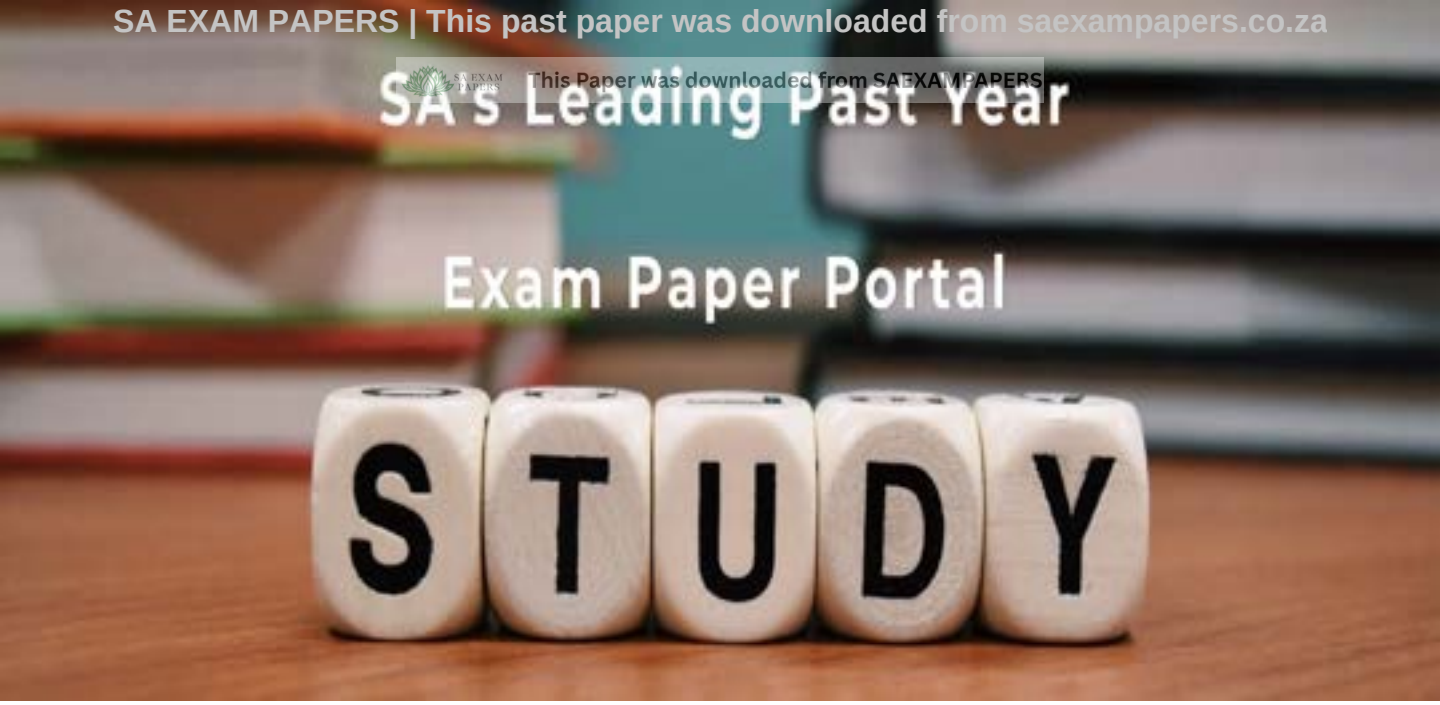


KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

PREPARATORY EXAMINATION

SEPTEMBER 2025

MARKS: 150

TIME: 3 hours

This question paper consists of 15 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 use a magnifying glass.
13. Write neatly and legibly.

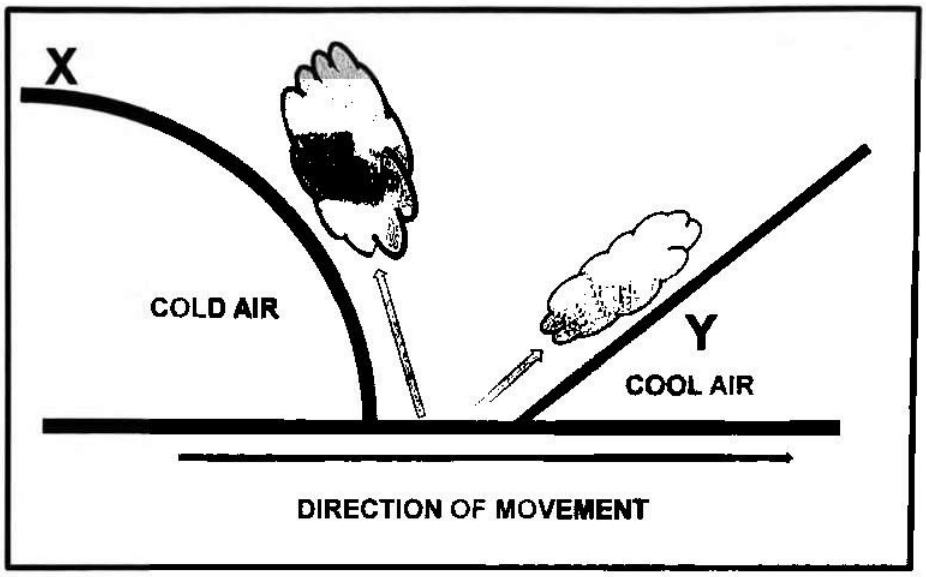
SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

14. A 1 : 50 000 topographical map 2829DB LADYSMITH and a 1 : 10 000 orthophoto map 2829 DB 6 LADYSMITH are provided.
15. The area demarcated in RED/BLACK on the topographical 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 orthophoto maps to the invigilator at the end of this examination.

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1 Refer to the cross-section of a mid-latitude cyclone below. 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 1.1.8) in the ANSWER BOOK, e.g. 1.1.9 D.



[Source: Examiner's own sketch]

1.1.1 The mid-latitude cyclone is a …

A. tropical storm found near the equator.
B. large low-pressure system that develops between 30° and 60° latitude.
C. high-pressure system that brings clear skies.
D. local thunderstorm associated with convection.

1.1.2 Which of the following best describes the movement of mid-latitude cyclones in the Southern Hemisphere?

A. West to east.
B. East to west.
C. North to west.
D. South to west.

1.1.3 Identify the front labelled **X**.

A. Warm front.
B. Occluded front.
C. Cold front.
D. Stationary front.

1.1.4 The general weather conditions experienced at **Y** are ...

A. clear skies and cool temperatures.
B. cumulonimbus clouds and thunderstorms.
C. heavy rain from nimbostratus clouds.
D. snowstorms and blizzards.

1.1.5 Which of the following cloud type is associated with front **X**?

A. Cumulonimbus
B. Cirrus
C. Nimbostratus
D. Altostratus

1.1.6 The mid-latitude cyclone above is in the ... stage.

A. initial
B. wave
C. mature
D. occluded

1.1.7 The change in wind direction of the mid-latitude cyclone in the southern hemisphere is called ...

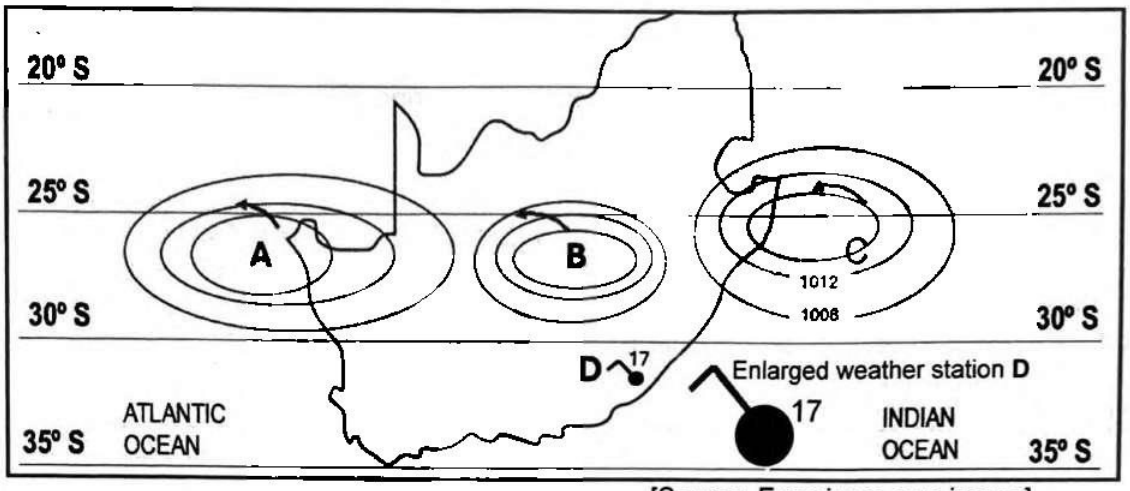
A. veering.
B. backing.
C. rotation.
D. converging.

1.1.8 The wind that causes the eastward movement of the mid-latitude cyclone is a/an ... wind.

A. westerly
B. easterly
C. polar.
D. trade.

(8 x 1) (8)

1.2 Refer to the diagram of the anticyclones over South Africa below. Various options are provided as possible answers to the following questions. Choose the correct word(s) from those given in brackets. Write only the word(s) next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK.



[Source: Examiners own image]

1.2.1 Pressure cell **A** is known as the (South Indian / South Atlantic) high pressure cell.

1.2.2 Air moves around pressure cell **B** in a/an (clockwise / anti-clockwise) direction.

1.2.3 The pressure reading at **C** is (1014 / 1016) hPa.

1.2.4 The Kalahari High Pressure Cell (**B**) is dominant over South Africa in (winter / summer).

1.2.5 Anticyclones are usually associated with (stable / unstable) weather conditions.

1.2.6 The long narrow extension of pressure cell **A** is known as a (ridge / trough).

1.2.7 The wind direction at weather station **D** is (north-west / north-east). (7 x 1) (7)

1.3 The extract below is on tropical cyclone Jude (March 2025).

Mozambique, the south eastern African country situated along the Indian Ocean coast, has been hit by a cyclone called Jude, which was initially identified as a depression on March 14 to the south-west of Diego Garcia in the Indian Ocean.

As it moved westwards across the Mozambique Channel, Jude developed into a tropical cyclone, fuelled by sea surface temperatures nearing 30°C, which provided the necessary heat and moisture for its growth.

The cyclone made landfall in Mozambique in the early morning, bringing sustained gusty winds of 120km/h reaching up to 193 km/h, comparable to a Category 5 storm. Coastal areas, including Memba, Monapo, Mossuril, Mozambique Island and Nacala, experienced over 200mm of rainfall within 24 hours, causing severe flooding. An estimated 483 340 people had been impacted, with 16 fatalities and 137 injuries reported. Flights were cancelled, and approximately 40,000 people were left without electricity.

[Adapted from: www.downtoearth.org.in/natural-disasters/cyclone-jude]

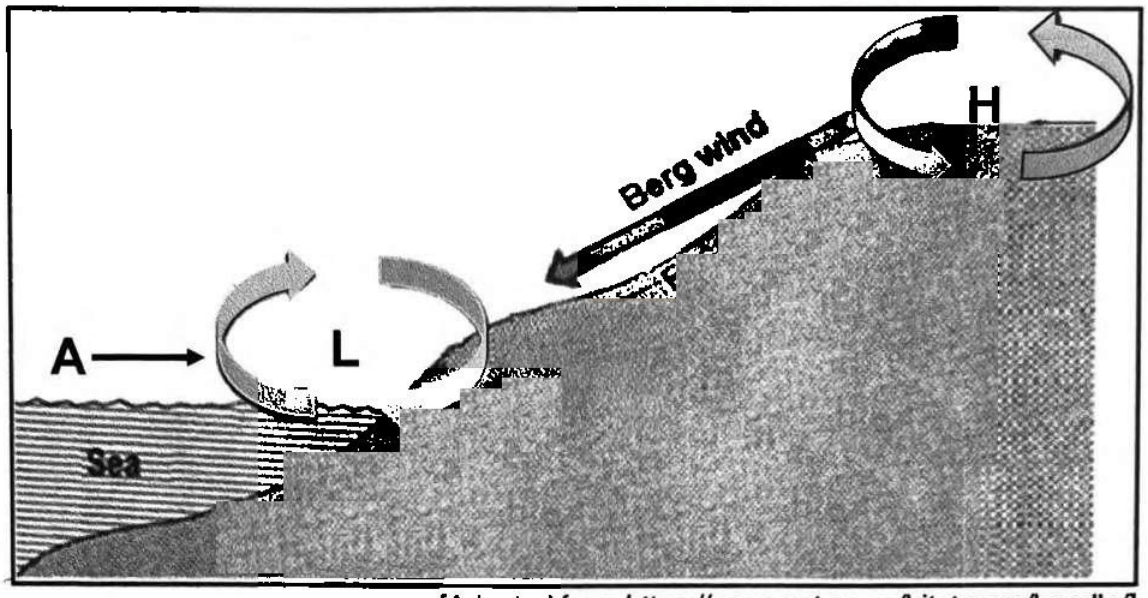
1.3.1 How many tropical cyclones occurred over the Indian Ocean before Cyclone Jude during this season? (1 x 1) (1)

1.3.2 Explain how warm sea surface temperatures might have contributed to the formation of tropical cyclone Jude. (2 x 2) (4)

1.3.3 Discuss the negative impact of tropical cyclones on infrastructure and people. (2 x 2) (4)

1.3.4 Suggest THREE measures that Mozambique government could take to prepare for the potential impact of cyclone Jude. (3 x 2) (6)

1.4 The figure below shows the development of berg winds.



[Adapted from https://open.uct.ac.za/bitstream/handle/]

1.4.1 Define the concept *berg winds*. (1 x 2) (2)

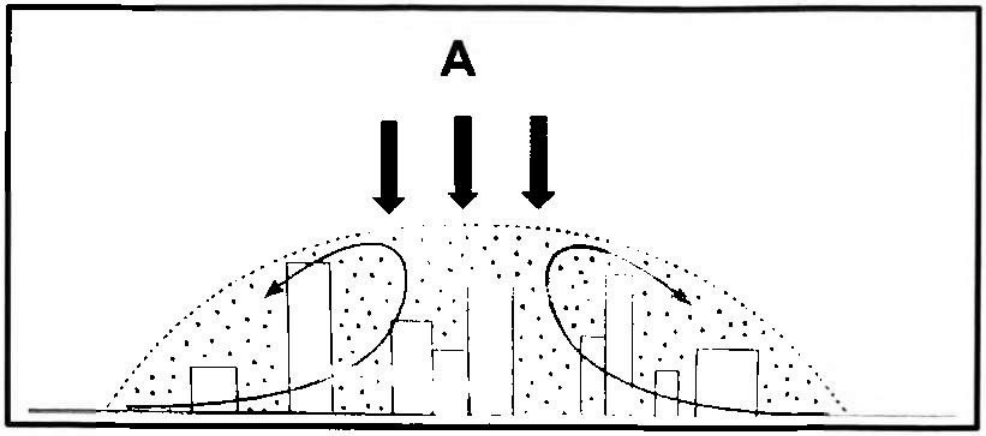
1.4.2 Name TWO pressure systems that are necessary for the formation of berg winds. (2 x 1) (2)

1.4.3 What happens to the air as it blows from the interior to the coast? (1 x 1) (1)

1.4.4 Describe the role that the low pressure cell labelled **A** plays in the formation of berg winds. (1 x 2) (2)

1.4.5 In a paragraph of approximately EIGHT lines, explain the negative impact of berg winds on the environment. (4 x 2) (8)

1.5 The diagram below shows the pollution dome over the city centre during the night.



[Source: Source: www.quizlet.com]

1.5.1 Define the concept ***pollution dome***. (1 x 2) (2)

1.5.2 Name ONE possible human activity that cause pollution dome in cities. (1 x 1) (1)

1.5.3 Name the air movement labelled **A**. (1 x 1) (1)

1.5.4 What is the significance of this air movement (answer to QUESTION 1.5.3 above) in the formation of the pollution dome. (1 x 2) (2)

1.5.5 During which season is the pollution dome better developed? (1 x 1) (1)

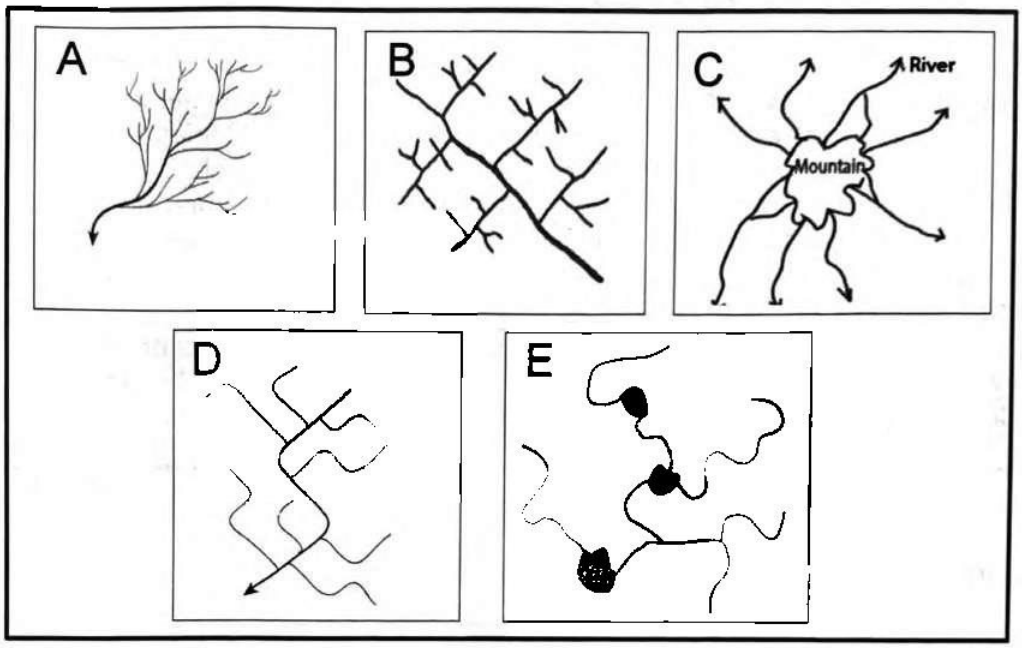
1.5.6 Explain why the level of pollution will be higher over the city in the morning and late afternoon. (2 x 2) (4)

1.5.7 Suggest TWO strategies that urban planners could implement to reduce pollution dome in cities. (2 x 2) (4)

[60]

QUESTION 2: GEOMORPHOLOGY

2.1 Various types of drainage patterns are illustrated by the sketches (A – E) below. Choose the sketch that matches the statement / description. Write only the answer (A – E) next to the question number (2.1.1 to 2.1.7) in the ANSWER BOOK, e.g. 2.1.8 F.



[Source: Examiner's own sketch]

2.1.1 This pattern resembles the spokes of a wheel.

2.1.2 Occurs in areas that have undergone glaciation.

2.1.3 Develops in areas where there are folded sedimentary rocks.

2.1.4 Tributaries join the main stream at acute angles.

2.1.5 Rivers flow in all directions aways from a central high lying area.

2.1.6 Occurs in rocks that have a uniform resistance to erosion.

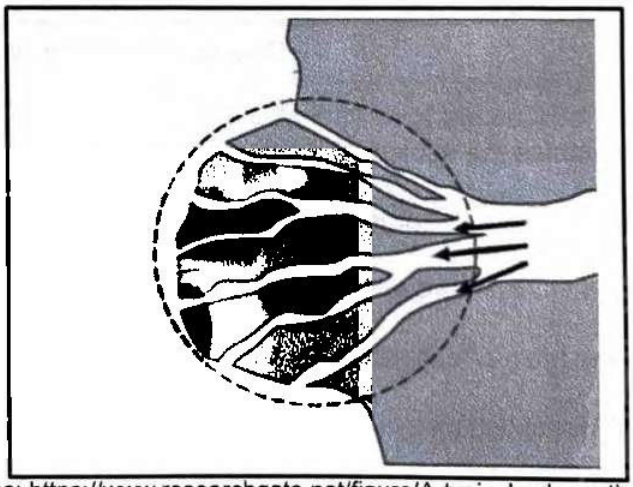
2.1.7 Forms in areas where there are alternate layers of hard and soft rocks. (7 x 1) (7)

2.2 Choose a term from COLUMN B that matches the statement / in COLUMN A. Write only the letter (Y or Z) next to the question numbers (2.2.1 to 2.2.8) in the ANSWER BOOK, e.g. 2.2.9 Z.

	COLUMN A	COLUMN A
2.2.1	A process whereby the watershed changes its position due to headward erosion.	Y Infiltration Z Abstraction
2.2.2	Where the river begins/originates.	Y source Z mouth
2.2.3	Forms on the lower course of the river as the river becomes chocked with its load.	Y distributaries Z tributaries
2.2.4	... forms in the lower course of a river when a river enters the ocean, sea or lake.	Y Rapids Z Delta
2.2.5	This river is in a state of balance between the rate of erosion and the rate of deposition.	Y ungraded Z graded
2.2.6	... forms as a result of renewed downward erosion in a meandering river.	Y incised meander Z natural levees
2.2.7	This river profile shows the width and the depth of the river channel.	Y transverse Z longitudinal
2.2.8	Commonly occurs along the upper course of the river because of the steep gradient.	Y Waterfall Z Meander

(8 x 1) (8)

2.3 Refer to the sketch below showing a delta.



[Source: https://www.researchgate.net/figure/A-typical-schematic-of-a-river-delta-The-primary-tributary-right-side-branches-into_fig7_369190115]

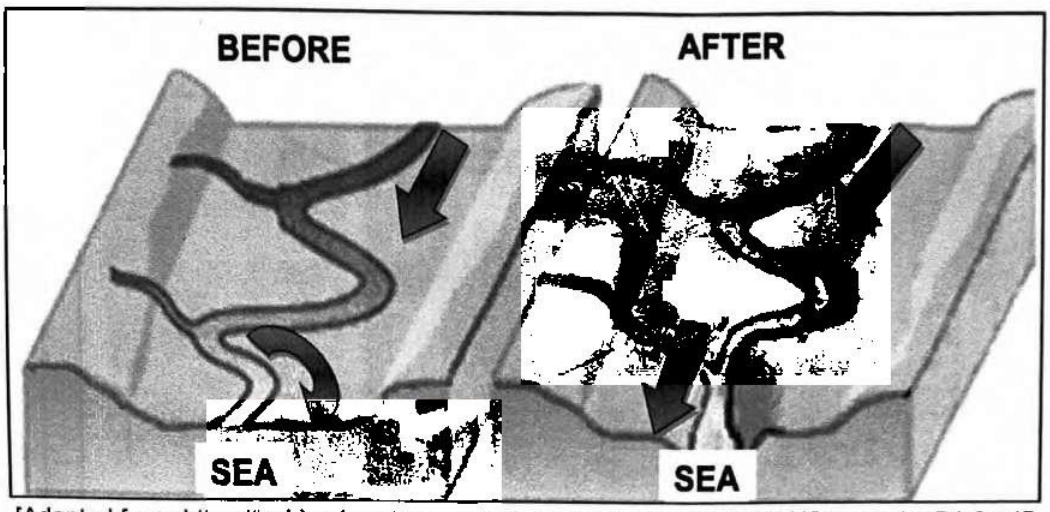
2.3.1 What is a *delta*? (1 x 2) (2)

2.3.2 Identify the river course where deltas form. (1 x 1) (1)

2.3.3 Describe how deltas form. (2 x 2) (4)

2.3.4 In a paragraph of approximately EIGHT lines, explain the importance of deltas on human activities. (4 x 2) (8)

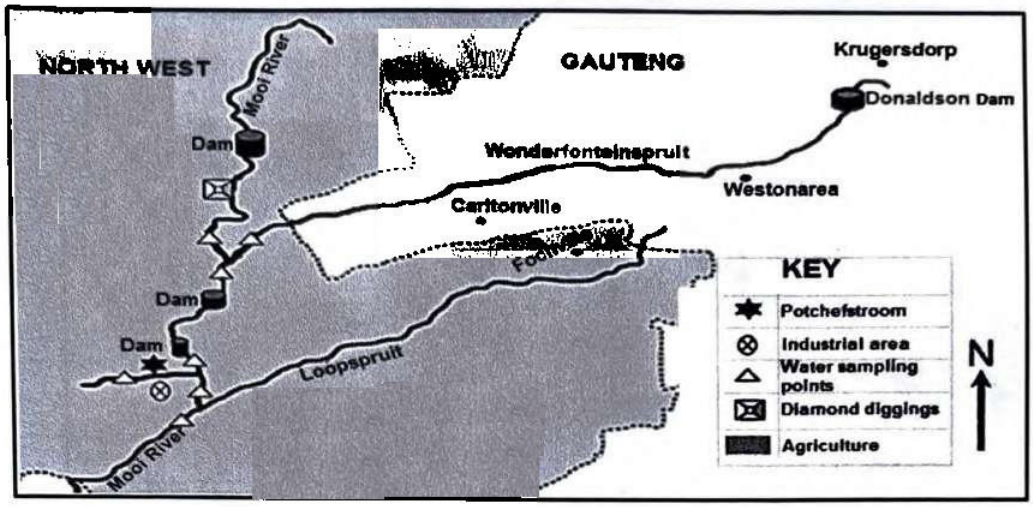
2.4 Refer to the sketch below showing river rejuvenation.



[Adapted from: https://insideeducation.co.za/wp-content/uploads/2023/10/Geography-P1-2.pdf]

2.4.1	Define the concept *river rejuvenation*.	(1 x 2) (2)
2.4.2	Identify the course of a river shown in the diagram above.	(1 x 1) (1)
2.4.3	Give a reason for your answer to QUESTION 2.4.2 above.	(1 x 2) (2)
2.4.4	Describe how the incised meander is formed.	(2 x 1) (2)
2.4.5	Explain the factors that result in river rejuvenation.	(2 x 2) (4)
2.4.6	Suggest the significance (importance) of a rejuvenated river on farmers.	(2 x 2) (4)

2.5 Refer to the diagram and an extract below on catchment and river management.



The Mooi River has **two major** tributaries, namely Wonderfonteinspruit and Loopspruit. The Donald**son Dam** in the upper Wonderfonteinspruit receives water from various sources, **such** as sewage facilities, mining areas and informal settlements, that has a **negative impact** on the quality of water.

The Mooi River flows south, through agricultural land, from where it eventually joins the Vaal River. The main types of land use in the Mooi River catchment area are crop farming and grazing.

According to the Department of Water Affairs (DWA), irrigation and farming are the two major activities polluting the waters of the Mooi River drainage basin, following the removal of natural vegetation. Some small scale diamond diggings also occur along the Mooi River, destroying the flood plain and riparian (wetlands next to river banks) habitats.

[Adapted from a case study by S Barnard, A Venter and CE van Ginkel]

2.5.1 Define the concept *catchment management*. (1 x 2) (2)

2.5.2 Use the information above to identify at least ONE major activity polluting the Mooi River drainage basin. (1 x 1) (1)

2.5.3 Why are the water sampling points (testing points) important? (1 x 2) (2)

2.5.4 Explain how poor catchment management of the Mooi River will affect the environment. (2 x 2) (4)

2.5.5 Suggest THREE sustainable strategies that can be implemented in order to maintain the quality of water in the Mooi River catchment area. (3 x 2) (6)

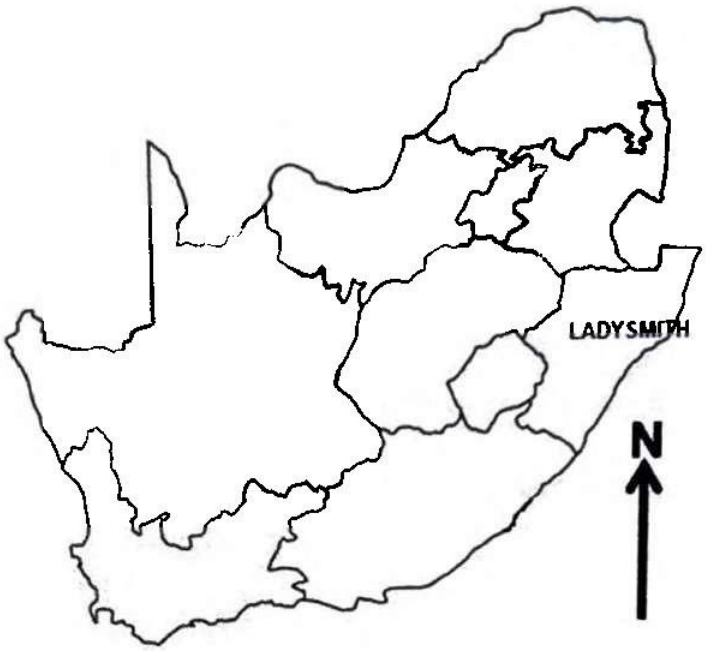
[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON LADYSMITH



Coordinates: 28°33'S; 29°46'E

Ladysmith is a city in the Uthukela District of Kwa Zulu-Natal. It is situated along the Klip River. The climate and temperature is warm with the highest rainfall recorded in summer. The average annual temperature is 17,3 °C. The average annual precipitation is approximately 1 057mm. This climate provides ideal conditions for agricultural raw materials.

[Adapted from https://en.wikipedia.org/wiki/Ladysmith]

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

ENGLISH	AFRIKAANS
Furrow	Voor
Aerodrome	Vliegveld
Klip River	Kliprivier
Sewage works	Rioolwerke
Weir	Studam

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 The orthophoto map is … times larger than the topographical map.

A. 5
B. 50
C. 500
D. 5 000 (1 x 1) (1)

3.1.2 The mean average change per year for the map of LADYSMITH (2829DB) is … minutes.

A. 5
B. 4
C. 8
D. 7 (1 x 1) (1)

Refer to topographical map to answer QUESTIONS 3.1.3 to 3.1.5 below.

3.1.3 The vertical interval from trigonometrical station 324 in block **E2** and spot height 1126 in block **E3** is …

A. 802 m
B. 80,2 m
C. 46,4 m
D. 464 m (1 x 1) (1)

3.1.4 The general direction of a weir (**I**) from the excavation (**J**) is …

A. north west
B. south East
C. north east
D. south west (1 x 1) (1)

3.1.5 Calculate the straight line distance in km between the trigonometrical station 324 in block **E2** and spot height 1126 in block **E3.**

Formula: Actual Distance = Map distance x Map scale (2 x 1) (2)

3.1.6 Calculate the area of the demarcated feature **6** on the orthophoto map in km^2. (4 x 1) (4)

Formula: Area = Length x Breadth

3.2 MAP INTERPRETATION

Refer to the Klip River on the topographical and orthophoto map.

3.2.1 In which direction is the Klip River flowing?

A. South-easterly
B. South-westerly
C. North-easterly
D. North-westerly (1 x 1) (1)

3.2.2 The grid reference of the dam, marked **H** (**B1**) on the topographical map is …

A. 29°31′09′′S, 28°32′15′′E
B. 28°31′16′′S, 30°45′45′′E
C. 29°45′45′′S, 28°31′09′′E
D. 28°32′09′′S, 29°45′35′′E (1 x 1) (1)

3.2.3 Provide ONE piece of evidence from the topographical map indicating that Ladysmith receives seasonal rainfall. (1 x 1) (1)

Refer to the rivers in block **D1** on the topographical map.

3.2.4 Identify the stream pattern in block **D1** (1 x 1) (1)

3.2.5 Provide a reason for your answer to QUESTION 3.2.5 above. (1 x 2) (2)

3.2.6 State ONE characteristic of the underlying rock structure of the stream pattern mentioned in QUESTION 3.2.5. (1 x 2) (2)

3.2.7 Soil erosion is experienced in block **E1** and **C5**. Suggest TWO sustainable measures that can be implemented to reduce this environmental issue (soil erosion). (2 x 2) (4)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.3.1 The topographical map represents (vector / raster) data. (1 x 1) (1)

3.3.2 Give a reason for your answer to QUESTION 3.3.1 above. (1 x 2) (2)

3.3.3 Define the concept *data layer*. (1 x 2) (2)

3.3.4 Identify any THREE data layers found in block **A5** on the topographical map. (3 x 1) (3)

TOTAL SECTION B: 30

GRAND TOTAL: 150