Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2025

GEOGRAPHY P1

MARKS: **150**

TIME: **3 hours**

This question paper consists of 17 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 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, for example 1 020 hPa, 13 °C and 25 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 (EXTRACT FROM 3320BB LAINGSBURG) and (1 : 10 000 EXTRACT FROM 3320 BB 17,18, 22, 23 LAINGSBURG) orthophoto map 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 the orthophoto map to the invigilator at the end of this examination session.

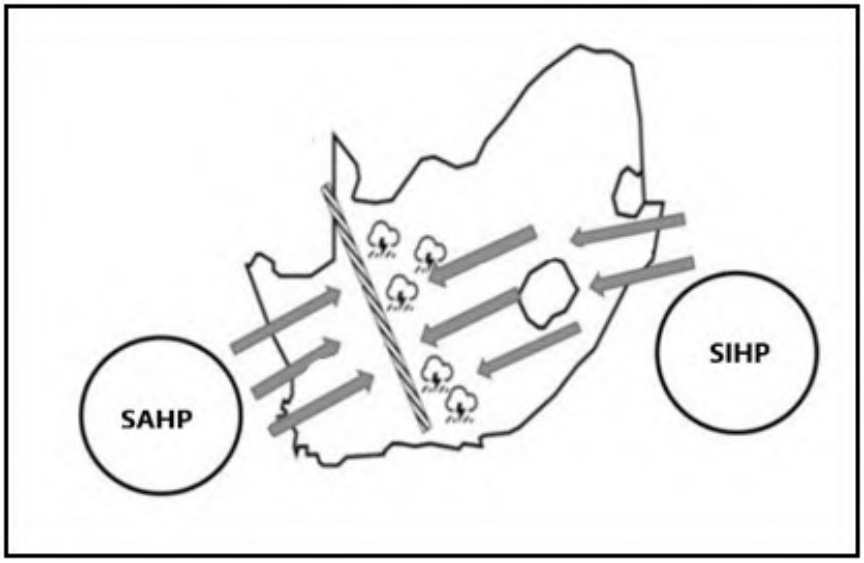
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SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

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, for example 1.1.9 A.

Refer to the sketch below to answer QUESTIONS 1.1.1 to 1.1.4.



[Adapted from https:zwarries.files.wordpress.com]

1.1.1 On which side of the moisture front do thunderstorms occur?

A Eastern
B North-East
C South-East
D Southerly

1.1.2. What are the key elements necessary for such thunderstorms to occur?

(i) Warm, less dense and moist air comes from the north-east and collides with cold dry air from the south-west
(ii) Warm dry air east of the moisture front rises
(iii) Warm moist air east of the moisture front subsides
(iv) Condensation of warm moist air east of the moisture front

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

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1.1.3 … clouds are associated with a line thunderstorm.

A Cumulus
B Cumulonimbus
C Nimbostratus
D Stratus

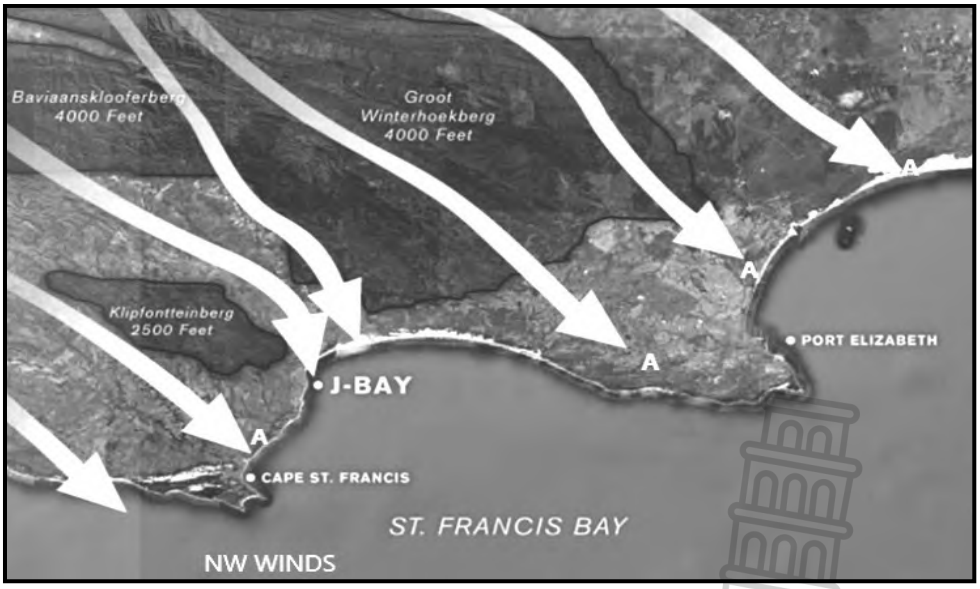
1.1.4 The occurrences below relate to line thunderstorms:

(i) Lightning can start fires
(ii) Heavy rain can lead to flooding
(iii) Hail damages crops
(iv) Heavy rain relieves drought conditions

Which ONE of the following combinations shows the dangers on the natural environment?

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

Refer to the sketch below to answer QUESTION 1.1.5 to QUESTION 1.1.8.



[Adapted from https://millerslocal.co.za/blog/blame-it-on-the-devil]

1.1.5 Hot dry wind that descends at the leeward side of a mountain.

A Westerlies
B Katabatic winds
C Berg winds
D Anabatic wind

1.1.6 The wind at **A** develop when there is a … high pressure cell and a … low pressure cell.

(i) Kalahari
(ii) South Indian
(iii) Heat
(iv) Coastal

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

1.1.7 The high temperatures associated with winds at **A**, are caused by … heating.

A adiabatic
B advection
C convection
D conduction

1.1.8 The season suitable for the development of the wind at **A** is …

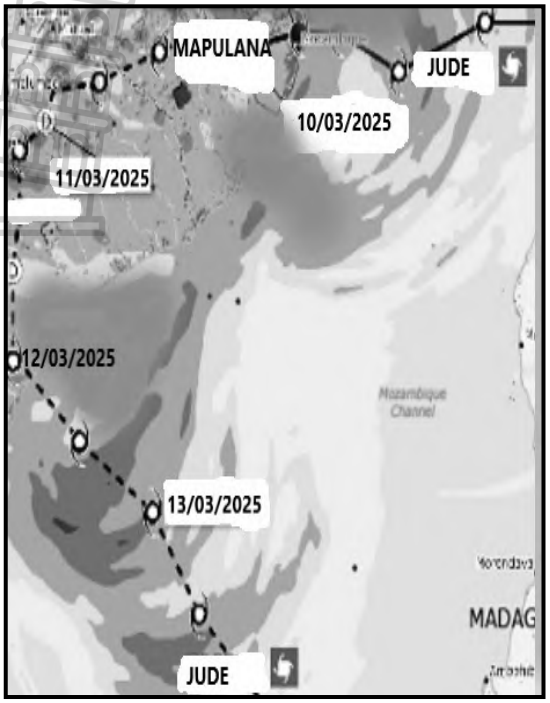
A spring.
B summer.
C autumn.
D winter. (8 x 1) (8)

1.2 Complete the statements in COLUMN A with the options in COLUMN B. Write only **X** or **Z** next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK, for example 1.2.8 X.

	COLUMN A	COLUMN B
1.2.1	A line on a map connecting points having equal temperature	**X** isohyets **Y** isotherms
1.2.2	Localised climatic condition that occurs within a small area	**X** macroclimate **Y** microclimate
1.2.3	The temperature over the city is warmer than the surrounding rural areas	**X** pollution dome **Y** urban heat island
1.2.4	… is the combination of smoke and fog above the city	**X** smog **Y** mist
1.2.5	Pollution is carried away by upper air divergence	**X** during the day **Y** at night
1.2.6	Inversion layer is elevated vertically	**X** at night **Y** during the day
1.2.7	Old paint peeling off buildings	**X** economic effect **Y** environmental effect

(7 x 1) (7)

1.3 Refer to the infographic below based on Tropical Cyclone Jude.

SATELITE IMAGE	AFTER MAKING A LANDFALL
 [Adapted from CDM_20250310.TC_JUDE]	 [Source: reliefweb.int/country/nwi]

HIGHLIGHTS

On 10 March 2025, Jude intensified into a tropical cyclone and made landfall in Mossuril District, Nampula Province, in the North of Mozambique. The province is currently experiencing heavy rain, destructive winds and dangerous seas.

[Source: https://reliefweb.int/report/Madagascar/southern-africa-tropical-cyclone.jude]

1.3.1 How many tropical cyclones have occurred before Tropical Cyclone Jude? (1 x 1) (1)

1.3.2 Describe the path of Tropical Cyclone Jude from the 10/03/2025 to 13/03/2025. (2 x 1) (2)

1.3.3 According to the extract, when did Tropical Cyclone Jude make a landfall?

(1 x 2) (2)

1.3.4 What evidence from the photo shows that Tropical Cyclone Jude made a land fall? (2 x 2) (4)

1.3.5 Explain the physical impact resulting from destructive winds. (3 x 2) (6)

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1.4 Refer to the extract below on protective measures to limit the cold front impact on crops.

ADVICE OF DR MPHO MATHITHIBANE

Farmers can take protective measures to limit the impact of cold fronts on their crops and livestock, where possible farmers can cover their crops with protective materials, using windbreaks, and providing adequate shelter for livestock can help reduce the impact of cold weather.



[Adapted from https://Iol.co.za/business-report/economy/farmers-urged-to-take-protective-measures-to-limit-cold-front-impact-on-crops-livestocks-01845cae-2014 published July 09/2024]

1.4.1 What is a *cold front*? (1 x 2) (2)

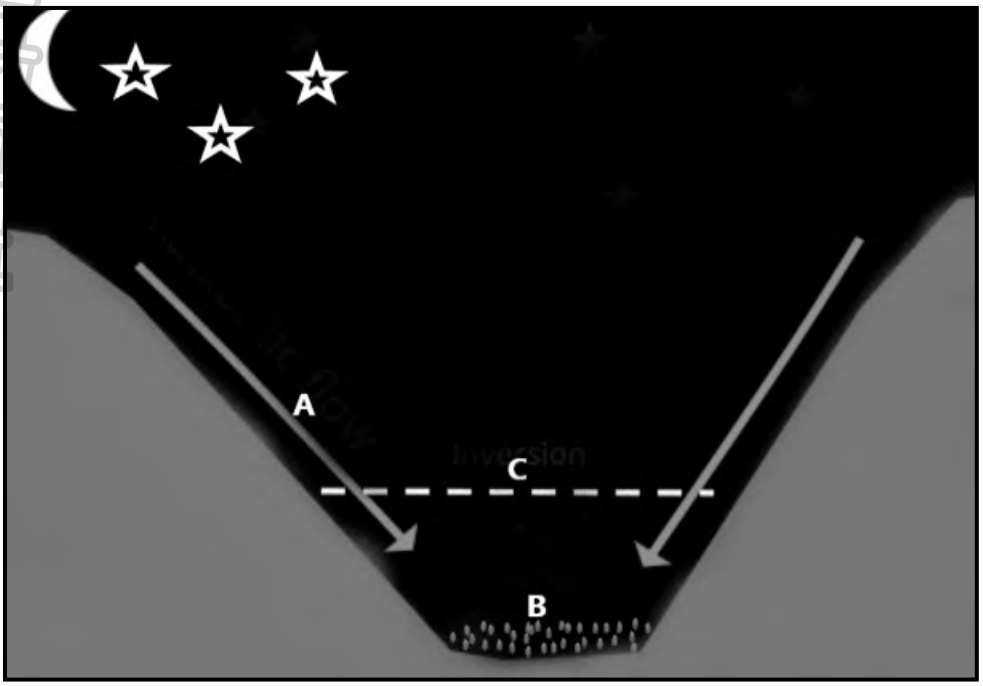
1.4.2 State from the extract, THREE measures that can lessen the impact of cold weather. (3 x 1) (3)

1.4.3 Describe the changes in the weather associated with the passing of a cold front. (1 x 2) (2)

1.4.4 In a paragraph of approximately EIGHT lines, explain the negative impact of cold fronts on crops. (4 x 2) (8)

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1.5 Refer to the sketch below on valley climates.



[Examiner's own sketch]

1.5.1 Is the wind at **A**, a katabatic or an anabatic wind? (1 x 1) (1)

1.5.2 What role does terrestrial radiation play in the formation of the wind at **A**? (1 x 2) (2)

1.5.3 State ONE factor accountable for the movement of wind as shown in the sketch. (1 x 1) (1)

1.5.4 What is the term used at **C**, to describe an increase in the temperature as height increases in the valley? (1 x 1) (1)

1.5.5 Area **B** is a frost pocket.

What is a *frost pocket*? (1 x 2) (2)

1.5.6 In a paragraph of approximately EIGHT lines, explain how a frost pocket is formed. (4 x 2) (8)

[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 D.

2.1.1 The high lying area that separates two different drainage basins.

A Interfluve
B Watershed
C Catchment area
D River system

2.1.2 Water that seeps into the ground after it rained.

A Infiltration
B Groundwater
C Base flow
D Water table

2.1.3 The lateral flow of water in the soil.

A Through flow
B Channel flow
C Sheet flow
D Base flow

2.1.4 The rivers that have their source in high rainfall areas and thereafter flow through arid areas maintaining their course throughout the year.

A Permanent rivers
B Periodic rivers
C Exotic rivers
D Episodic rivers

2.1.5 These rivers occur in arears of low rainfall and high evaporation rates.

A Permanent rivers
B Exotic rivers
C Periodic rivers
D Episodic rivers

2.1.6 The pattern of a river system when seen on a map.

A River terraces
B Drainage density
C Drainage system
D Drainage pattern

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2.1.7 The underlying rock structure that is associated with the trellis drainage pattern.

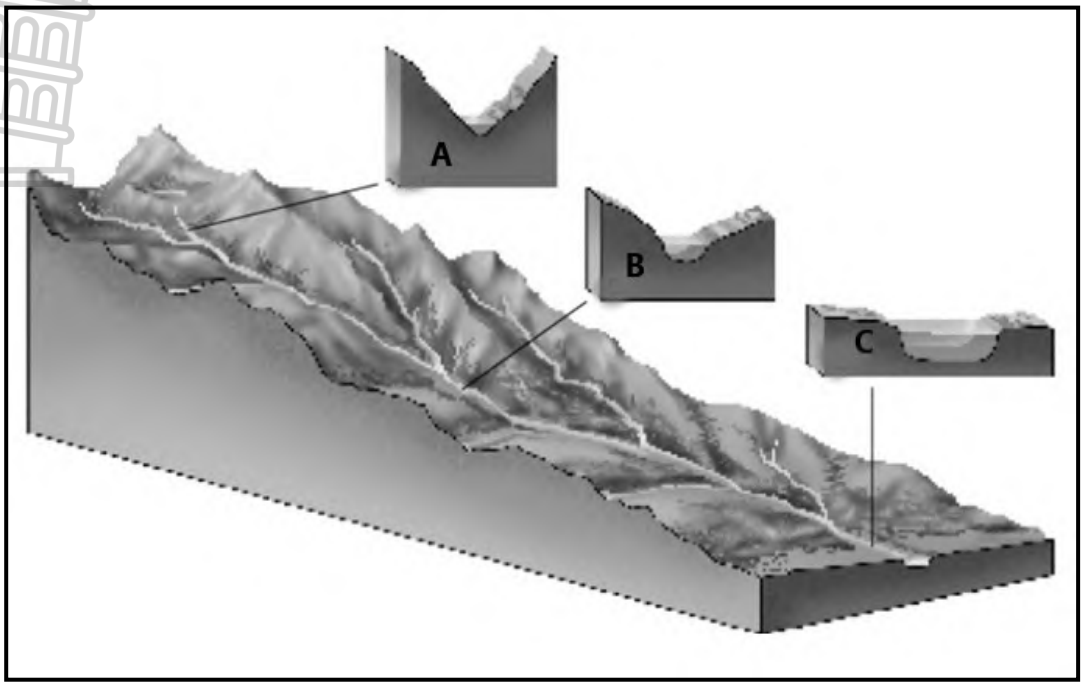
A Folded sedimentary rocks
B Massive igneous rocks
C Rocks of uniform resistance to erosion
D Main streams are parallel to one another

2.1.8 Characteristics of a dendritic pattern is … and …

(i) Resembles the branches of a tree
(ii) Tributaries join the main stream at acute angles
(iii) Tributaries join the main river at right angles
(iv) The main river and tributaries flow parallel to each other

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

2.2 The sketch below shows the longitudinal profile and the cross-profile of a river. Match the descriptions with the appropriate stage of a river. Write only the letter **A**, **B**, or **C** next to the question numbers (2.2.1 to 2.2.7) in the ANSWER BOOK, for example 2.2.8 C.



[Adapted from https:// the britishgeographer.weebly.com/river-landforms.html]

2.2.1 Downward erosion deepens the valley

2.2.2 The valley is very wide and gently sloping

2.2.3 Straight stream channel with short non-perennial stream

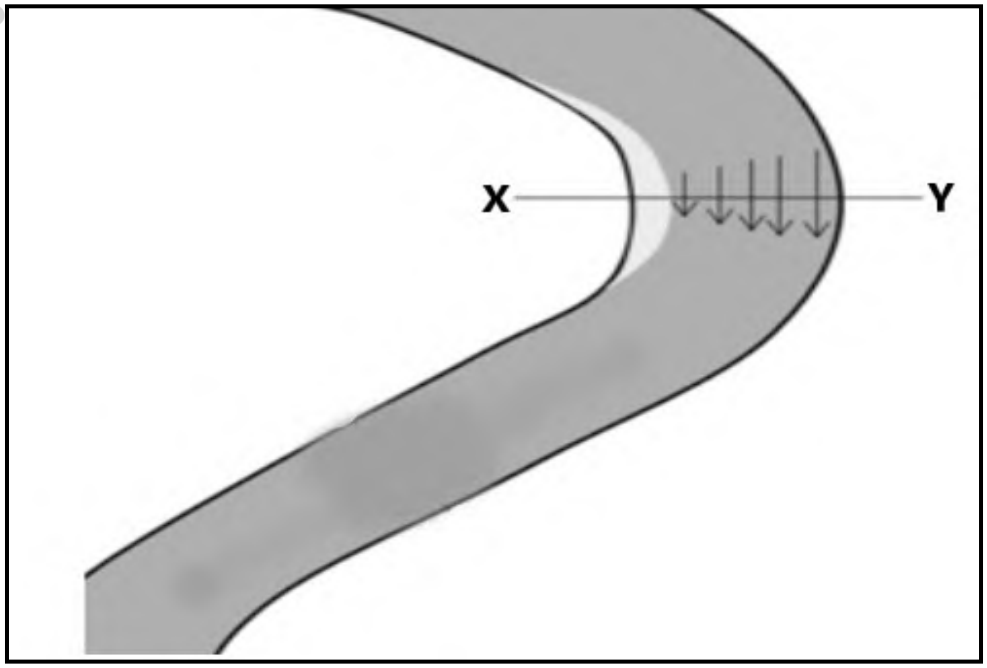
2.2.4 Laminar flow with greater volume

2.2.5 The river deposits more material than it erodes

2.2.6 Small flood plains may be found here

2.2.7 Lateral erosion dominates here (7 x 1) (7)

2.3 Refer to the sketch below of a fluvial landform.



[Adapted from https://collegesidekick.com/study-guides/physical geology]

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

2.3.2 Draw a labelled free-hand cross-section from **X** to **Y** of the illustrated meander.

Marks will be awarded for:

(a) Shape of the cross-profile (1 x 1) (1)

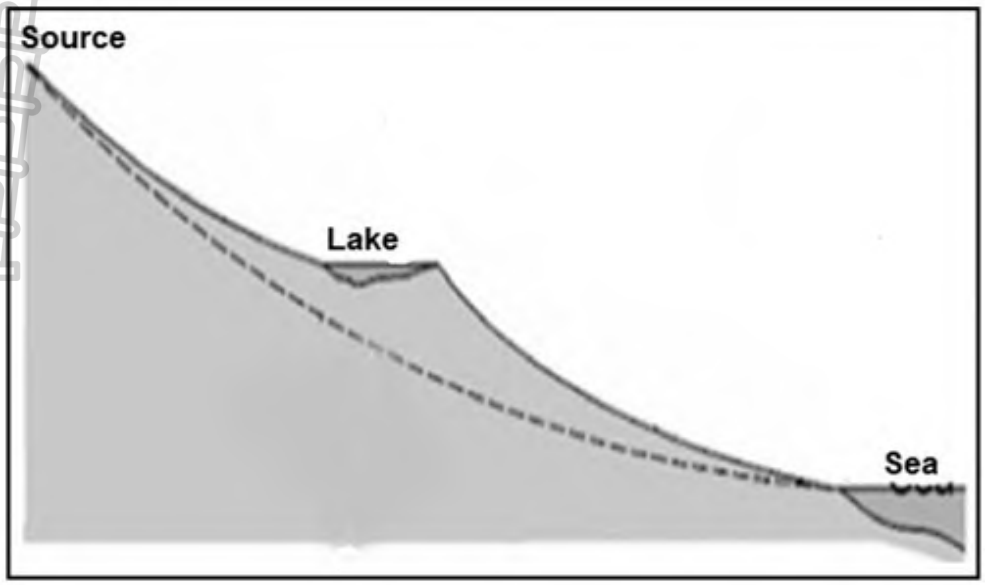
(b) Slip off slope (1 x 1) (1)

(c) Undercut slope (1 x 1) (1)

2.3.3 Differentiate between a *slip off slope* and a *undercut slope*. (2 x 2) (4)

2.3.4 Explain how the meander (illustrated in the sketch) developed. (3 x 2) (6)

2.4 Refer to the sketch below on river grading.



[Adapted from https://geomorphonline.github.io/fluvial/base_level]

2.4.1 Does the sketch above represent a graded or ungraded river? (1 x 1) (1)

2.4.2 Identify ONE example of a temporary base level. (1 x 2) (2)

2.4.3 Distinguish between a *permanent base level* and a *temporary base level*. (2 x 2) (4)

2.4.4 In a paragraph of approximately EIGHT lines, explain the processes that a river undergoes to become graded. (4 x 2) (8)

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

WATER RESOURCE MANAGEMENT IN THE OLIFANTS BASIN OF SOUTH AFRICA

The Olifants River Basin is located in the north-eastern part of South Africa and south of Mozambique. The Olifants River passes through three provinces of South Africa (Gauteng, Mpumalanga and Limpopo Province), through the Kruger National Park, into Mozambique where it joins Limpopo. It is the home to nearly 10% of the total population of South Africa.

In South Africa, significant mining, industrial and agricultural activities (including intensive irrigation schemes) are concentrated within the catchment area, so it is of considerable importance for the country's economy.

The basin also faces significant water quality problems, due to mining activities, industries, power generation and agricultural use of water. The impact of these pollutions (high salinity, high concentrations of metals, low pH) is probably multiple with serious ecological impacts.

[Adapted from https://cgspace.cgiar.org]

2.5.1 Define the term *river management.* (1 x 2) (2)

2.5.2 Identify ONE activity that causes water quality problems from the extract. (1 x 1) (1)

2.5.3 Explain how poor river management mentioned in QUESTION 2.5.2 impact negatively on the river downstream. (1 x 2) (2)

2.5.4 Why is the Olifants River Basin important for the Kruger National Park? (2 x 2) (4)

2.5.5 Suggest strategies that can be put in place to ensure the sustainable use of drainage basins. (2 x 3) (6)

[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON LAINGSBURG



Co-ordinates: 33º11'42"S 20º51'33"

Laingsburg is situated along the N1 route, at Lat: -33.20, Long: 20.85, in the Western Cape province of South Africa.

The town is situated in the Great Karoo, a semi-desert region of South-Africa. The town's total rainfall is about 150 mm per year. The main water supply is a fountain in the Moordenaars Karoo area. Although the Buffels River runs right through the town, the river hardly ever has any water. Summers are extremely hot and dry, with temperatures usually exceeding 30 °C. Winters are crisp to sometimes very cold, with snow occasionally occurring in the surrounding region. The Seweweekspoort Pass is located along the R323 to the south of the town.

[Source: https://en.wikipedia.org>wiki>Laingsburg,_South_Africa]

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

ENGLISH	**AFRIKAANS**
Diggings	Uitgrawings
Golf course	Gholfbaan
River	Rivier
Sewerage works	Rioolwerke
Golf Driving Range	Gholf-dryfbaan
Nature Reserve	Natuurreservaat

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3.1 MAPWORK SKILLS AND CALCULATIONS

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 (3.1.1 to 3.1.3) in the ANSWER BOOK, for example, 3.1.4 A.

3.1.1 Laingsburg is situated in the …

A Northern Cape Province.
B Western Cape Province.
C Eastern Cape Province.
D North West Province. (1 x 1) (1)

3.1.2 The length of the bridge at **L** in block **E5** on the topographic map is …

A 0,4 m.
B 40 m.
C 200 m.
D 2 200 m. (1 x 1) (1)

3.1.3 The coordinates of the trigonometrical station 103 in block **D2** on the topographic map is …

A 33º12'00"S 20º50'52"E.
B 20º50'52"E 33º12'00"S.
C 20º50'52"E 33º12'05"S.
D 33º12'05"S 20º50'52"E. (1 x 1) (1)

3.1.4 Determine the true bearing of spot height 710 in block **D4** from trigonometrical station 101 in block **C4**. (1 x 2) (2)

3.1.5 Calculate the average gradient from the trigonometrical beacon 103 in block **D2** to point **6** on the orthophoto map.

Measurement of map distance between the two points is: 4,1 cm

Average Gradient = $\frac{\text{Vertical Interval (VI)}}{\text{Horizontal Equivalent (HV)}}$

(4 x 1) (4)

3.1.6 Interpret your answer in QUESTION 3.1.5 above. (1 x 1) (1)

3.2 MAP INTERPRETATION

3.2.1 Provide evidence from the topographical map that the mapped area receives seasonal rainfall. (2 x 1) (2)

Refer to point **J** on the topographical map.

3.2.2 Calculate the stream order of the river at **J**. (1 x 2) (2)

3.2.3 Compare area **J** with area **I** on the topographical map. (1 x 2) (2)

3.2.4 **H** in block **B5** is a (dendritic/parallel) drainage pattern. (1 x 1) (1)

3.2.5 Describe the characteristics for the drainage pattern mentioned in QUESTION 3.2.4. (2 x 2) (4)

Refer to number **5** on the orthophoto map.

3.2.6 Identify the concept at point **5**. (1 x 1) (1)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

Refer to the topographical map.

3.3.1 What is *buffering?* (1 x 2) (2)

Refer to block **C3** on the main river flowing through Laingsburg on the topographical map.

3.3.2 Provide evidence of buffering along the river. (2 x 1) (2)

3.3.3 Determine human activities in block **C1** that can have a negative impact on the drainage basin. (2 x 1) (2)

3.3.4 Suggest ways in which GIS can assist in river management. (1 x 2) (2)

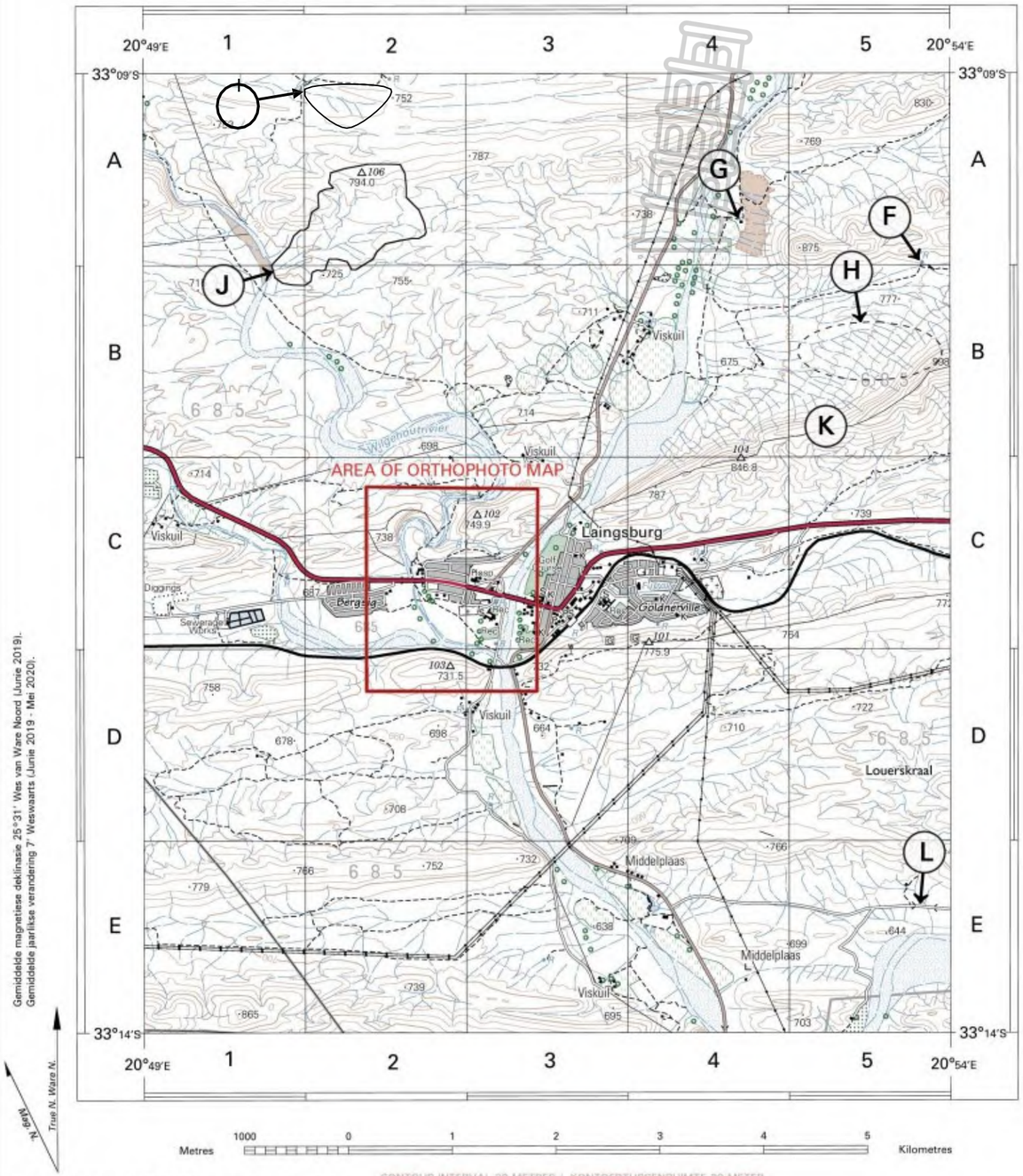
[30]

TOTAL SECTION B: 30
GRAND TOTAL: 150

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EXTRACT FROM 3320BB LAINGSBURG

1:50 000



Gemiddelde magnetiese deklinasie 25°31' Wes van Ware Noord (Junie 2019).
Gemiddelde jaarlikse verandering 7' Weswaarts (Junie 2019 - Mei 2020).

Mean magnetic declination 25°31' West of True North (June 2019).
Mean annual change 7' Westwards (June 2019 - May 2020).

CONTOUR INTERVAL 20 METRES / KONTOERTUSSENRUIMTE 20 METER

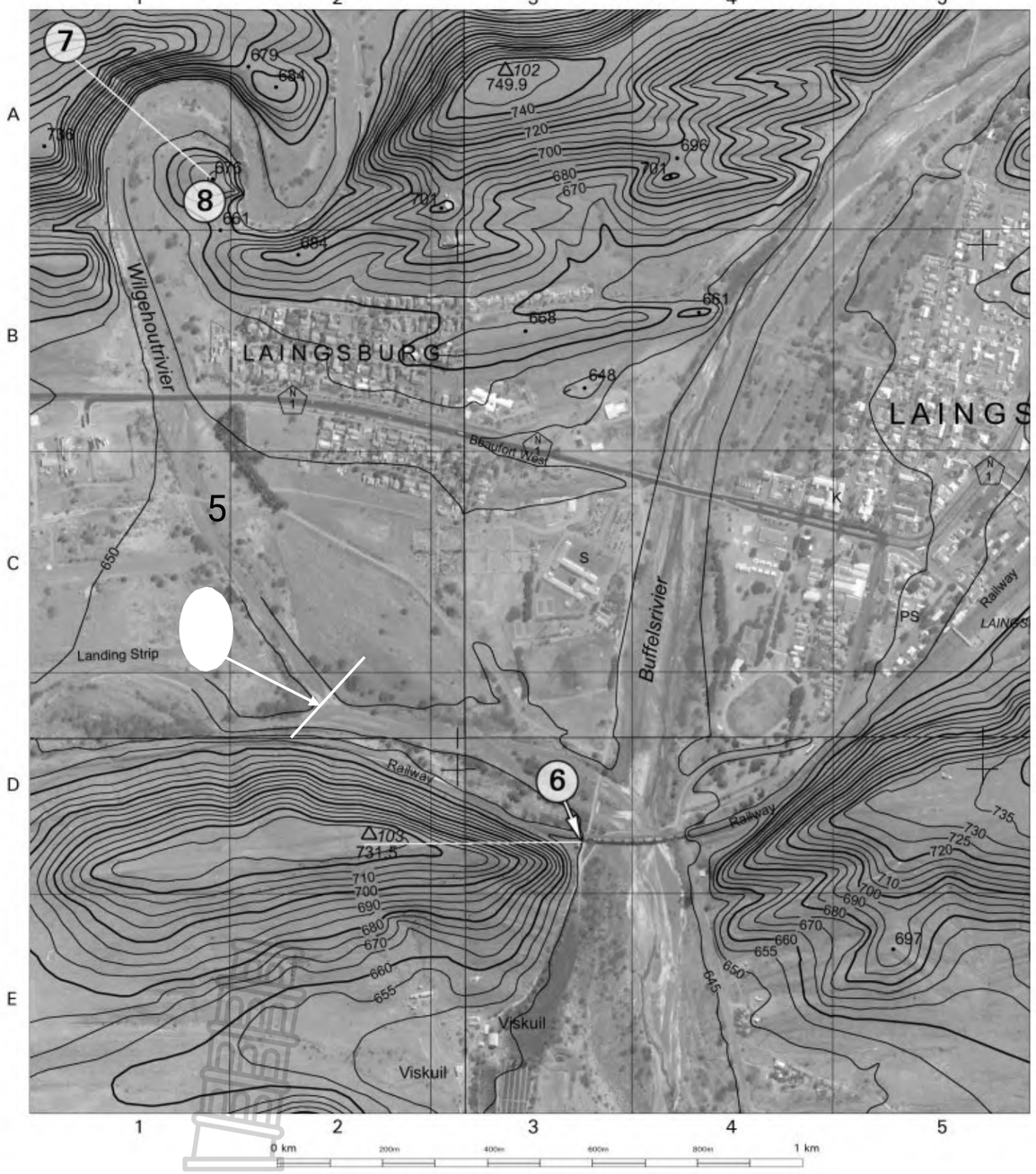
REFERENCE

National Freeway; National Route
Arterial Route
Main Road
Secondary Road; Bench Mark
Other Road; Bridge
Track and Hiking Trail
Railway; Station or Siding
Other Railway; Tunnel
Embankment; Cutting
Power Line
Built-up Area (High, Low Density)
Buildings; Ruin
Post Office; Police Station; Store
Place of Worship; School; Hotel

International Boundary and Beacon
Provincial Boundary
Protected Area
Perennial River
Perennial Water
Non-perennial River
Non-Perennial Water
Dry Water Course
Dry Pan
Marsh and Vlei
Pipeline (above ground)
Water Tower; Reservoir; Water Point
Coastal Rocks
Prominent Rock Outcrop

Fence; Wall
Windpump; Monument
Communication Towes
Mine Dump; Excavation
Trigonometrical Station; Marine Beacon
Lighthouse and Marine Light
Cemetery; Grave
Erosion; Sand
Woodland
Cultivated Land
Orchard or Vineyard
Recreation Ground
Row of Trees
Original Farms

EXTRACT FROM 3320BB 17,18,22,23 LAINGSBURG ortho-rectified image 1:10 000



CONTOUR INTERVAL 5 METRES - KONTOERTUSSENRUIMTE 5 METER

VERKLARING

Nasionale Deurpad; Nasionale Roete
Hoofverkeersroete
Hoofpad
Sekondêre Pad; Hoogtemerk
Ander Pad; Brug
Dowwe Pad en Voetslaanpad
Spoorweg; Stasie of Sylyn
Ander Spoorweg; Tonnel
Opvulling; Deurgrawing
Kraglyn
Beboude Gebied (Hoë, Lae Digtheid)
Geboue; Murasie
Poskantoor; Polisiestasie; Winkel
Plek van Aanbidding; Skool; Hotel

Internasionale Grens en Baken
Provinsiale Grens
Bewarings Gebied
Standhoudende Rivier
Standhoudende Water
Nie-standhoudende Rivier
Nie-standhoudende Water
Droë Loop
Droë Pan
Moeras en Vlei
Pyplyn (bo die grond)
Watertoring; Reservoir; Waterpunt
Kuslynrotse
Prominente Klipbank

Draadheining; Muur
Windpomp; Monument
Kommunikasietoring
Mynhoop; Uitgrawing
Peilbaken; Seevaartbaken
Vuurtoring en Seevaartlig
Begraafplaas; Graf
Erosie; Sand
Beboste Gebied
Bewerkte Land
Boord of Wingerd
Ontspanningsterrein
Rye Bome
Oorspronklike Plase