basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

GEOGRAPHY P1

MAY/JUNE 2025

MARKS: 150

TIME: 3 hours

This question paper consists of 18 pages.

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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. 1020 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 2929BB ESTCOURT and a 1 : 10 000 orthophoto map 2929 BB 3 ESTCOURT 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.

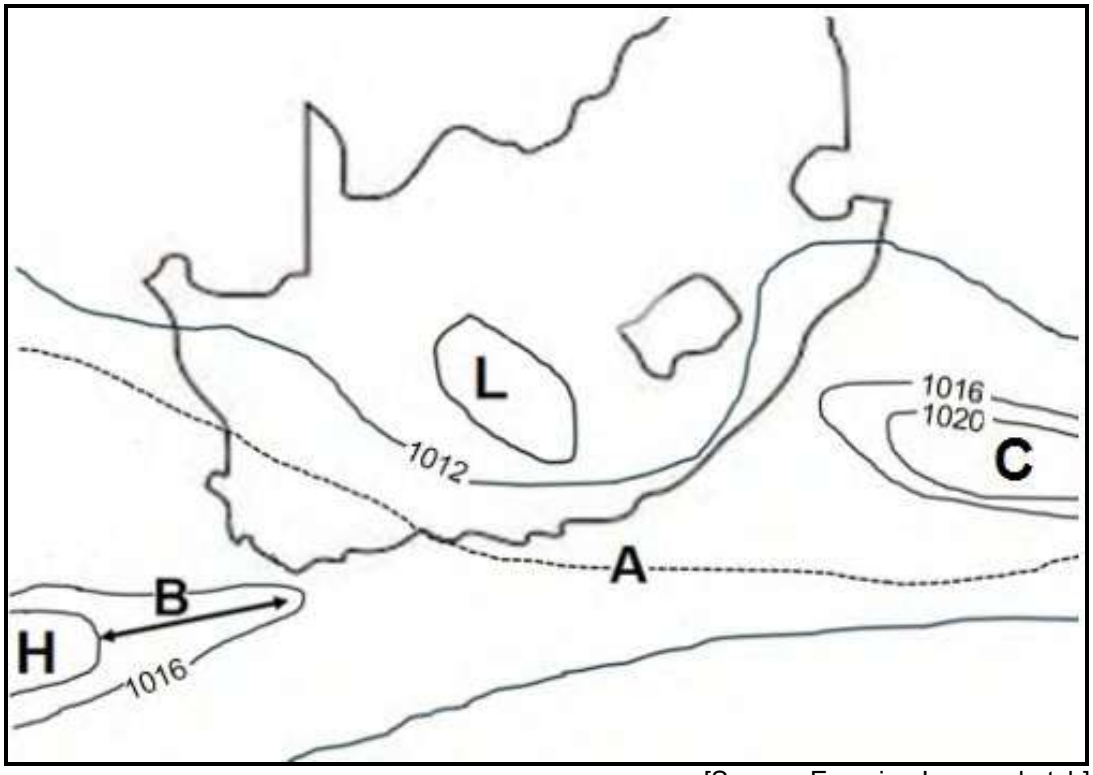
17. You must hand in the topographical map and the orthophoto map to the invigilator at the end of this examination.

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

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 1.1.8) in the ANSWER BOOK, e.g. 1.1.9 D.

Refer to the sketch map below to answer QUESTIONS 1.1.1 to 1.1.5.



[Source: Examiner's own sketch]

1.1.1 The season shown in the sketch map is …

A summer.
B spring.
C winter.
D autumn.

1.1.2 Lines on the sketch map that join places of equal atmospheric pressure are known as …

A isotherms.
B isohyets.
C isobars.
D contours.

1.1.3 The atmospheric pressure reading at **A** is … hPa.

A 1022
B 1018
C 1014
D 1010

1.1.4 The elongation of isobars at **B** indicates … of the South Atlantic high.

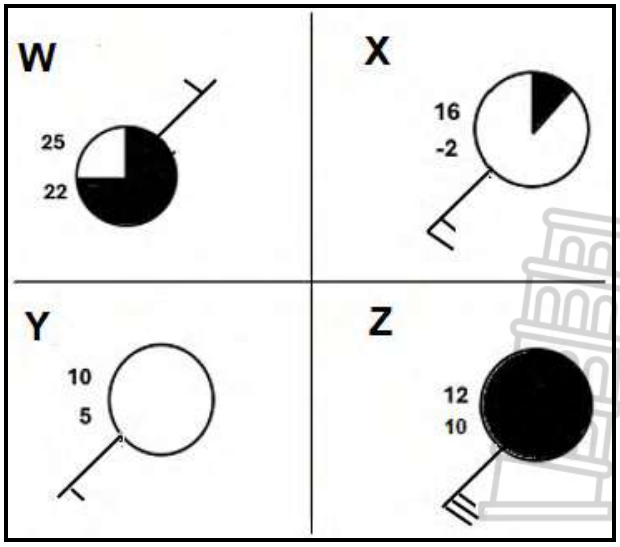
A the ridging
B backing
C the trough
D veering

1.1.5 The air movement at **C** is … and …

(i) descending
(ii) converging
(iii) ascending
(iv) diverging

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

Refer to the station models below to answer QUESTIONS 1.1.6 to 1.1.8.



[Source: Examiner's own sketch]

1.1.6 The station model with a wind speed of 5 knots and with a south-westerly wind direction is …

A W.
B X.
C Y.
D Z.

1.1.7 The station model representing typical winter weather conditions over the Western Cape is …

A W.
B X.
C Y.
D Z.

1.1.8 Station model **W** shows a high possibility of rainfall because of the following:

(i) High cloud cover
(ii) Low dew point temperature
(iii) Low relative humidity
(iv) High relative humidity

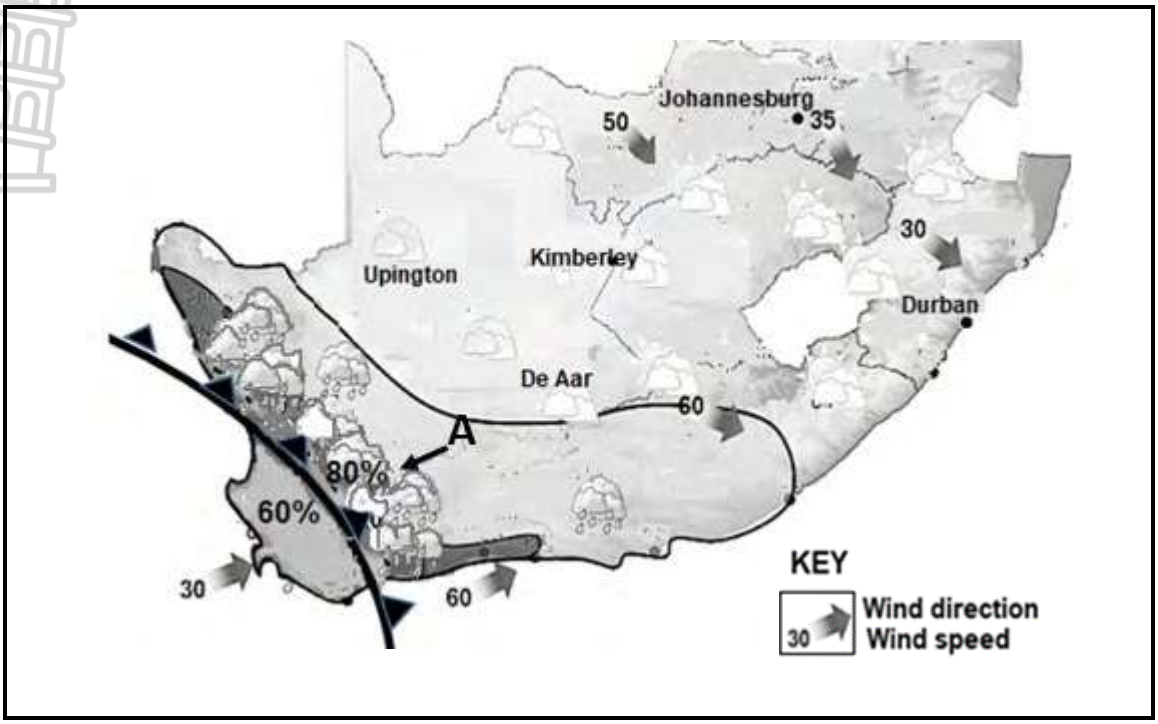
A (i) and (ii)
B (ii) and (iii)
C (i) and (iv)
D (ii) and (iv) (8 x 1) (8)

1.2 Choose the term/concept from COLUMN B that matches the statement/ description in COLUMN A. Write only **Y** or **Z** next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK, e.g. 1.2.8 Y.

	COLUMN A		COLUMN B
1.2.1	A … refers to higher temperatures in the urban areas with decreasing temperatures towards the rural areas.	**Y** **Z**	pollution dome heat island
1.2.2	A factor contributing to higher temperatures in the urban area	**Y** **Z**	dense buildings green belts
1.2.3	Heat islands are more dominant during the …	**Y** **Z**	day night
1.2.4	… would be an effective strategy to reduce the heat island effect.	**Y** **Z**	Planting trees Tarring roads
1.2.5	Multiple reflections of the sun's rays in urban areas are caused by …	**Y** **Z**	glass surfaces concrete surfaces
1.2.6	Heat islands are more likely to favour the formation of …	**Y** **Z**	smog rainfall
1.2.7	… is an effect of heat islands on people.	**Y** **Z**	Heat stroke Reduced visibility

(7 x 1) (7)

1.3 Refer to the weather map below showing the cold front of the mid-latitude cyclone.



[Adapted: From 04/08/2024 at 00:00 SAST until 04/08/2024 at 23:59 SAST]

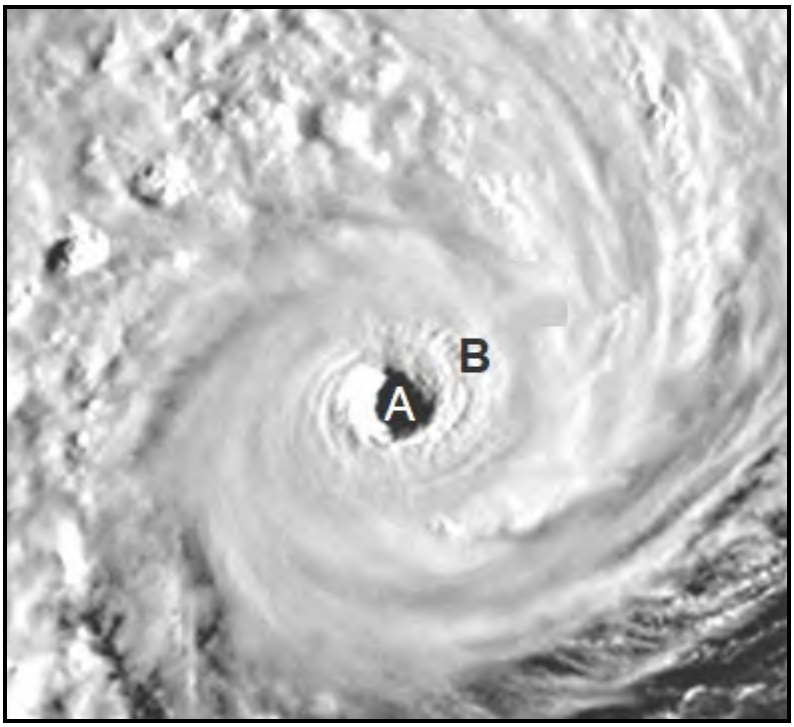
1.3.1 The general direction of movement of the cold front is (eastwards/westwards). (1 x 1) (1)

1.3.2 Why does the mid-latitude cyclone move in this direction (answer to QUESTION 1.3.1)? (1 x 2) (2)

1.3.3 Account for the heavy rainfall of 80% at **A** as the cold front approaches. (2 x 2) (4)

1.3.4 In a paragraph of approximately EIGHT lines, explain how different weather conditions associated with a cold front will have a negative impact on tourists in the Western Cape. (4 x 2) (8)

1.4 Refer to the satellite image below of a tropical cyclone.



[Source: https://earthsci.org/processes/weather/cyclone/cyclone.html]

1.4.1 Give ONE piece of evidence from the satellite image which shows that the tropical cyclone is in the Southern Hemisphere. (1 x 1) (1)

1.4.2 Name the area of the cyclone labelled **A**. (1 x 1) (1)

1.4.3 Why does air subside in area **A**? (1 x 2) (2)

1.4.4 Draw the symbol that is used on a synoptic weather map to represent a tropical cyclone in the Southern Hemisphere. (1 x 1) (1)

1.4.5 Explain the formation of high-density clouds at **B**. (2 x 2) (4)

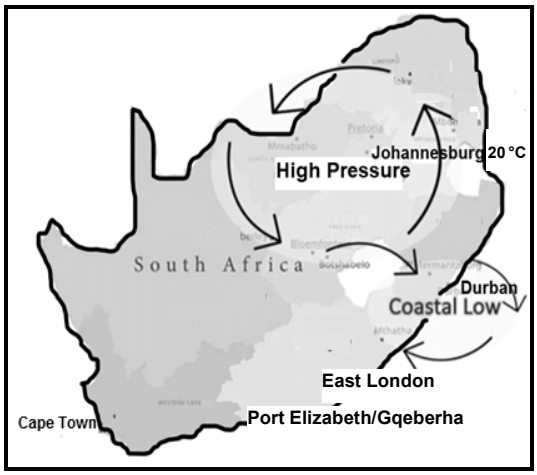
1.4.6 High-density clouds result in torrential (very heavy) rainfall.
Describe the natural (physical) environmental damage associated with this torrential rainfall as it moves over the land. (3 x 2) (6)

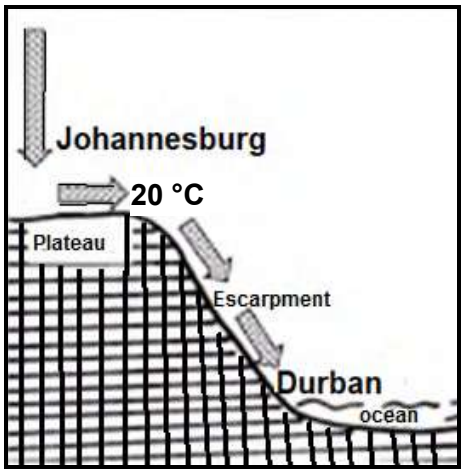
1.5 Refer to the infographic below on the South African berg wind.

THE SOUTH AFRICAN BERG WIND

Berg winds occur when air from the central plateau flows down the escarpment to the coast, where it undergoes heating caused by the adiabatic process of approximately 1 °C per 100 metres. An example of this is a parcel of air at 20 °C descending from Johannesburg to Durban that would heat up by 15 °C (if we take Johannesburg being at an altitude of 1 500 metres).

When berg winds occur during the day, it is more severe and has a greater influence on the weather as compared to night-time berg wind events, which do not have a significant influence on the weather.





[Adapted from https://rmets.onlinelibrary.wiley.com]

1.5.1 What are *berg winds*? (1 x 2) (2)

1.5.2 State TWO factors evident on the map that promote berg wind conditions. (2 x 1) (2)

1.5.3 According to the extract, why does the temperature of the air increase as it blows from Johannesburg to Durban? (1 x 1) (1)

1.5.4 Determine the expected air temperature at Durban due to the associated berg wind conditions. (1 x 2) (2)

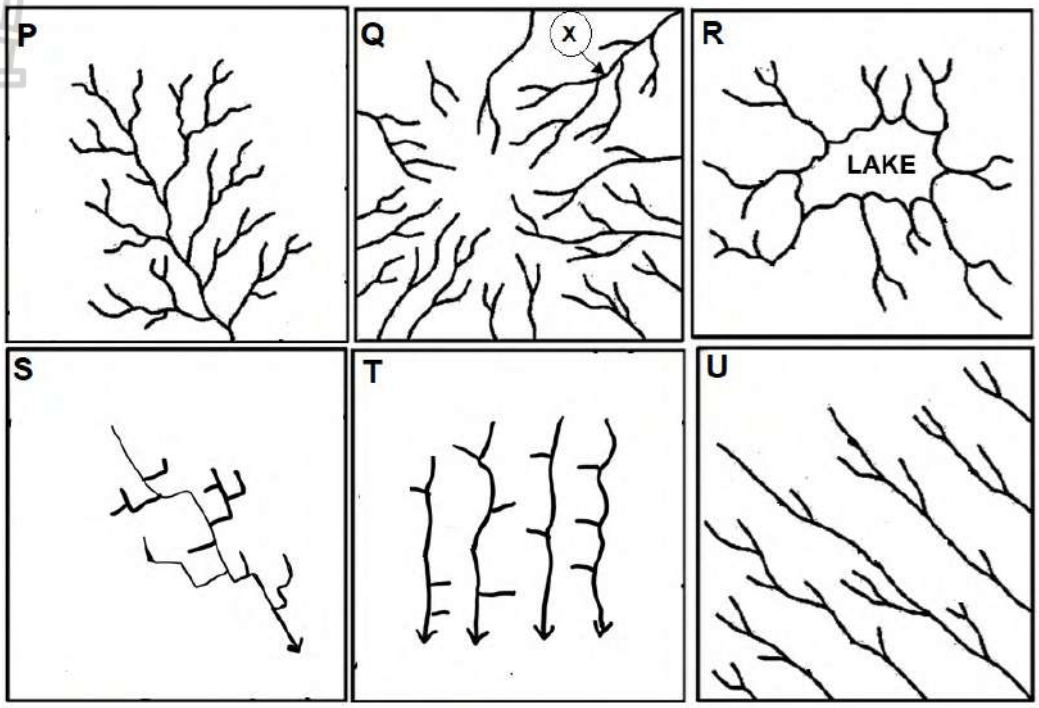
1.5.5 Why is the threat of wildfires greater during the day when berg winds occur? (2 x 2) (4)

1.5.6 Explain why berg winds are associated with lower agricultural productivity on farms. (2 x 2) (4)

[60]

QUESTION 2: GEOMORPHOLOGY

2.1 Various types of drainage patterns are illustrated by the sketches (P–U) below. 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, e.g. 2.1.9 D.



[Adapted from https://blogger.googleusercontent.com/img/b/R29vZ2xl/]

2.1.1 Drainage pattern **P** is known as a … pattern.

A dendritic
B trellis
C rectangular
D deranged

2.1.2 In sketch …, rivers flow towards a low-lying central point.

A P
B Q
C R
D S

2.1.3 Drainage pattern **Q** is known as a … pattern.

A centripetal
B radial
C parallel
D trellis

2.1.4 Drainage pattern **S** is associated with …

A jointed igneous rocks.
B very steep gradients.
C folded mountain regions.
D domes and buttes.

2.1.5 The tributaries in sketch … join the mainstream at acute angles and resemble the branches of a tree.

A P
B Q
C R
D S

2.1.6 In sketch …, the streams flow alongside each other in areas of steep, folded bedrock.

A R
B S
C T
D U

2.1.7 The underlying rock structure of drainage pattern **T** is …

A massive igneous rocks.
B domes and volcanoes.
C inclined strata.
D major faults.

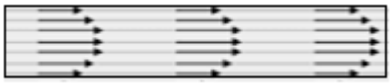
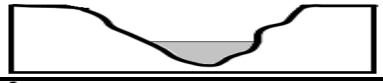
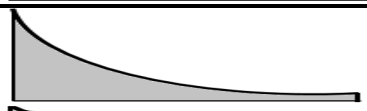
2.1.8 In drainage pattern **Q**, the stream order at **X** is … and could … with heavy rainfall.

(i) 2
(ii) 3
(iii) increase
(iv) decrease

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

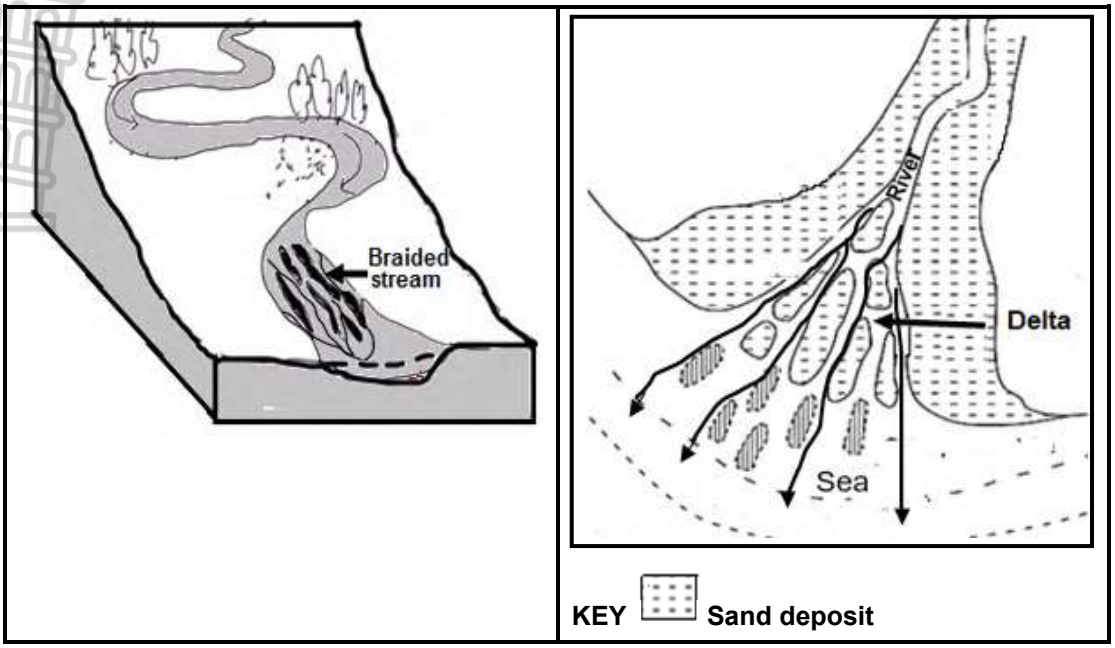
(8 x 1) (8)

2.2 Choose the term/sketch in COLUMN B that matches the statement/ description in COLUMN A. Write only **Y** or **Z** next to the question numbers (2.2.1 to 2.2.7) in the ANSWER BOOK, e.g. 2.2.8 Y.

	COLUMN A	COLUMN B
2.2.1	The sketch that depicts turbulent flow	**Y**  **Z** 
2.2.2	The fluvial process associated with turbulent flow	**Y** deposition **Z** erosion
2.2.3	The fluvial feature associated with turbulent flow	**Y** rapid **Z** levee
2.2.4	The sketch that depicts a cross-profile	**Y**  **Z** 
2.2.5	An example of an ungraded river profile	**Y**  **Z** 
2.2.6	… of rivers can change the grade of a river from graded to ungraded.	**Y** Rejuvenation **Z** Meandering
2.2.7	A waterfall is an example of a … base level of erosion.	**Y** permanent **Z** temporary

(7 x 1) (7)

2.3 Refer to the sketches below of a braided stream and a delta.



[Source: Examiner's own sketch and https://www.researchgate.net/figure/Basic-environments-of-deltas-aFluvial-]

2.3.1 Braided streams and deltas form when the dominant fluvial process is (erosion/deposition). (1 x 1) (1)

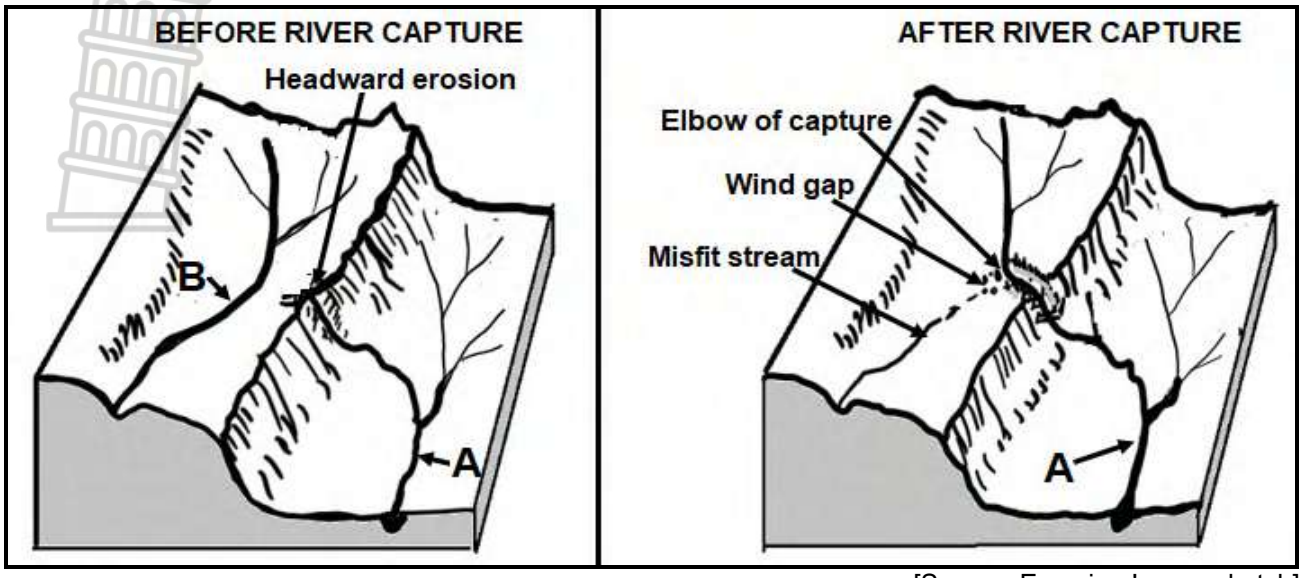
2.3.2 State ONE physical similarity between braided streams and deltas. (1 x 2) (2)

2.3.3 Give TWO reasons why braided streams are common in the lower course of a river. (2 x 2) (4)

2.3.4 Why do deltas not form in all rivers? (2 x 2) (4)

2.3.5 Explain why deltas are suitable for agriculture. (2 x 2) (4)

2.4 Refer to the sketches based on river capture below.



[Source: Examiner's own sketch]

2.4.1 What is *headward erosion*? (1 x 2) (2)

2.4.2 State ONE factor evident on the sketch that would promote headward erosion in stream **A**. (1 x 1) (1)

2.4.3 Why is stream **A** referred to as the captor stream after river capture? (1 x 2) (2)

2.4.4 Why is river gravel found in the wind gap after river capture? (2 x 2) (4)

2.4.5 Explain how the fluvial processes would change in stream **A** after river capture. (3 x 2) (6)

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

NORTH WEST COMMUNITIES NEAR MINES CONCERNED ABOUT WATER POLLUTION

Mines bring economic wealth but also negatively affect the physical river system and human health. One of the greatest concerns in South Africa is the pollution of water in rivers.

Orkney, a small gold-mining town situated outside Klerksdorp, is affected by water pollution. Mine chemicals are a great threat to the quality of ground water and water that runs off the surface into rivers. Mining waste can pollute water through surface run-off and seepage from mine dumps.

Mining waste contains harmful metals such as arsenic, lead, uranium and mercury. It may also contain acids, minerals and sulphides. If not managed properly, mining waste can have negative impacts on humans and the environment.

Exposure to metals can lead to numerous health issues, including stomach illnesses and an increased cancer risk. Many studies have shown that lengthy exposure to environmental pollutants such as metals can cause health effects.

[Adapted from https://www.sabcnews.com/sabcnews/north-west-communities-around-mines-concerned-about-ground-water-contamination/]

2.5.1 According to the extract, state TWO ways in which mines pollute rivers. (2 x 1) (2)

2.5.2 Quote from the extract ONE health risk that mining poses for humans. (1 x 1) (1)

2.5.3 Explain the negative impact of mining on the river system. (2 x 2) (4)

2.5.4 In a paragraph of approximately EIGHT lines, suggest measures that mining companies can implement to manage the impact of water pollution on rivers and humans. (4 x 2) (8)

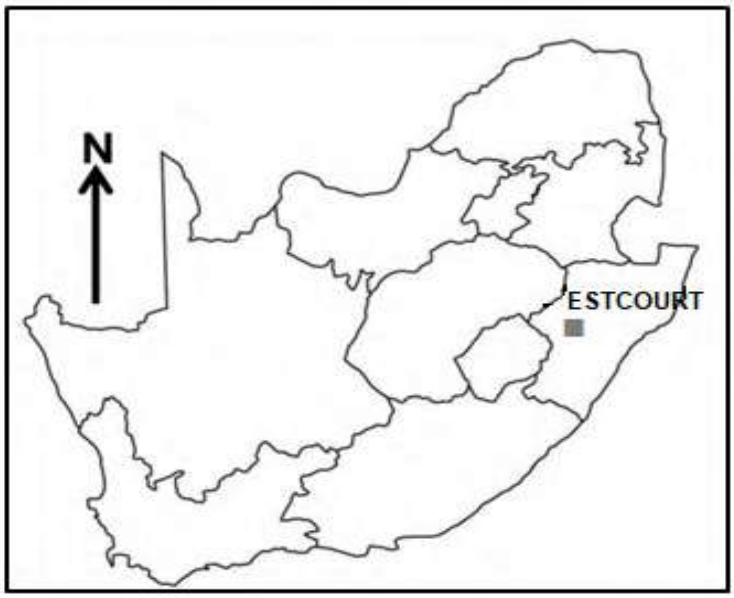
[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON ESTCOURT



Coordinates: 29°00'S; 29°49'E

Estcourt is a town in KwaZulu-Natal.

Estcourt is located at the confluence of the Bushmans River and the Little Bushmans River. The town started at a crossing point on the Bushmans River.

Estcourt has mild to warm summers and cooler winters. Temperature variations are influenced by the close location of the town to the Drakensberg mountains.

The Wagendrift Dam was constructed on the Bushmans River to irrigate 3 000 ha of land upstream from the rivers' confluence.

[Source: https://en.wikipedia.org/wiki/Estcourt]

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

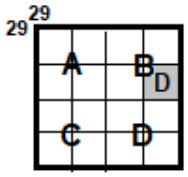
ENGLISH	AFRIKAANS
Sewage works	Rioolwerke
Bushmans River	Boesmansrivier
Rifle range	Skietbaan
Nature reserve	Natuurreservaat

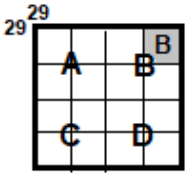
3.1 MAP SKILLS AND CALCULATIONS

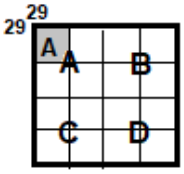
3.1.1 What is the distance by railway to Frere from the boundary of the mapped area?

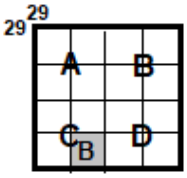
A 1,8 km
B 17 km
C 18 km
D 1,7 km (1 x 1) (1)

3.1.2 Which illustration below represents the map index for the topographical map of Estcourt?

A 

B 

C 

D 

(1 x 1) (1)

Refer to the topographical map.

3.1.3 Calculate the length of the Wagendrift Dam wall at **F** in block **C3** in metres (m).

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

3.1.4 Calculate the magnetic declination for 2025 using the following information:

Difference in years: 24 years
Mean annual change: 9' W (3 x 1) (3)

Refer to the orthophoto map.

3.1.5 Draw a rough cross-section from **6** in block **A4** to **7** in block **B5**.
(2 x 1) (2)

3.1.6 Why is there no intervisibility between **6** and **7**? (1 x 1) (1)

3.2 MAP INTERPRETATION

Refer to the valley in block **C1** on the topographical map.

3.2.1 Name the wind that is likely to blow at night between **G** and **H**. (1 x 1) (1)

3.2.2 Give ONE reason why this wind (answer to QUESTION 3.2.1) will develop in this area. (1 x 2) (2)

Refer to blocks **B1** and **C5** on the orthophoto map.

3.2.3 (a) The rate of evaporation will be less in area (**8**/**9**). (1 x 1) (1)

(b) Give evidence from the orthophoto map for the low rate of evaporation in this area (answer to QUESTION 3.2.3(a)). (1 x 2) (2)

Refer to the Wagendrift Dam on the topographical map.

3.2.4 Identify ONE strategy that was put in place to limit the negative human impact on the Wagendrift Dam. (1 x 2) (2)

Refer to the topographical map and the orthophoto map.

3.2.5 (a) Identify fluvial landform/feature **10** on the orthophoto map. (1 x 1) (1)

(b) Feature **11** is known as the (inner/outer) bank. (1 x 1) (1)

(c) Why will this bank (answer to QUESTION 3.2.5(b)) be associated with fertile soil? (1 x 2) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

Refer to the topographical map.

3.3.1 What is *data layering*? (1 x 2) (2)

3.3.2 Identify TWO infrastructural layers in block **B1** that would promote farming. (2 x 1) (2)

Refer to the orthophoto map.

3.3.3 Define the concept *remote sensing*. (1 x 2) (2)

3.3.4 Refer to blocks **C1/C2** and **D1/D2**. How would remote sensing assist the town's emergency personnel in the event of flooding of the Bushmans River? (1 x 2) (2)

TOTAL SECTION B: 30
GRAND TOTAL: 150

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