Province of the
EASTERN CAPE
EDUCATION

SUBJECT	:	GEOGRAPHY
CODE	:	GEOG
GRADE	:	12
TASK	:	MAPWORK TASK
TOTAL TIME	:	1 HOUR
TOTAL MARKS	:	60
IMPLEMENTATION	:	04 MARCH 2025

School Name _____

Name of Learner _____

QUESTION	QUESTION 1	QUESTION 2	QUESTION 3	TOTAL
Total	**24**	**20**	**16**	**60**
Marker				
School Moderator				
District Moderator				

This Question paper consists of 7 pages, including the cover page.

1. A 1:50 000 topographical map (2829 DB LADYSMITH) and a 1:10 000 orthophoto map (2829 DB 6 LADYSMITH of a part of the mapped area are provided.

2. All questions are based on the 1:50 000 topographical map (2829 DB LADYSMITH), 1:10 000 ortho – rectified image (2829 DB 6 LADYSMITH) and Satellite Image.

3. The area demarcated in RED on the topographic map represents the area covered by the Othophoto map.

4. You may use magnifying glass

5. Kindly hand in ALL the material given to you by the invigilator/educator.

6. This document serves both as a question paper as well as the answer sheet for this task.

Ladysmith (renamed **uMnambithi** in 2024) is a town in the Uthukela District of KwaZulu-Natal, South Africa. It lies 230 kilometres (140 mi) north-west of Durban and 365 kilometres (227 mi) south-east of Johannesburg. Ladysmith is located on the banks of the Klip River ("stone 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 (*Cwb*, according to the Köppen climate classification), with warm summers and cool, dry winters. It borders on a humid subtropical climate (*Cwa*). The average annual precipitation is 639 mm (25 in), with most rainfall occurring during summer.

[Source: https://en.wikipedia.org/wiki/Ladysmith,_KwaZulu-Natal]

QUESTION 1

1.1 MULTIPLE CHOICE QUESTIONS

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

1.1.1 Ladysmith is found in... province

A Western
B Eastern
C KwaZulu-Natal
D Mpumalanga

1.1.2 The feature located in 28°31'20"s and 29°48'50"E represents…on a topographic map

A a Police Station
B a Ruin
C a Place Of Worship
D buildings

1.1.3 The contour line 1080 in **block A5** on the topographic map shows that…in **block A5.**

A height is 1080 meters below sea level
B joins places with the height of 1080 meters
C contour interval is 1080 meters
D the topography is gentle

1.1.4 Direction of Glencoe from **block C2** using N11 national route / road is…

A from Southwest to Northeast
B from Northeast to Southwest
C from North to South
D from South to North

1.1.5 A feature marked **J** on the Topographic Map is a…

A mine dump
B Cemetery
C Embankment
D excavation

(1 x 5) (5)

1.2 Map Calculations

1.2.1 Calculate true bearing from spot height 1159 in **block A1** to trig beacon 1118 in **block A2** on the topographic map. Show all your calculations. (2 x 1)(2)

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……
……

1.2.2 Calculate Magnetic Declination for the present year. Show all your calculations. (5 x 1)(5)

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……
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……

1.2.3 Calculate the area of point **6** that is demarcated by a red rectangle on the Othophoto map. (5 x 1)(5)

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……

1.2.4 (a) Calculate gradient from Spot Height 1092 in **block E2** to **No 7** in **block D3** (**1015 Meters**). Map distance between the two points is 5.3cm. (5 x 1)(5)

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……

(b) Why would you say that the answer of the calculation in question 1.2.4 (a) above is evidence of steep gradient? (1 x 2)(2)

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……
……
……

[24]

QUESTION 2 : MAP INTEPRETATION

2.1 Refer to the Othophoto Map.

2.1.1 (a) Choose one option from those given in brackets. (1 x 2)(2)

(Anabatic / Katabatic) wind would develop from the mountain top in Maiden Castle in **block E2** and blow towards the foot of the mountain **labelled 7** in **block D3**.

……

(b) Refer to the map and describe how the local winds you mentioned in question 2.1.1(a) would occur. (2 x 2)(4)

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……

……

2.1.2 The area in **block D1** on the Othophoto map is not suitable for construction of buildings. Support the statement above by quoting evidence from the map. (2 x 2)(4)

……

……

……

2.1.3 Refer to table 2.1.3 below showing records of temperature in **block A4** and **block C2** on the Othophoto map.

Day	Time	Temperature Recording in °C	
		Block A4	*Block C2*
Day 1	12h00 – 14h00	12°C	10°C
Day 2	12h00 – 14h00	10°C	8°C
Day 3	12h00 – 14h00	18°C	12°C

[Source: Examiner's own sketch]

(a) On what day was the highest temperature difference experienced? (1 x 2)(2)

……

(b) On what day was the lowest temperature difference experienced? (1 x 2)(2)

……

(c) Compare the record of temperature for **block C2** and **block A4** in day 3. (2 x 2)(4)

……

……

(d) Refer to the Othophoto map. (2 x 1)(2)

Quote evidence from the map and explain why temperature records differ in **block C2** and **block A4** .

……

……

……

…… **[20]**

QUESTION 3 GIS

3.1 Refer to the Satellite image of Hurricane Rita in Figure 1.3 below and answer the following questions.

[Source: https://www.gettyimages.com/collections/media-and-sports]

3.1.1 Identify any two data layers visible on the satellite image. (2 x 1)(2)

……

……

3.1.2 State one example of vector data and one example of raster data in figure 3.1 (2 x 1)(2)

……

……

3.1.3 The satellite image in Figure 3.1 has high spatial resolution.

(a) Define the concept spatial resolution. (1 x 2)(2)

.....

.....

(b) Differentiate between low spatial resolution and high spatial resolution. (2 x 2)(4)

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3.1.4 Why is the satellite image in figure 3.1 an example of remote sensing? (1 x 2)(2)

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3.1.5 State TWO advantages of remote sensing. (2 x 2)(4)

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.....

.....

..... **[16]**

GRAND TOTAL : 60

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This Question paper consists of 9 pages, including the cover page.

SPECIFIC INSTRUCTIONS AND INFORMATION FOR THIS TASK

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2. All questions are based on the 1:50 000 topographical map (2829 DB LADYSMITH), 1:10 000 ortho – rectified image (2829 DB 6 LADYSMITH) and Satellite Image.
3. The area demarcated in RED on the topographic map represents the area covered by the Othophoto map.
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QUESTION 1

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D Mpumalanga

B

1.1.2 The feature located in 28°31'20"s and 29°48'50"E represents…on a topographic map

A a Police Station
B a Ruin
C a Place Of Worship
D Buildings

D

1.1.3 The contour line 1080 in block A5 on the topographic map shows that…

A height is 1080 meters below sea level
B joins places with the height of 1080 meters in block A5
C contour interval in block A5 is 1080 meters
D the topography in block A5 is gentle

B

1.1.4 Direction of Glencoe from Block C2 using N11 national route / road is…

A from Southwest to Northeast
B from Northeast to Southwest
C from North to South
D from South to North

A

1.1.5 A feature marked J on the Topographic Map is a…

A mine dump
B cemetery
C embankment
D excavation

D

(1 x 5) (5)

1.2 MAP CALCULATIONS

1.2.1 Calculate true bearing from spot height 1159 **Block A1** to trig beacon 1118 in **Block A2** on the topographic map. Show all your calculations. (1 x 2)(2)

True Bearing = 93°

1.2.2 Calculate Magnetic Declination for the present year. (5 x 1)(5)

Difference In Years = 2025 – 2001
=24 Yrs

Mean Annual Change = 8' x 24yrs
= 192'

Magnetic Declination for 2001 = 21° 03'
- 192'
=24° 15' WOTN

1.2.3 Area = L x B (5 x 1)(5)
L = 3.1 cm x 0.1 = 0.31 km
B = 2.2 cm x 0.1 = 0.22 km
Area = 0.1 x 0.22
= 0,022 km

1.2.4 (a) Calculate gradient from Spot Height 1092 in **Block E2** to **No 7** in **Block D3** (**1015 Meters**). Map distance between the two points is 5.3cm.

(5 x 1)(5)

Gradient = VI / HE
VI = 1092 – 1015 = 77 m
HE = 5.3cm x 100 = 530m
=77 / 77 = 1
530 / 77 = 6.8
G = 1: 6.8

(b) Why would you say that the answer of the calculation in question 1.2.4 (a) above is evidence of steep gradient?
Gradient is less than 1: 10 meaning it is steep. (1 x 2)(2)

[24]

Commented [MT1]: Letters and numbers used to mark/label the map must be **BOLD** on questions

QUESTION 2 : MAP INTEPRETATION

2.1 Refer to the Othophoto Map.

2.1.1 (a) Choose one option from those given in brackets. (1 x 2)(2)

(Anabatic / Katabatic) wind would develop on the mountain top in Maiden Castle in **block E2** and blow toward the foot of the mountain **labelled no 7** in **block D3**.

- Katabatic Winds

(b) Refer to the map and describe how the local wind mentioned in question 2.1.1(a) would occur. (2 x 2) (4)

- Occurs during the **evening / night**.
- Cooling of the Maiden Castle (Mountain Top) due **to temperature inversion.**
- Air also gets **cooled, becomes heavy and dense**.
- Air flows downslope due to gravity from Maiden Castle to the mountain foot at No 7.

2.1.2 The area in **block D1** on the Othophoto map is not suitable for construction of buildings. Support the statement above by quoting evidence from the map. (2 x 2)(4)

- Steep slope would prevent the construction of buildings
- Contour lines close together indicate steep slopes therefore building would be costly.

2.1.3 Refer to table 2.1.3 showing records of temperature in **block A4** and **block C2** on the Othophoto map.

Day	Time	Temperature Recording in °C	
		Block A4	***Block C2***
Day 1	12h00 – 14h00	12°C	9°C
Day 2	12h00 – 14h00	10°C	8°C
Day 3	12h00 – 14h00	18°C	12°C

[Source: Examiner's own sketch]

(a) On which day was the highest temperature difference experienced? (2 x 1)(2)

Highest difference – Day 3

Commented [MT2]: This question can be simplified or rephrased as far as marking guideline is concerned

(b) On which day was lowest temperature difference recorded? (2 x 1)(2)

- Lowest difference = Day 2

(c) Compare the record of temperature in **block C2** and **block A4** in day 3. (2 x 2)(4)

- Temperature in day 3 showed is higher temperatures in block A4.
- Temperatures in day 3 showed is lower temperatures in block C2.

(d) Refer to the Othophoto map. Quote evidence from the map and explain why temperature records differ in block C2 and block A4. (2 x 2)(4)

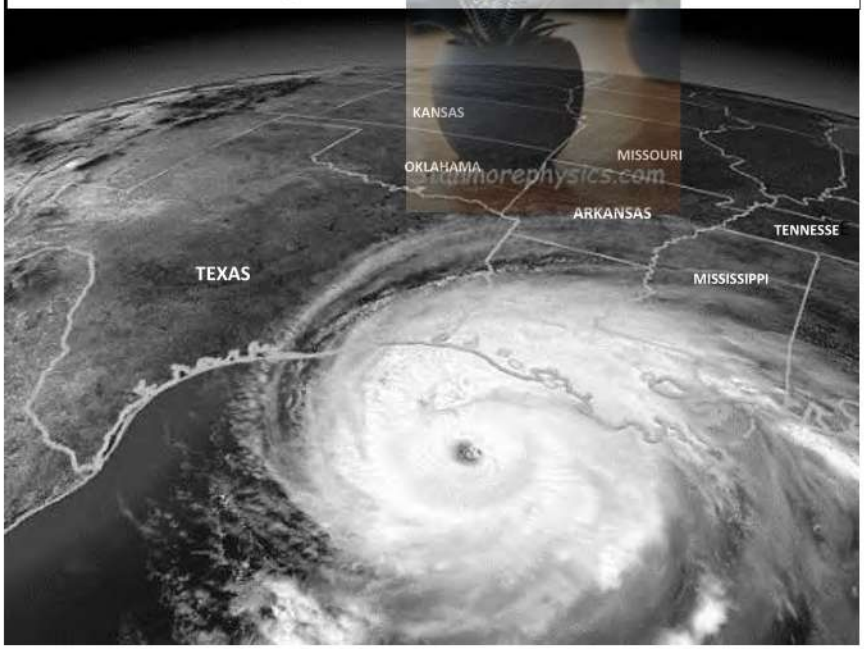
- In C2 high density buildings limit inflow of air. This causes higher temperatures whilst block A4 has low density buildings that allow free flow of air contribute to reduce temperatures.
- Block C2 is situated in the city center whilst Block A4 is situated in the outskirts of the city.
- In Block A4 there is more vegetation that contribute in reducing temperatures whilst block C2 has more built up areas that absorb temperature.

[20]

QUESTION 3 GIS

3.1 Refer to the Satellite image of Hurricane Rita in Figure 1.3 and answer the following questions.

Hurricane Rita threatening the Texas and Louisiana coasts on September 23, 2005.



[**Source: https://www.gettyimages.com/collections/media-and-sports**]

3.1.1 Identify any two data layers visible on the satellite image. (2 x 1)(2)

- Boundaries/ Names
- Clouds data layer/ Tropical Cyclone Data Layer

3.1.2 State one example of vector data and one example of raster data in figure 3.1 (2 x 1)(2)

- Vector data – Country Boundary lines
- Raster data – Tropical Cyclone Image /

3.1.3 The satellite image in Figure 3.1 has high spatial resolution.

(a) Define spatial resolution. (1 x 2)(2)

- Number and Size of pixels required to represent an image.

(b) Differentiate between low spatial resolution and high spatial resolution. (2 x 2)(4)

- **High resolution** – Small and many pixels that represent an image.
- **Low resolution** – Larger and few pixels that represent an image.

3.1.4 Why is a satellite image in figure 3.1 an example of remotely sensed data? (2 x 1)(2)

- View of a weather system captured with a device (**satellite)** without physical contact (**located far away vertically / Located In Space**).

3.1.5 Discuss two advantages of remote sensing. (2 x 2)(4)

- Data can be collected from places that cannot be accessed easily.
- Provides high resolution spatial data

[16]