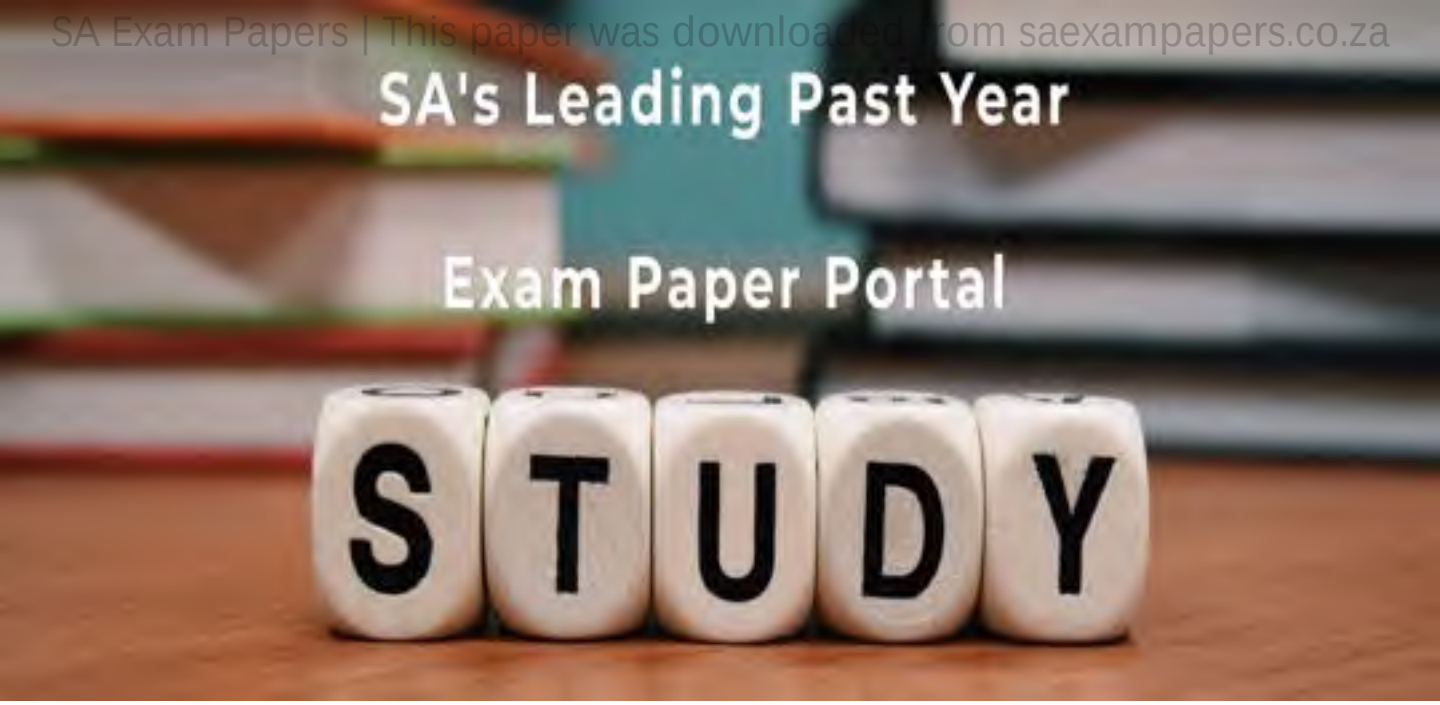


Western Cape Government
Education
FOR YOU

COMMON TRIAL EXAM

GRADE 12

GEOGRAPHY PAPER 1
06 SEPTEMBER 2023

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.

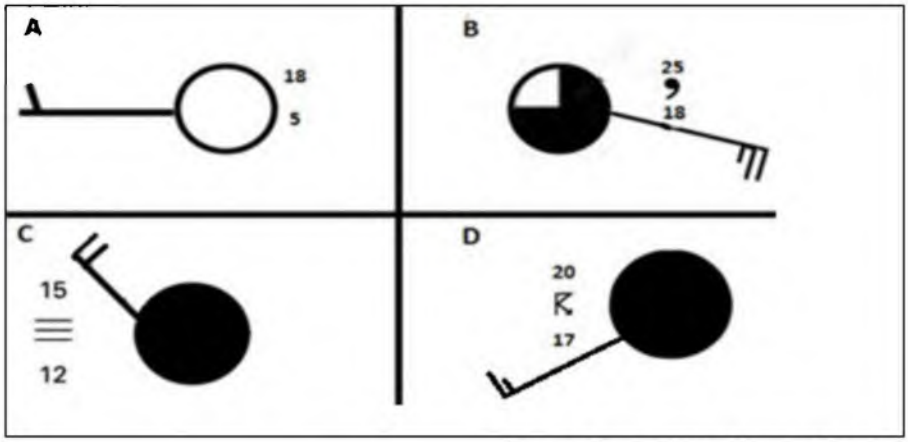
15. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.

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.

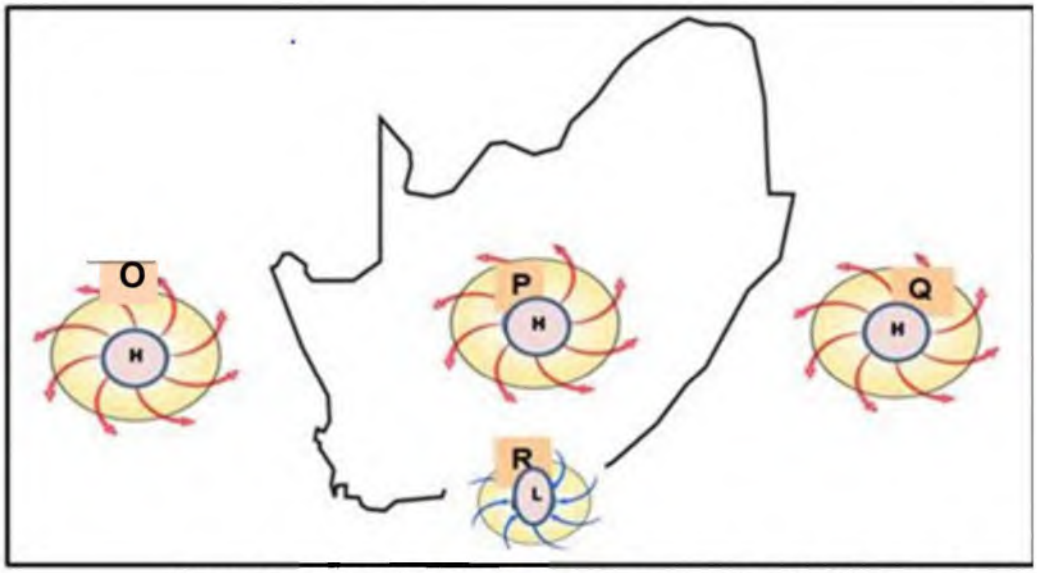
1.1.6 Conditions that prevail on the west coast of South Africa in winter.

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?

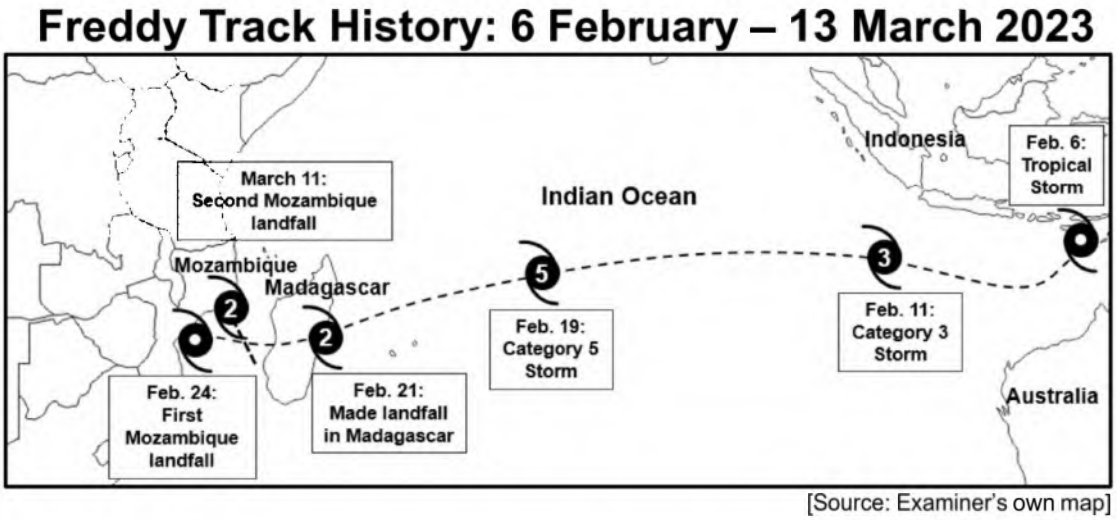
1.2.5 The low-pressure cell at **R** moves from … to east along the coast of southern Africa.

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.



[Source: Examiner's own map]

1.3.1 Give evidence that this tropical cyclone is in the Southern Hemisphere. (1 x 1) (1)

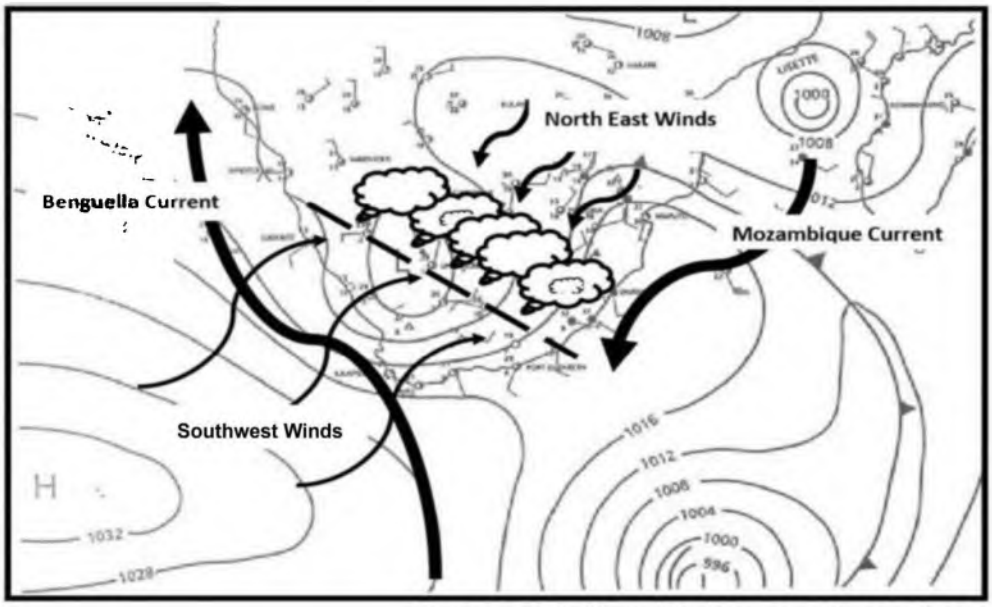
1.3.2 Name TWO conditions that were necessary for the developement (formation) of tropical cyclone Freddy. (2 x 1) (2)

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)

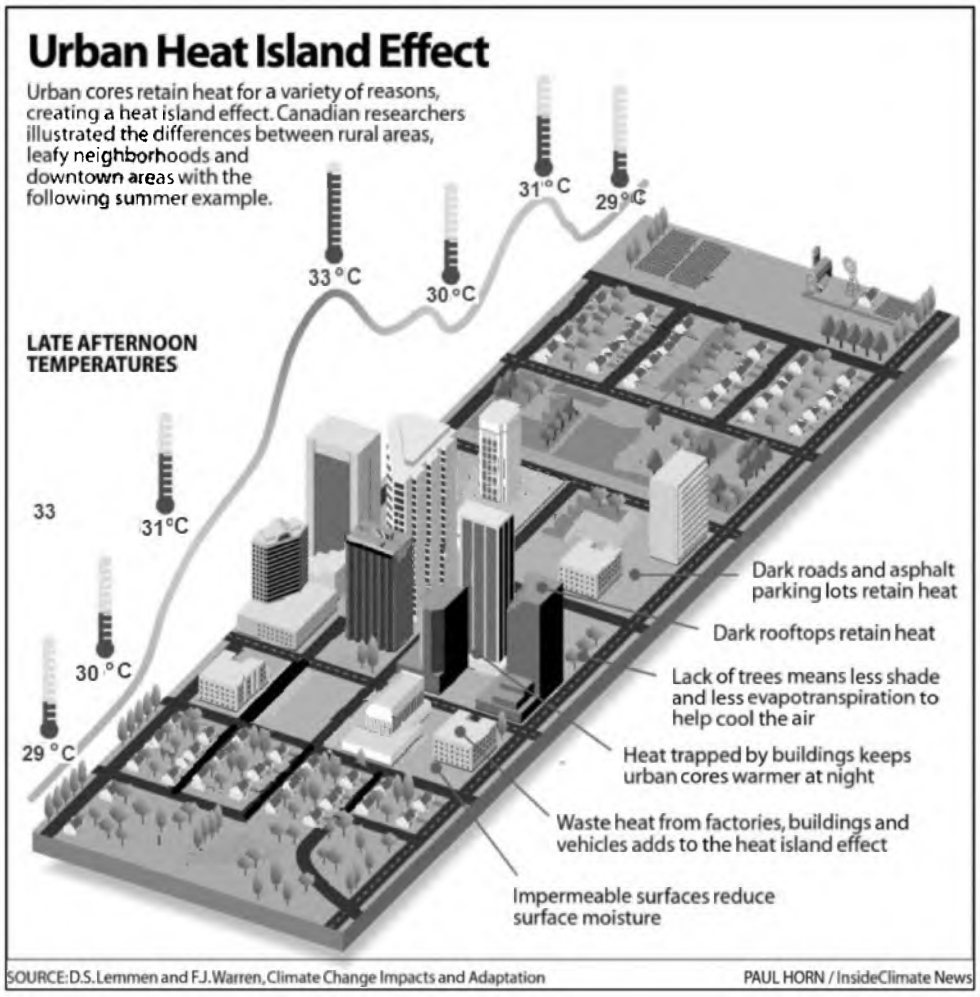
1.4 Refer to the map below showing a line thunderstorm over South Africa.



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 develope 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 developement (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

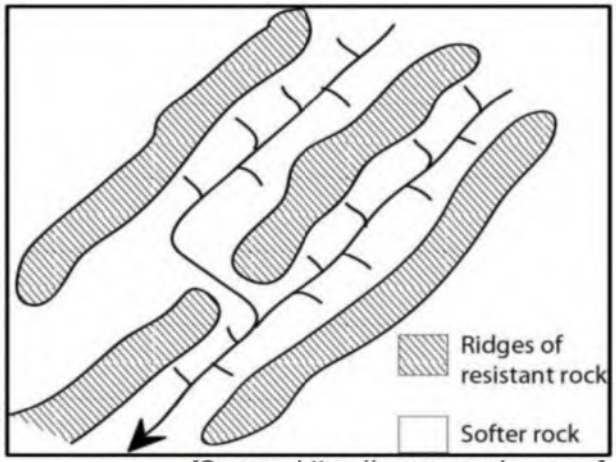
2.1.2 Rivers that only flow in the rainy season are called … rivers.

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:

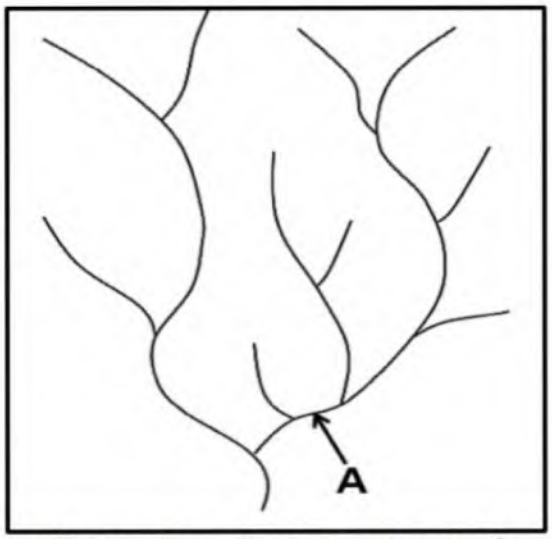
(i) Rock with uniform resistance to erosion
(ii) Folded mountains
(iii) Areas where volcanoes erupted
(iv) Hard and soft rock formations

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

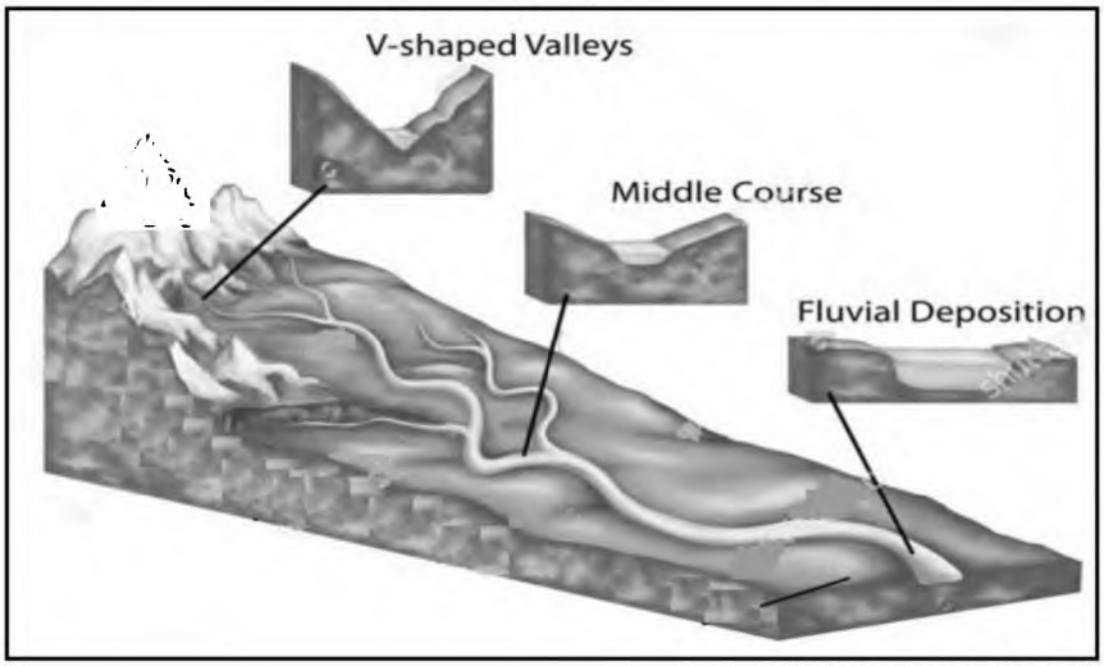
2.1.8 This drainage pattern usually flows on … slopes and in … valleys.

(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.

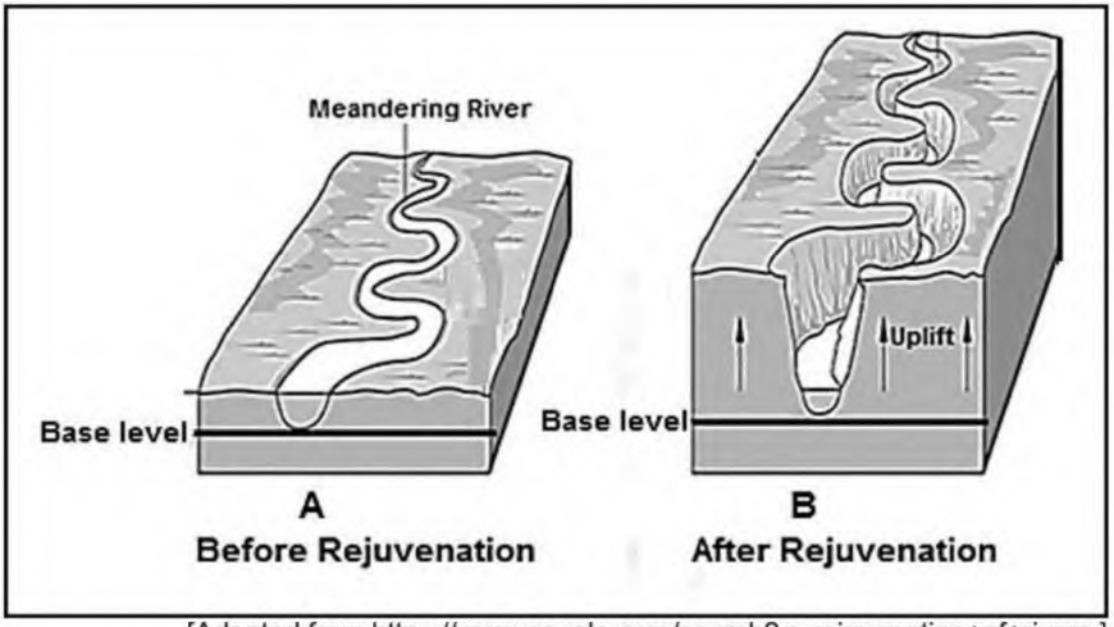


[Source: shutterstock.com]

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

(7x1) (7)

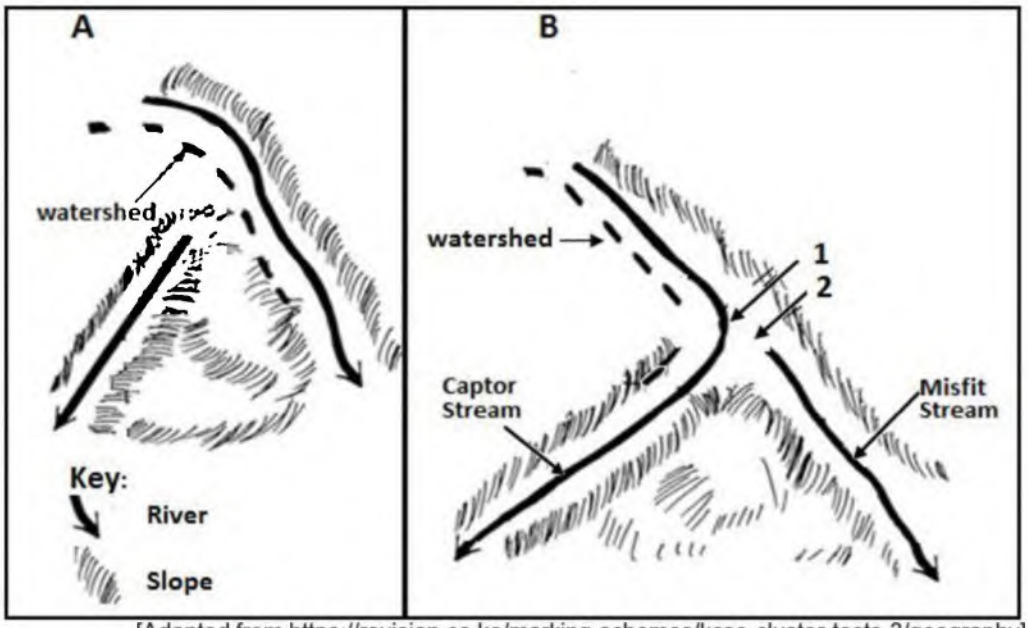
2.3 Refer to the diagram below which shows features of river rejuvenation.



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

2.3.1	Define the concept *river rejuvenation.*	(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)

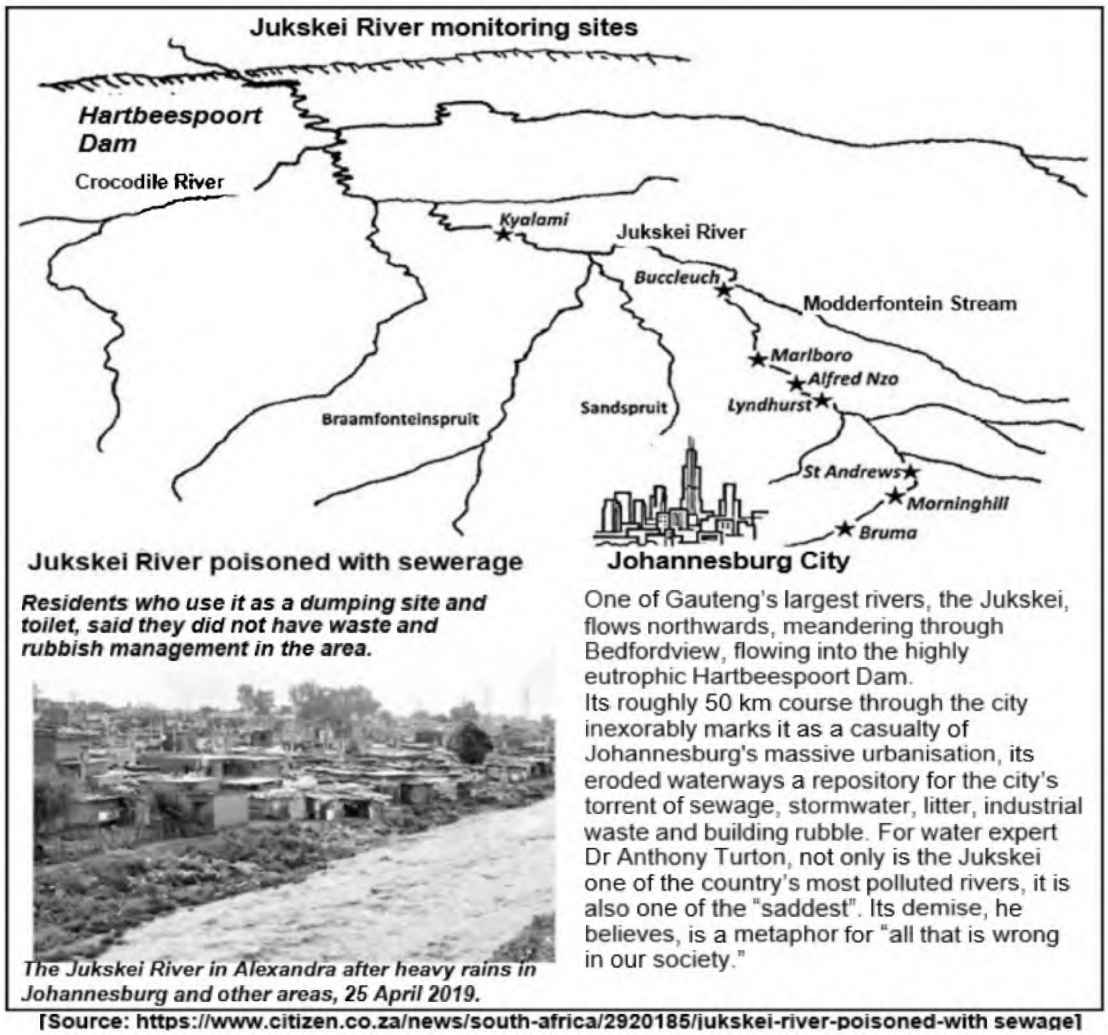
2.4 Refer to the sketches below which shows river capture (stream piracy).



[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.



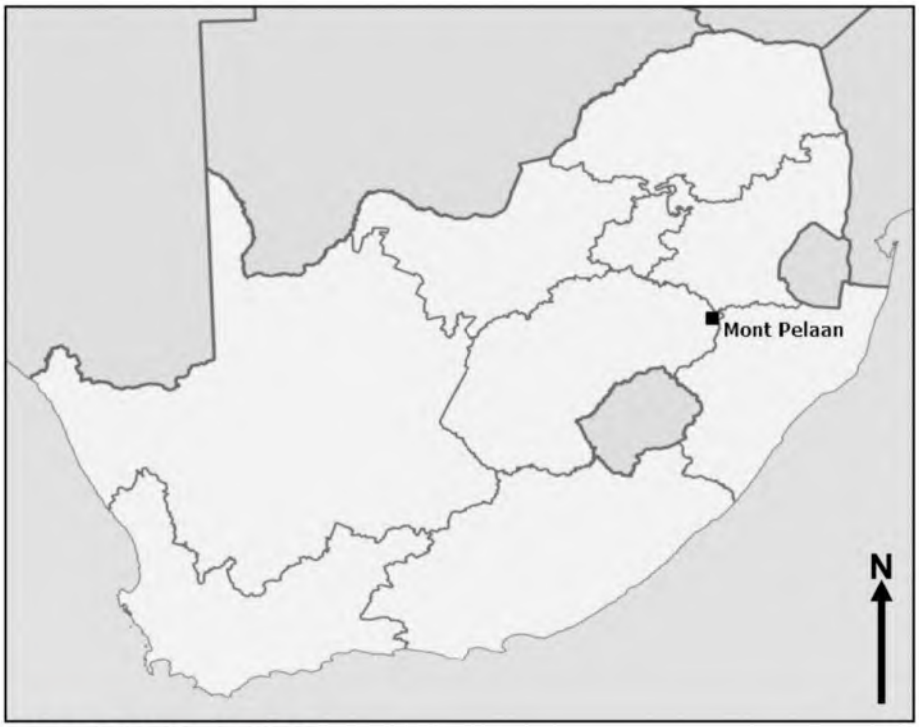
[Source: https://www.citizen.co.za/news/south-africa/2920185/jukskei-river-poisoned-with sewage]

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]

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON MONT PELAAN



Coordinates: 27°45`S; 29°37`E

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

Mont Pelaan 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	**AFRIKAANS**
Cutline	Kaplyn of voorbrand
Mean magnetic declination	Gemiddelde magnetiese deklinasie
Mean annual change	Gemiddelde jaarlikse verandering
West of True North	Wes van Ware Noord

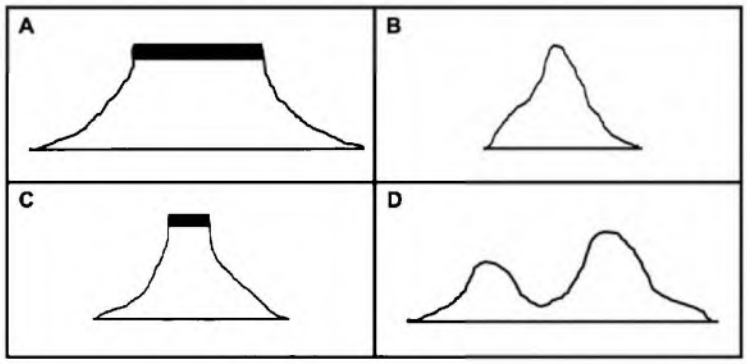
3.1 MAP SKILLS AND CALCULATIONS

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