education

MPUMALANGA PROVINCE

REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

JUNE 2026

MARKS: 150

TIME: 3 HOURS

This question paper consists of 15 pages.

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO SECTIONS.

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

   SECTION B
   QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES (30 MARKS)

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 topographic map 2531 BC MALELANE and a 1 : 10 000 orthophoto map 2531 BC 16 RIVERSIDE 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.

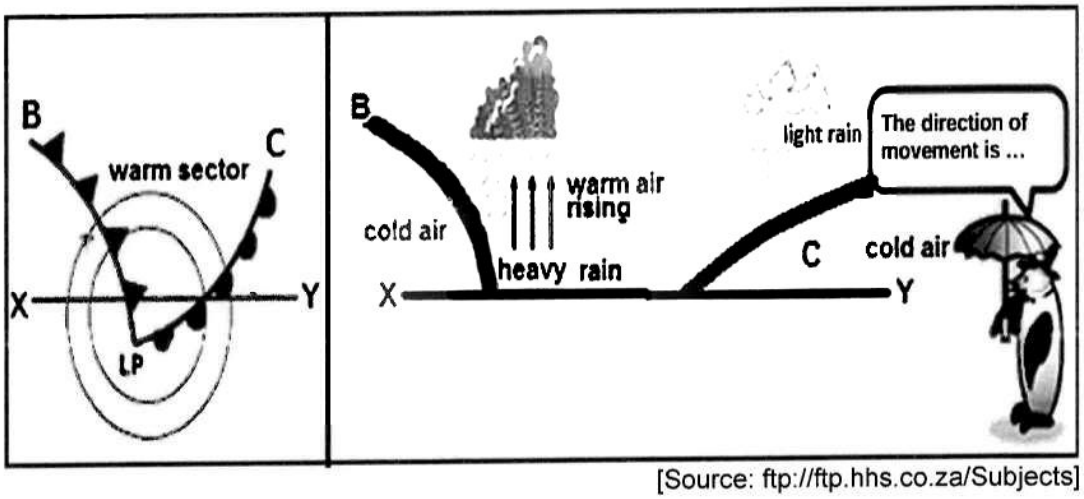
17. You must hand in the topographic and orthophoto map to the invigilator at the end of the examination.

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SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1 Refer to the diagram based on a mid-latitude cyclone. 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), e.g. 1.1.9 D.



[Source: ftp://ftp.hhs.co.za/Subjects]

1.1.1 Mid-latitude cyclones develop at the ... front

A moisture
B warm
C polar
D cold

1.1.2 The above mid-latitude cyclone is situated in the ... hemisphere.

A northern
B eastern
C southern
D western

1.1.3 The direction of movement of this mid-latitude cyclone is eastwards, steered by the...

A Subtropical easterlies.
B Tropical westerlies.
C Subtropical westerlies.
D Polar westerlies.

1.1.4 Front ... is associated with strong winds and heavy rainfall.

A X
B Y
C C
D B

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1.1.5 The movement of the mid-latitude cyclone in summer in the Southern Hemisphere is due to the position of the ITCZ located ... of the equator.

A north
B east
C west
D south

1.1.6 The steeper gradient at **B** causes ...

i) warm air undercutting cold air.
ii) strong updraughts of warm air.
iii) cold air moving faster.
iv) cold air undercutting warm air.

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

1.1.7 The wave deepens because of ....

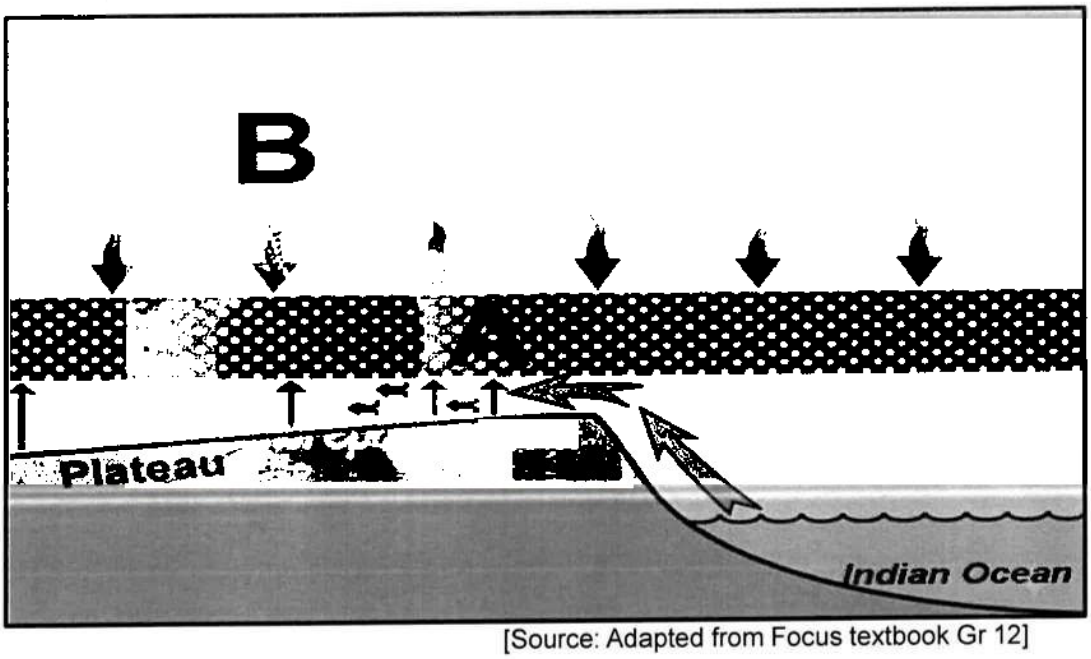
A equal velocity.
B same temperatures.
C less friction.
D temperature differences.

1.1.8 ... is associated with a mid-latitude cyclone.

A Winter rainfall in the interior
B Winter rainfall in the South Western Cape
C Strong gale force winds in the east coast
D Summer rainfall in the West coast (8 x 1) (8)

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1.2 Study the diagram based on anticyclones and answer the questions that follow. Choose the correct term or concept in brackets. Write only the correct answer e.g. 1.2.8 low pressure.



[Source: Adapted from Focus textbook Gr 12]

1.2.1 The season depicted in the diagram is (winter/summer).

1.2.2 The descending air at **B** is a characteristic of a (High pressure/Low pressure) system.

1.2.3 (Stable/unstable) weather conditions prevail over the interior.

1.2.4 The position of the inversion layer results in the water level of dams (increasing/decreasing).

1.2.5 The (coastal/thermal) low displaces the Kalahari High in summer.

1.2.6 The figure shows ascending (moist/dry) air from the Indian Ocean.

1.2.7 The area labelled **A** on the diagram is the (inversion layer/thermal belt).

(7 x 1) (7)

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1.3 Study the extract below, about Hurricane Melissa and answer the following questions.

> Hurricane Melissa was an extremely powerful, erratic, and devastating cyclone. This Category 5 hurricane of the 2025 Atlantic hurricane season, was also the strongest cyclone worldwide in 2025. The storm caused catastrophic damage upon landfall in Jamaica. It also generated the highest wind gust ever recorded by dropsonde data, with a wind gust of 406 km/h at an altitude of 200 m, exceeding the record set by Typhoon Megi in 2010. Climate scientists analysing Melissa concluded that human-driven climate change, which raises ocean temperatures, intensified the hurricane's destructive winds and rainfall.
>
> [Source: Adapted from en.wikipedia.org]

1.3.1 In which hemisphere did this tropical cyclone occur? (1 x 1) (1)

1.3.2 Give a reason for your answer to QUESTION 1.3.1. (1 x 1) (1)

1.3.3 According to the extract what evidence suggests that Jamaica is usually affected by tropical cyclones. (1 x 1) (1)

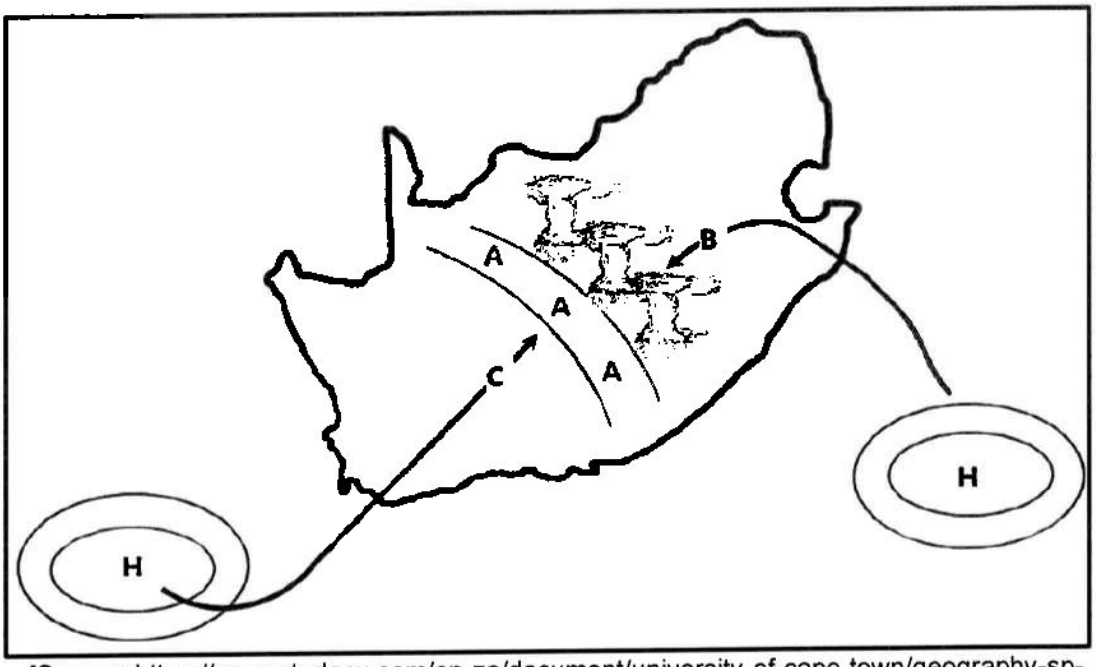
1.3.4 Account for Melissa being classified as a Category 5 hurricane. (1 x 2) (2)

1.3.5 Explain why Cyclone Melissa is expected to weaken once it hits Jamaica? (2 x 2) (4)

1.3.6 According to the extract the negative impact of Tropical Cyclone Melissa was devastating. Suggest THREE strategies that could be put in place to reduce this impact. (3 x 2) (6)

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1.4 Study the diagram showing line thunderstorms.



[Source: https://www.studocu.com/en-za/document/university-of-cape-town/geography-sp-fet/line-thunderstorms-marking-guideline]

1.4.1 Define *line thunderstorms*. (1 x 2) (2)

1.4.2 Name wind **B** and **C** respectively. (2 x 1) (2)

1.4.3 Identify zone **A**. (1 x 1) (1)

1.4.4 Name and describe the cloud type associated with the development of line thunderstorms. (2 x 1) (2)

1.4.5 In a paragraph of approximately EIGHT lines outline the negative impacts of line thunderstorms. (4 x 2) (8)

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1.5 Refer to the case study based on urban climate.

JOHANNESBURG SETS OUT TO REDUCE THE IMPACT OF HEAT ISLAND EFFECT.

The Heat Island effect is a phenomenon which metropolitan regions across the world experience. This is due to absorption and retention by buildings, pavement, and other man-made structures. This can lead to a range of severe consequences for human health and the environment, such as increased energy consumption for cooling buildings, exacerbate air pollution, smog formation and affect human health by intensifying heat related illnesses.

[Adapted from https//joburg.org.za/media_/Newsroom]

1.5.1 State how temperature changes as one moves towards Johannesburg. (1 x 1) (1)

1.5.2 According to the extract how do buildings contribute to urban heat islands? (1 x 2) (2)

1.5.3 Why is the chance of thunderstorms greater in Johannesburg than in the surrounding rural area? (2 x 2) (4)

1.5.4 Explain why rural areas are cooler than the nearby urban areas.(2 x 2) (2)

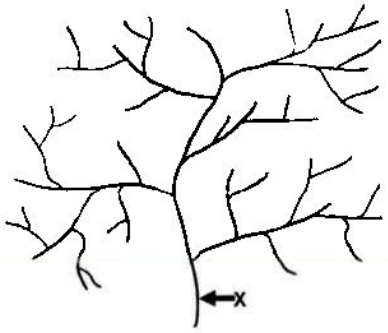
1.5.5 Discuss strategies that the city of Johannesburg can implement to reduce the heat caused by buildings and pavements. (3 x 2) (6)

[60]

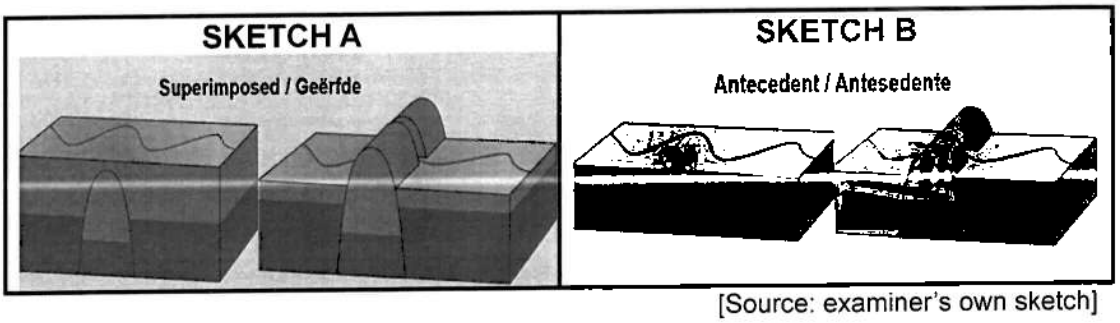
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QUESTION 2: GEOMORPHOLOGY

2.1 Match the statement in COLUMN A with the term/concept in COLUMN B, write only the question number and the correct letter e.g. 2.1.9 Y

COLUMN A	COLUMN B
2.1.1 Top level of groundwater.	Y Water table Z Watershed
2.1.2 Water flowing below the earth's surface.	Y Run off Z Baseflow
2.1.3 A perennial river that originates in a water-rich area and flows through an arid landscape.	Y Exotic Z Episodic
2.1.4 Area drained by a river and its tributaries.	Y River system Z Drainage basin
2.1.5 The stream order at **X**. 	Y 4th order Z 5th order
2.1.6 Land that separates streams of the same drainage basin.	Y Interfluves Z Watershed
2.1.7 Area that supplies water to a river.	Y Catchment area Z Drainage system
2.1.8 A place where two rivers meet.	Y Tributary Z Confluence (8 x 1) (8)

2.2 Refer to the sketches about superimposed and antecedent rivers. Choose the pattern that matches the statement and write only the correct letter e.g. 2.2.8 A



[Source: examiner's own sketch]

2.2.1 The river maintains its course even after the upliftment of the landscape.

2.2.2 The river is not related to the landscape through which it flows.

2.2.3 The river is younger than the landscape through which it flows.

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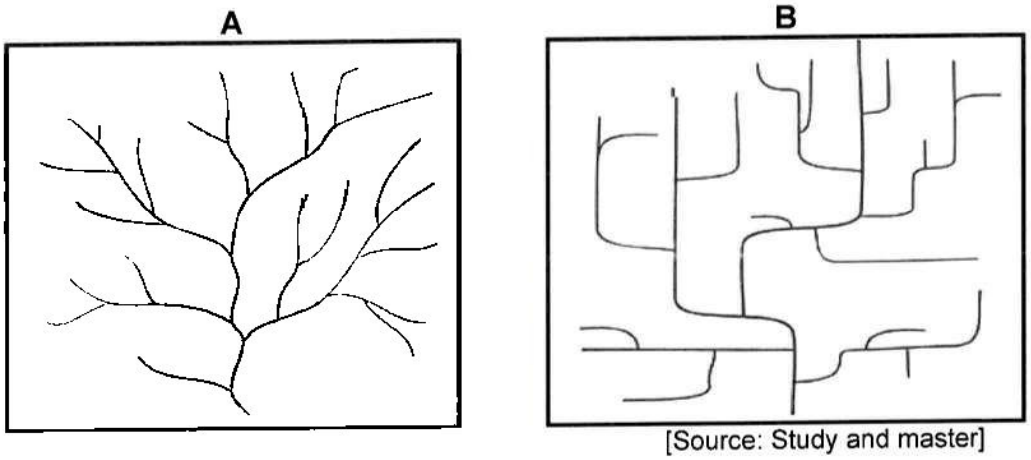
2.2.4 The original rock formation is removed by erosion.

2.2.5 The river pattern was formed before folding or faulting.

2.2.6 The river is older than the landscape through which it flows.

2.2.7 The river maintains its pattern over a different rock structure. (7 x 1) (7)

2.3 Refer to the sketch below based on drainage patterns and answer the questions.



[Source: Study and master]

2.3.1 Identify the drainage patterns marked **A** and **B** respectively. (2 x 1) (2)

2.3.2 State the underlying type of rock on which drainage pattern **B** develops. (1 x 1) (1)

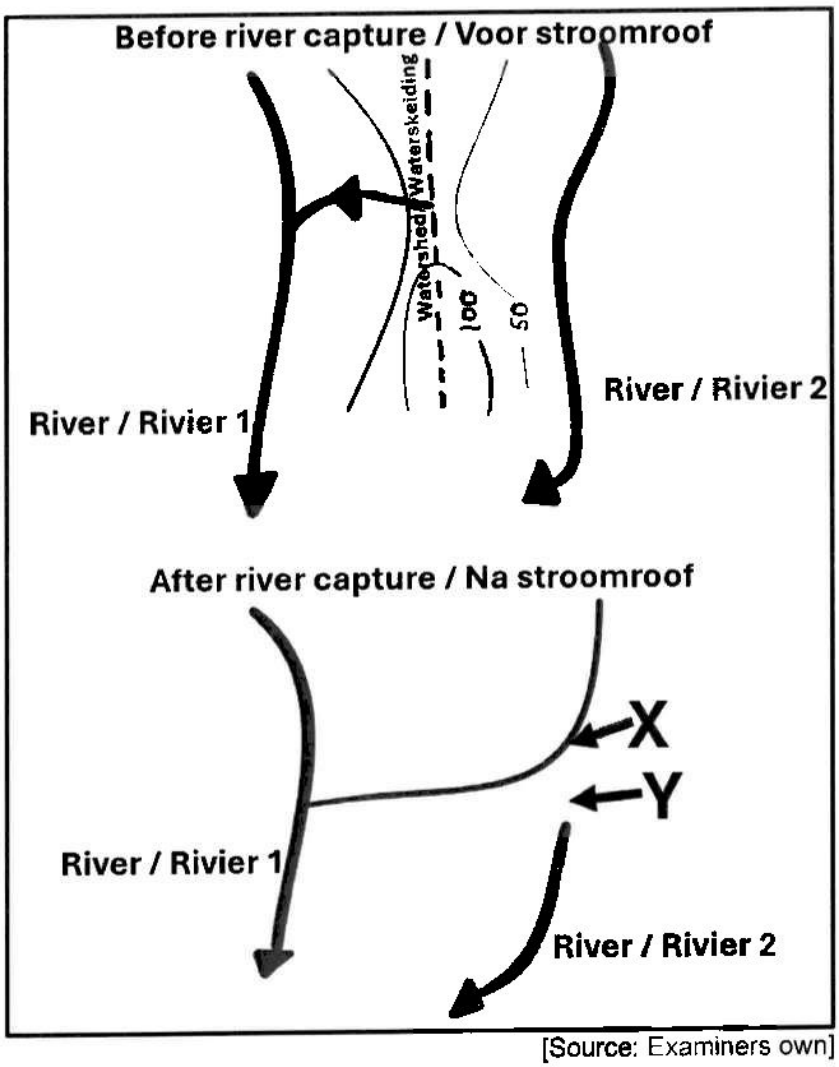
2.3.3 Describe the characteristics of drainage patterns **A** and **B** in relation to the tributaries joining the main stream. (2 x 2) (4)

2.3.4 Explain the relationship between drainage density and stream order. (1 x 2) (2)

2.3.5 Outline possible factors that resulted in the high drainage density on diagram **A.** (3 x 2) (6)

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2.4 Study the diagram showing river capture.



[Source: Examiners own]

2.4.1 Define *river capture*. (1 x 2) (2)

2.4.2 State ONE condition needed for river capture to take place. (1 x 2) (2)

2.4.3 Identify features marked **X** and **Y** respectively. (2 x 1) (2)

2.4.4 What is the process by which river **1** lengthens its channel by cutting through the watershed known as? (1 x 2) (2)

2.4.5 Will river **1** or **2** experience rejuvenation after river capture? (1 x 1) (1)

2.4.6 Give a reason for your answer to QUESTION 2.4.5? (1 x 2) (2)

2.4.7 Describe TWO physical changes that river **2** will experience after river capture. (2 x 2) (4)

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2.5 Study the cartoon and answer the questions that follow.



[Source: https://www.bing.com/images/search]

2.5.1 According to the cartoon what is the main reason for river pollution. (1 x 1) (1)

2.5.2 State a possible health issue that might affect humans as a result of river pollution. (1 x 2) (2)

2.5.3 Explain the negative impact of river pollution on the health of rivers. (2 x 2) (4)

2.5.4 Discuss the economic importance of river management. (2 x 2) (4)

2.5.5 Explain how buffering of a river could be a sustainable strategy for river management. (2 x 2) (4)
[60]

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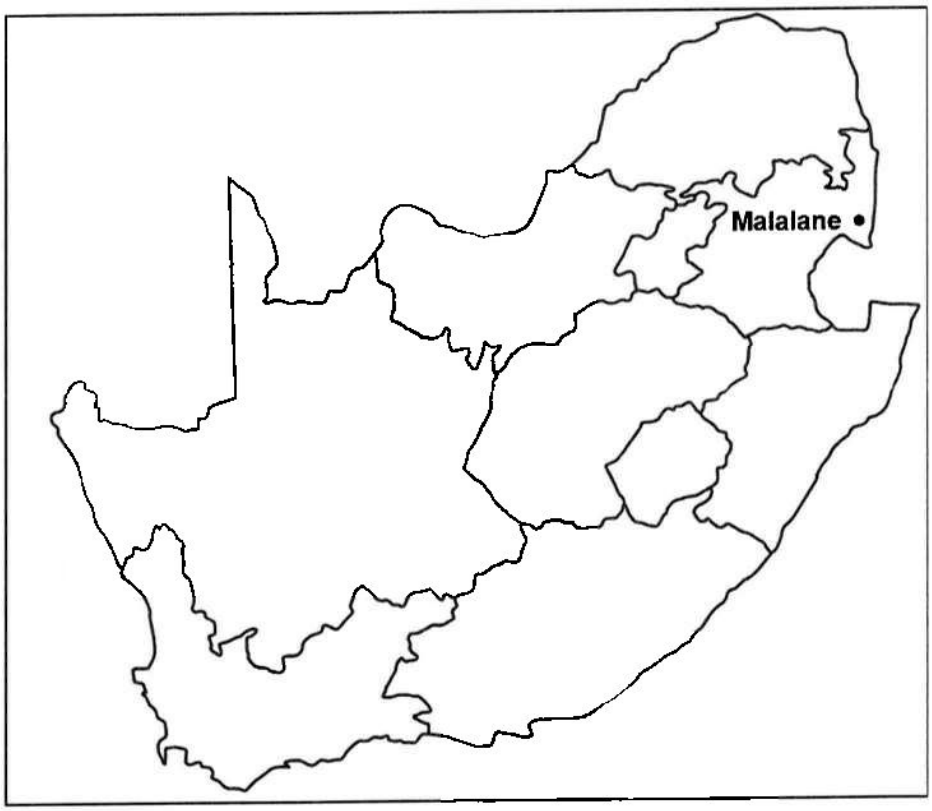
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[60]

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SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON MALELANE



COORDINATES: **25°29'S 31°31'E**

Malelane, a farming town in Mpumalanga, South Africa situated on the N4 national highway. The farms in the region produce sugarcane, subtropical fruit and winter vegetables. Malelane features a warm, subtropical climate with hot, wet summers and mild, dry winters, typical of the Mpumalanga Lowveld. Average annual temperatures are around 27°C with summer highs often exceeding 30°C in January and February. Annual rainfall averages 547mm-934mm, with most falling between October and March.

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

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

ENGLISH	AFRIKAANS
Diggings	Delwery
Golf Course	Gholfbaan
River	Rivier
Estate	Landgoed
Landing strip	Landingstrook
Aerodrome	Vliegveld
Canal	Kanaal
Furrow	Voor
Conveyor belts	Vervoerband
Refinery	Raffinadery

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3.1 MAP SKILLS AND CALCULATIONS

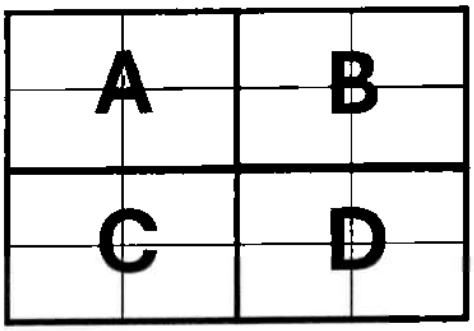
3.1.1 The scale of the topographical map is 1cm represents ....

A 5 000 km
B 500 km
C 0,5 km
D 50 000 km (1 x 1) (1)

3.1.2 The height of the trigonometrical beacon in block **C5** is...

A 145 km
B 145 m
C 471,0 km
D 471,0 m (1 x 1) (1)

3.1.3 Redraw the following grid diagram and show the position of **2531BC** Malelane as it will appear on the index sheet.



(1 x 2) (2)

3.1.4 Determine the coordinates of the windpump in block **E2**. (2 x 1) (2)

3.1.5 Refer to the area covered by the orthophoto map on the topographic map and calculate the area in km^2.

Use the following information :

The length is 1,75 km.

Formula: Area = Length x Breadth (3 x 1) (3)

3.1.6 A tourist has disembarked from the train and is inquiring about the location of the nearest shop.
Refer to block **E1** on the topographical map to assist the tourist with the general direction to the nearest shop. (1 x 1) (1)

3.2 MAP INTERPRETATION

3.2.1 Refer to the cultivated area in block **E4** on the orthophoto map.

i) Name the winds that occur during the nights. (1 x 1) (1)

ii) How can farmers in block **E4** manage the effect of the winds mentioned in QUESTION 3.2.1 i) (1 x 2) (2)

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3.2.2 The table below compares the temperature and reason for the change in temperature in certain areas. Complete the table below on your answer sheet.

Location:	Trig beacon 145 in block **C5**	Built up area in block **E1**	Area marked **S** in block **E3**
Temperature	Decreases	Increase	3.2.2 (a)...
Reason	...3.2.2 (b)...	Buildings absorb heat	3.2.2 (c)...

(3 x 1) (3)

3.2.3 Refer to **F** and **G** on the topographical map to identify the course of the river. (1 x 1) (1)

3.2.4 Draw a cross profile of the river from **G** to **F** .

Instructions:

Correct shape of the cross profile.
Label the two meander slopes. (3 x 1) (3)

3.2.5 What evidence is there on the map suggesting that Malelane receives seasonal rainfall. (2 x 1) (2)

3.2 GEOGRAPHICAL INFORMATION SYSTEM (GIS)

3.3.1 Classify the following as spatial or attribute data.

i) The location of the fluvial landform marked H. (1 x 1) (1)

ii) The shape of the dam in block **B4**. (1 x 1) (1)

3.3.2 Refer to the river in block **D1**.

a) Define the term *buffering*. (1 x 2) (2)

b) Discuss the importance of buffering the river as shown in block **D1.** (1 x 2) (2)

3.3.3 You want to buy a farm in Malelane. Explain how you can use GIS to determine a suitable land for sugar cane farming. (2 x 1) (2)

[30]

TOTAL [150]

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