education
Department of Education
FREE STATE PROVINCE

# GEOGRAPHY

## 2025


## PRACTICAL TASK


## GRADE 12

## MARKS: 60

## TIME: 1 HOUR

## SURNAME AND INITIALS: _____

| QUESTION | Q1 | Q2 | Q3 | TOTAL |
|---|---|---|---|---|
| MARKER | | | | |
| MODERATOR | | | | |
| TOTAL | 20 | 24 | 16 | 60 |

**This task consists of 9 pages.**

**RESOURCE MATERIAL:**

1. An extract of an ALL-INCLUSIVE topographical map and orthophoto map **2829 DB LADYSMITH**.
   NOTE: The resource material must be collected by the schools for their own use.

**INSTRUCTIONS AND INFORMATION:**

1. Write your SURNAME AND INITIALS in the spaces provided on the cover page.
2. Answer ALL the questions in the spaces provided on this question paper.
3. You are supplied with an ALL-INCLUSIVE topographical map and orthophoto map of a part of the mapped area.
4. You must hand in the map to the invigilator at the end of this examination session.
5. Show ALL calculations. Marks will be allocated for calculations.
6. You may use a non-programmable calculator.



**0RIENTATION TO THE MAP**



Ladysmith is located on the banks of the Klip River with the central business district and a large part of the residential areas located within the flood basin of the river. It is on the foothills of the Drakensberg mountains, about 26 km from the Van Reenen's Pass.
The town has a subtropical highland climate, with warm summers and cool, dry winters. It borders on a humid subtropical climate. The average annual precipitation is 639 mm , with most rainfall occurring during summer.

Since it was established the town has suffered severely from flooding of the Klip River. During the 110 years up to 1997 with the completion of the Qedusizi Dam,29 serious floods occurred. Minor flooding occurred almost every year.

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

| **ENGLISH** | **AFRIKAANS** |
|---|---|
| Dipping tanks | Dipbakke |
| Fire breaks | Voorbrande |
| Landing strip | Landingstrook |
| Stadium | Stadion |
| Station | Stasie |
| Sports club | Sport Klub |

**QUESTION 1: MAP SKILLS AND CALCULATIONS:**

1.1 The questions below are based on the 1:50 000 topographical map 2829 DB LADYSMITH, as well as the orthophoto map 2829 DB6 LADYSMITH as part of the mapped area. Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) in the block next to each question.

1.1.1 Ladysmith is a town in the …….. province.

A Free State
B Kwazulu Natal
C Gauteng
D North West

1.1.2 Ladysmith is prone to flooding because …….

A it is located in the flood plain.
B there is high rainfall.
C it receives frontal rainfall
D receives rainfall in summer.

1.1.3 The town north west of Ladysmith is …..

A Colenso
B Harrismith
C Newcastle
D Glencore

1.1.4 The real distance from 7 to 9 on the orthophoto map is ……..

A 15cm
B 1.5km
C 7.5km
D 15km

(4)

1.2 **MAP SKILLS AND CALCULATIONS:**

1.2.1 Determine the coordinates of the feature at **I** on the topographic map.

_____

_____ (2x2) (4)

1.2.2 Calculate the difference in height between the benchmark **1056.2** (block D1) and trig beacon **324** (block E2) on the topographic map.

_____ (1x2) (2)

1.2.3 What is the distance in meters from benchmark **1056.2** (block D1) and trig beacon **324** (block E2) on the topographic map.

_____ (1x2) (2)

1.2.4 Work out the gradient between benchmark **1056.2** (block D1) and trig beacon **324 (**block E2) on the topographic map.

_____ (3x1) (3)

1.2.5 Refer to the orthophoto and calculate the area of the rectangle marked **6 in km**.
Show all calculations.

_____

_____

_____

_____

_____

_____ (5x1) (5)

**[20]**



**QUESTION 2: MAP INTERPRETATION:**

2.1 The questions below are based on the 1:50 000 topographical map 2829 DB LADYSMITH, as well as the orthophoto map 2829 DB6 LADYSMITH as part of the mapped area. Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) in the block next to each question.

2.1.1 The man-made feature at **J** (block C4) is a ….

A mine dump.
B embarkment.
C dry pan.
D excavation.

2.1.2 The fluvial feature at **G** (block D4) is a ….

A meander loop
B cultivated land
C slip off
D oxbow lake

2.1.3 The slope at 7 on the orthophoto is …..

A steep
B gentle
C gradual
D vertical

(3)

| 2.2 | Refer to the table below showing the climate of Ladysmith |
|---|---|

**Climate data for Ladysmith (1981–2010)**

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean daily maximum °C | 29.5 | 28.5 | 27.7 | 25.1 | 22.7 | 20.1 | 20.6 | 22.7 | 25.3 | 26.1 | 27.4 | 29.2 | 25.5 |
| Mean daily minimum °C | 16. | 16.4 | 15.0 | 10.9 | 6.4 | 2.0 | 2.5 | 6.0 | 10.0 | 12.3 | 14.4 | 16.0 | 10.7 |
| Average rainfall mm | 145 | 106 | 90 | 39 | 14 | 6 | 5 | 26 | 38 | 77 | 91 | 112 | 749 |
| Average rainy days | 14.4 | 11.8 | 11.3 | 6.1 | 2.9 | 1.4 | 1.4 | 3.2 | 4.8 | 9.7 | 12.5 | 14.1 | 93.6 |

2.2.1 Which month recorded the lowest daily minimum temperatures?

_____ (1X1) (1)

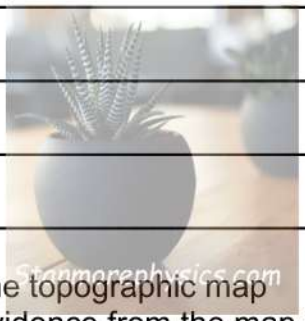
2.2.2 Provide evidence from the table that proves that Ladysmith receives seasonal rainfall

_____

_____

_____

_____ (2X2) (4)




2.2.3 Refer to the topographic map
Provide evidence from the map that shows that Klip River is in its lower course.

_____

_____

_____ (2X2) (4)

2.2.4 Identify the drainage pattern displayed by the streams in block **A1.**

_____

_____ (1X2**)** (2)

2.2.5 What is the underlying rock structure of the drainage pattern identified in question 2.2.4

_____ (1X2**)** (2)

2.2.6 Account for the location of the rifle range in block **E1**.

_____

_____ (1x2) (2)

**2.3** Refer to the orthophoto map

**2.3.1** **a**. Is the orthophoto map developed from a vertical or an oblique aerial photograph?

_____

**b**. Provide a reason for your answer in 2.3.1 a**.**

_____ (2x1) (2)

**2.3.2** At which time of the day was the photograph taken?
Provide evidence from the orthophoto map to support your answer.

_____

_____

_____

_____ (2X2) (4)
**(24)**


## QUESTION 3: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.1 Various options are provided as possible answers to the following questions.
Choose the answer and write only the letter (A–D) in the block next to each question.

3.1.1 Consist of grid or cells in rows and columns called pixels.

A spatial data
B attribute data
C polygons
D raster data

3.1.2 Collection of data by a recording device that is not in direct contact with the area…..

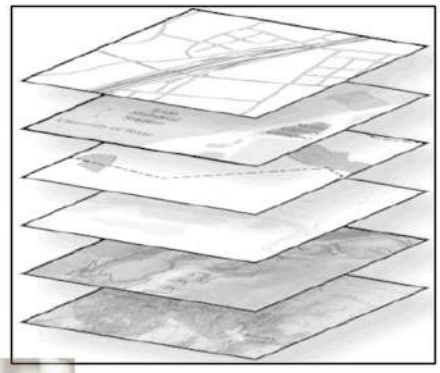
A resolution.
B remote sensing.
C image capturing.
D telescopic capturing.

3.1.3 It is not a component of GIS

A hardware
B software
C method
D climate

(3)

3.2 Refer to the image below.



3.2.1 Identify the GIS process shown in the image above.

_____ (1 x 1) (1)

3.2.2 Explain how the process identified in question 3.2.1 is used in GIS

_____

_____

_____ (2x 1) (2)

3.2.3 Refer to the topographic map
Which layers were analysed that informed the location of the activity at **G.** (block D4)

_____

_____ (2 x 1) (2)

3.2.4 Explain why it was important to analyse the layers mentioned in question 3.2.3.

_____

_____

_____

_____ (1x2) (2)

3.2.5 What challenge might be faced by the people practicing the activity at **G** in block **D4**?

_____ (1x1) (1)

3.2.6 Explain why the orthophoto is referred to as rasta data.

_____ (1x1) (1)

3.2.7 What are the advantages of using rasta data?

_____

_____

_____

_____ (2x2) (4)

**(16)**

**TOTAL: 60**

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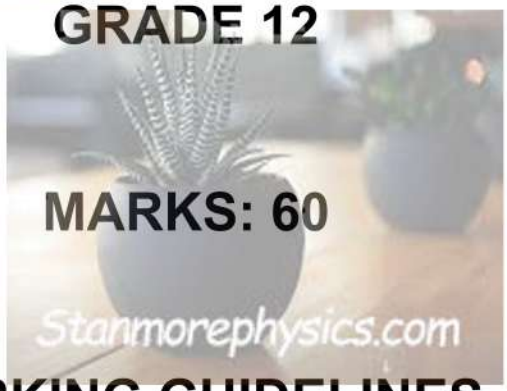


## MARKS: 60

# MARKING GUIDELINES

## QUESTION 1: MAP SKILLS AND CALCULATIONS

1.1

1.1.1 B✓

1.1.2 A✓

1.1.3 B✓

1.1.4 B✓ (4)

1.2 **Map skills and calculations**

1.2.1 28°31'24" S√√ and 29°47'26" E √√ range for seconds (23'' – 25'' S and 24"-26"E) (4)

1.2.2 1172.4m – 1056.2m = 116.2m√ (2)

1.2.3 5.3√cm x 500 = 2650m√ (2600 - 2700) (2)

1.2.4 $\frac{116.2\surd}{2650\surd}$

1: 22.8√ (3)

1.2.5 3cm√ x 0.1
2.2cm√ x 0.1
0.3km√ x 0.22km√
0.066km²√ (5)
**[20]**

## QUESTION 2: MAP INTERPRETATION:

2.1

2.1.1 D✓

2.1.2 A ✓

2.1.3 A✓ (3)

2.2

2.2.1 July✓ (1x1) (1)

2.2.2
- Highest rainfall recorded in summer months.✓✓
- Summer months have more rainy days✓✓
- Low rainfall in the winter months✓✓

**(Any Two)** (2x2) (4)

2.2.3
- Meandering river ✓✓
- River flowing on low altitude ✓✓
- Gradient is gentle✓✓ (2x2) (4)

2.2.4 Dentritic pattern✓✓ (1x2) (2)

2.2.5 Rock with uniform resistance to erosion✓✓ (1x2) (2)

2.2.6
- Away from residential areas to avoid accidents. ✓✓
- Located away from people to avoid noise ✓✓

**[ANY ONE]** (1x2) (2)

2.3

2.3.1 10: slip off slope ✓ (1x1) (1)
11: undercut slope/river cliff ✓

2.3.2
- Always found on the outside of a meander bend. (2x2) (4)
- Due to the strong erosion, the cliff face is usually quite steep and vertical
- often undercut by the water, leading to potential collapses.

**(Any two)**

**[24]**

## QUESTION 3: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.1

3.1.1 D✓

3.1.2 A ✓

3.1.3 D ✓ (3)

3.2

3.2.1 Data layering ✓ (1x2) (2)

3.2.2
- Different sets of data can be compared ✓✓
- Relationships between different sets of data can be established ✓✓
- Analysing different sets of data ✓✓
- Comparisons can assist with future developments ✓✓

**(Any Two)** (2x1) (2)

3.2.3 Drainage✓
Topography/ Relief✓ (2x1) (2)

3.2.4
- Drainage was analysed to check availability of water for irrigation ✓✓
- Topography analysed so to determine the soil type/ soil fertility ✓✓
- Topography used to determine the slope of land ✓✓

(Any one) (1x2) (2)

3.2.5 Flooding. ✓✓
The river may flood and destroy the crops✓✓ (1x2) (2)
**(Any one)**

3.2.6 It consists of cells or grid in rows and columns called pixels✓ (1x1) (1)

3.2.7
- Complicated images can be easily displayed ✓✓
- Easily processed on computers ✓✓
- Easy to manipulate and analyze compared to more complex vector data structures. ✓✓
- Representing continuous surfaces like elevation models, temperature variations, or vegetation density, where each cell holds a single value representing the attribute within that area. ✓✓
- Calculations and operations on raster data can be performed quickly, enabling efficient spatial analysis like overlay analysis and modeling. ✓✓
- Raster data can capture fine details and variations in imagery, making it ideal for displaying complex phenomena like weather patterns or satellite imagery. ✓✓
- Most remote sensing imagery is provided in raster format, making it readily compatible with GIS analysis. ✓✓ (2x2) (4)

**[16]**

**TOTAL: [60]**