KZN DEPARTMENT OF EDUCATION

UGU DISTRICT

PISGAH AND SAKHAYEDWA CLUSTER

GRADE 12

GEOGRAPHY

MAPWORK TASK

MARCH 2025

MARKS: 60
DURATION: 1:30 HR

Name : _____

Date : _____

Grade and Class : _____

INSTRUCTIONS AND INFORMATION

1. This paper consists of THREE questions:

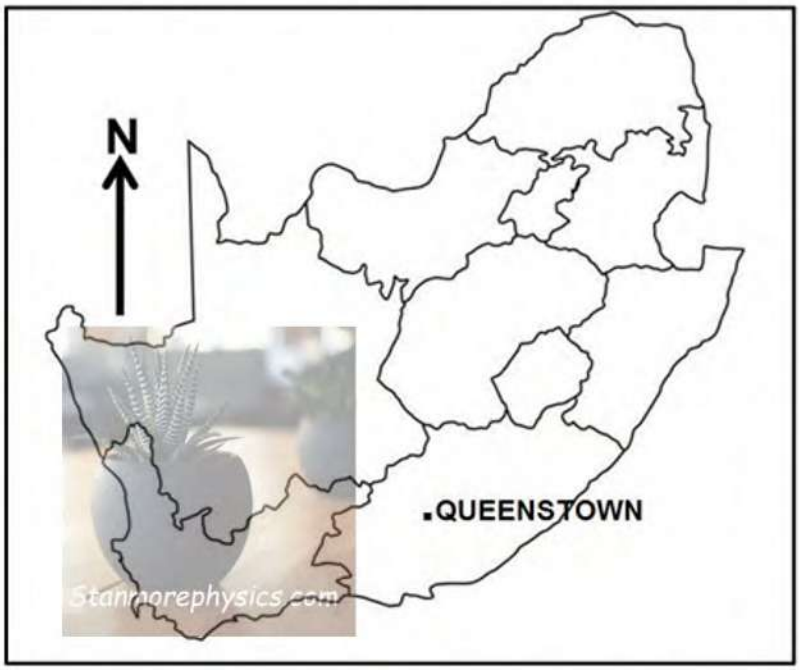
   QUESTION 1: CALCULATIONS/ MAP SKILLS (20 MARKS)

   QUESTION 2: MAP INTERPRETATION (24 MARKS)

   QUESTION 3: GIS (16 MARKS)

2. Answer all THREE questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Units of measurement MUST be indicated in your final answer, e.g. 1 020 hPa, 14 °C and 45 m.
5. You may use a non-programmable calculator.
6. You may use a magnifying glass.
7. Write neatly and legibly.
8. A 1: 50 000 topographic map 3126DD QUEENSTOWN and a 1: 10 000 Orthophoto map 3126DD 1 NOOITGEDACHT are provided.
9. The area demarcated in RED/BLACK on the topographic map represents the area covered by the Orthophoto map.
10. Marks will be allocated for steps in calculations.
11. You must hand in the topographic and Orthophoto map to the invigilator at the end of this examination session.

GENERAL INFORMATION ON QUEENSTOWN



Coordinates: 31°54'S; 26°53'E

Queenstown (officially known as Komani) is a town in the Eastern Cape in South Africa. The town lies on the banks of the Komani River which forms part of the Great Kei river system and has a refreshing climate and an abundant water supply from the surrounding rugged mountains.

The area's annual average temperature is 18,29 °C which is 2,93% lower than the average for South Africa. Queenstown generally receives approximately 90,83 millimetres of precipitation and has 134 rainy days annually.

Winters are short, cold, dry and windy; it is mostly clear year-round.

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

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

ENGLISH	AFRIKAANS
Diggings	Delwery
Mooi River	Mooirivier
Sewerage Works	Rioolwerke
Nature Reserve	Natuurreservaat

QUESTION 1:

1.1 CALCULATIONS/ MAP SKILLS

1.1.1 What is the direction of Thorny Vale from Hopefield North?

A North

B North West

C West

D North East (1 x 1) (1)

1.1.2 The scale of 1:50 000 shows a … area and … detail as it is a smaller scale than 1: 10 000.

(i) larger
(ii) smaller
(iii) less
(iv) more

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

1.1.3 The contour interval on the Orthophoto map is…

A. 5M
B. 10M
C. 25M
D. 20M (1 x1) (1)

1.1.4 In which province is the town shown on the map?

A. KwaZulu-Natal.
B. Western Cape.
C. Eastern Cape. (1 x 1) (1)
D. North West.

1.2 CALCULATIONS

1.2.1 Calculate the difference in height between **6** in block **D4** and **7** in spot height 1567 in block **D2** on the orthophoto map. (1 x 1) (1)

_____

_____

1.2.2 Calculate the Straight line distance in Metres **(M)** between **6** in block **D4** and **7** in spot height 1567 in block **D2** on the orthophoto map. (1 x2) (2)

_____

_____

_____

_____

1.2.3 Use the information in **1.2.1** and **1.2.2** to calculate the Average gradient. (1x2) (2)

Formula: $Avarage\ gradient = \frac{Vertical\ Interval\ (VI)}{Horizontal\ Equivalent\ (HE)}$

_____

_____

_____

_____

1.2.4 Determine the slope of the gradient calculated in **1.2.3** (1 x1) (1)

_____

1.2.5 Calculate the area covered by the Orthophoto map on the Topographic map in km. (5)

Formula: ***Area = Length x Breadth***

_____

_____

_____

_____

_____

1.2.6 Calculate the Magnetic Declination of Queenstown for the **current (2025)** year. (5)

Difference in years : _____

Mean Annual change: _____

Total change: _____

MD for current year : _____

[20]

QUESTION 2: MAP INTERPRETATION

2.1 Refer to the information sheet and topographical map to answer the following questions.

2.1.1 a) Does the area of Queenstown receive seasonal or annual rainfall? (1x1) (1)

_____

b) Quote ONE evidence from the information sheet and TWO pieces of evidence from the topographic map support your answer in **QUESTION 2.1.1 a)** above. (3x1) (3)

_____
_____
_____
_____
_____

2.1.2 Refer to block **E2/3** on the Orthophoto map and…

a) Identify winds that blow down the valley at night. (1x1) (1)

_____

b) Give a reason why these winds occur at night. (1x2) (2)

_____
_____
_____
_____

2.1.3 As a result of winds mentioned in **QUESTION 2.1.2 a)** above smog is likely to occur.

a) Define the term smog.

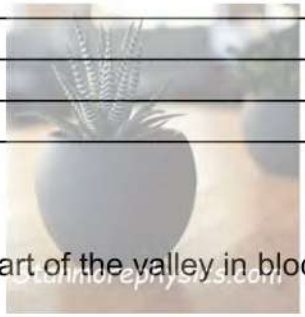
(1x2) (2)

_____
_____
_____

b) Explain TWO negative effects of smog on the people living in the valley.

(2x2) (4)

_____
_____
_____
_____



2.2

2.2.1 The warmest part of the valley in block **E2/3** on the Orthophoto map is a/an ....

A Frost pocket
B Valley
C Thermal belt
D Slope (1 x 1) (1)

2.2.2 The drainage pattern in block **C5** on the topographic map is…

A. Trellis.
B. Dendritic.
C. Radial.
D. Rectangular. (1 x 1) (1)

2.2.3 Describe the underlying rock structure that is responsible for the drainage pattern mentioned in **2.2.2** (1 x2) (2)

_____
_____

2.2.4 The river in block **B5** on the topographic map is a/an… river. (1x1) (1)

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

2.2.5 Refer to block **B5** on the Topographic map. The area has a high surface run-off rate and less infiltration. Discuss any **TWO** factors leading to the high surface run-off rate in the area. (2x2) (4)

_____
_____
_____
_____

2.2.6 Refer to the Lesseyton River in block **D4** on the Topographic map:

A) In which direction is the river flowing? (1x1) (1)

_____

B) Does the river flow in a Turbulent or Laminar flow? (1x1) (1)

_____

C) Give the evidence from the map to support your answer in **B**. (1x2) (2)

[24]

3.1 GEOGRAPHICAL INFORMATION SYSTEM (GIS)

3.1.1 Refer to block **B1** and choose the correct answer from the brackets.

a) The human-made polygon feature is (**road; cultivated land**)

_____ (1)

b) A natural line feature is (**road; river**)

_____ (1)

c) The features mentioned in 3.1.1 a) and 3.1.1 b) represent (**vector; raster**) data.

_____ (1)

3.1.2 Refer to the orthophoto map provided:

a) Does the map display high spatial resolution or low spatial resolution?

_____(1x1) (1)

b) Give a reason for your answer in ***3.1.2. a***. (1x1) (1)

c) How would the high resolution map assist a tourist in navigating the area covered by the orthophoto map? (1x2) (2)

3.1.3 The coordinates for spot height 1438 in block **C3** are: $31^0$47'59" S; $26^0$47'15" E.

a) Is the information above an example of *spatial* or *attribute data*? (1x1) (1)

b) Give a reason for your answer in 3.1.3. a. (2x1) (2)

3.2

3.2.1 Define *buffering*. (2)

3.2.2 Rural areas have lower temperatures than urban areas. Give **TWO** reasons for the difference in temperatures evident in block **B1** on the topographic map. (2x2) (4)

[16]

GRAND TOTAL: 60

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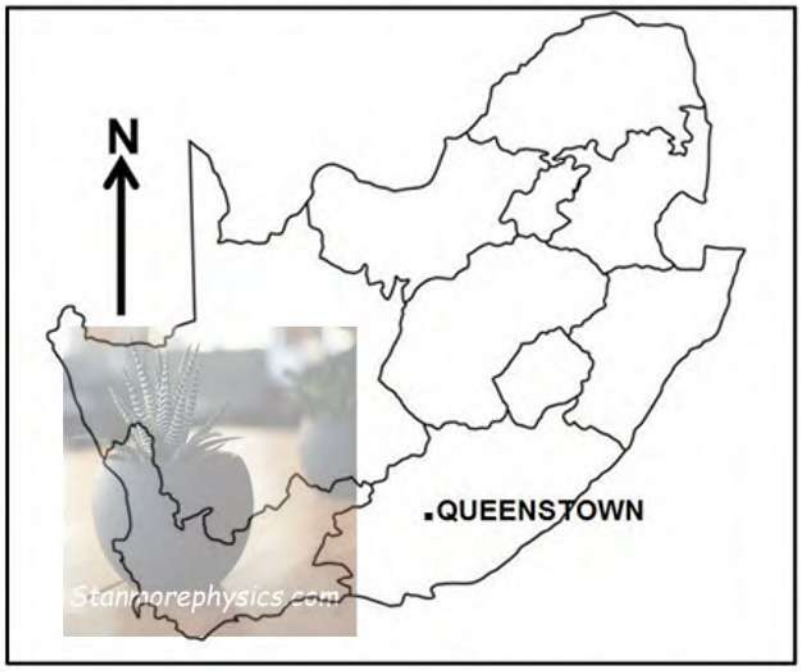

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QUESTION 1:

1.1 CALCULATIONS/ MAP SKILLS

1.1.1 What is the direction of Thorny Vale from Hopefield North?

A North

B North West

C West

D North East

(1 x 1) (1)

B √

1.1.2 The scale of 1:50 000 shows a … area and … detail as it is a smaller scale than 1: 10 000.

(i) larger
(ii) smaller
(iii) less
(iv) more

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

(1 x 1) (1)

A √

1.1.3 The contour interval on the Orthophoto map is…

A. 5M

B. 10M

C. 25M

D. 20M

(1 x1)(1)

B √

1.1.4 In which province is the town shown on the map?

A. KwaZulu-Natal.
B. Western Cape.
C. Eastern Cape.
D. North West.

(1 x 1) (1)

C √

1.2 CALCULATIONS

1.2.1 Calculate the difference in height between **6** in block **D4** and **7** in spot height 1567 in block **D2** on the orthophoto map. (1 x 1) (1)

D=1567m-1420m

= 147m √

1.2.2 Calculate the Straight line distance in Metres**(M)** between **6** in block **D4** and **7** in spot height 1567 in block **D2** on the orthophoto map. (1 x2) (2)

Straight Line Distance = Map Distance X Map Scale

=9,5 cm √ **X 100** **(range 9,4cm-9,6cm)**

= 950 m √ **(range 940m-960m)**

1.2.3 Use the information in ***1.2.1*** and ***1.2.2*** to calculate the Average gradient. (1x2) (2)

Formula: $Avarage\ gradient = \frac{Vertical\ Interval\ (VI)}{Horizontal\ Equivalent\ (HE)}$

G = $\frac{147}{950}$ √

= 1: 6,46 √

1.2.4 Determine the slope of the gradient calculated in ***1.2.3*** (1 x1) (1)

Steep. √

1.2.5 Calculate the area covered by the Orthophoto map on the Topographic map in km. (5)

Formula: ***Area = Length x Breadth***

L = 4,2cm√ **X 0,5 (range 4,1 cm- 4,3 cm)**

= 2,1 km√ **(range 2,05 km-2,15km)**

B=3,8cm √ **X 0,5 (range 3,7cm-3,9)cm**

=1,9 km√ **(range 1,85km-1,95 km)**

A= 2,1 km X 1,9 km

= 3,99 km² √ **(range 3,79 km²- 4,19 km²)**

1.2.6 Calculate the Magnetic Declination of Queenstown for the ***current (2025)***year. (5)

Difference in years : 2025 – 2017 = 8 years √

Mean Annual change : 10' westwards √

Total change : 8 X 10' = 80' √

MD for current year : 26° 25' + 1 °20' √

=27° 45' west of true north √

[20]

QUESTION 2: MAP INTERPRETATION

2.1 Refer to the information sheet and topographical map to answer the following questions.

2.1.1 a) Does the area of Queenstown receive seasonal or annual rainfall? (1x1) (1)

Seasonal √

b) Quote ONE evidence from the information sheet and TWO pieces of evidence from the topographic map support your answer in **QUESTION 2.1.1 a)** above. (3x1) (3)

Many reservoirs √

Many dams/ perennial water √

Many non- perennial rivers √

Many wind pumps √ **(ANY THREE)**

2.1.2 Refer to block **E2/3** on the Orthophoto map and…

a) Identify winds that blow down the valley at night. (1x1) (1)

Katabatic √

b) Give a reason why these winds occur at night. (1x2) (2)

Land cools off due to terrestrial radiation √

Cold air becomes dense and subsides √

Due to gravitational force √ **(ANY ONE)**

2.1.3 As a result of winds mentioned in **QUESTION 2.1.2 a)** above smog is likely to occur.

a) Define smog. (1x2) (2)

Combination of smoke and fog. √ √ **(concept)**

b) Explain TWO negative effects of smog on the people living in the valley. (2x2) (4)

May cause respiratory diseases. √ √ **(accept examples)**

May cause accidents due to poor visibility on the road √ √

May result to acid rain that will destroy crops √ √ **(ANY TWO)**

2.2

2.2.1 The warmest part of the valley in block **E2/3** on the Orthophoto map is a/an ....

A Frost pocket
B Valley
C Thermal belt
D Slope (1 x 1) (1)

C √

2.2.2 The drainage pattern in block **C5** on the topographic map is…

A. Trellis.
B. Dendritic.
C. Radial.
D. Rectangular. (1 x 1) (1)

B √

2.2.3 Describe the underlying rock structure that is responsible for the drainage pattern mentioned in **2.2.2** (1 x2)(2)

Massive igneous rock resistant to erosion √ √

Horizontal sedimentary rock resistant to erosion √ √ **(ANY ONE)**

2.2.4 The river in block **B5** on the topographic map is a/an… river. (1x1) (1)

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

D √

2.2.5 Refer to block **B5** on the Topographic map. The area has a high surface run-off rate and less infiltration. Discuss any **TWO** factors leading to the high surface run-off rate in the area. (2x2) (4)

Vegetation cover is less √ √

Steep gradient √ √

Porosity of rocks less √ √

Permeability of rocks less √ √ **(ANY TWO)**

2.2.6 Refer to the Lesseyton River in block **D4** on the Topographic map:

A) In which direction is the river flowing? (1x1) (1)

West √

B) Does the river flow in a *Turbulent* or *Laminar flow*? (1x1) (1)

Laminar flow √

C) Give the evidence from the map to support your answer in **B**. (1x2) (2)

Gradient is gentle √ √

The contour lines are far apart √ √ **(ANY ONE)**

[24]

3.1 GEOGRAPHICAL INFORMATION SYSTEM (GIS)

3.1.1 Refer to block **B1** and choose the correct answer from the brackets.

a) The human-made polygon feature is (**road; cultivated land**)

Cultivated land √ (1)

b) A natural line feature is (**road; river**)

River √ (1)

c) The features mentioned in 3.1.1 a) and 3.1.1 b) represent (**vector; raster**) data.

Vector Data √ (1)

3.1.2 Refer to the orthophoto map provided:

a) Does the map display high spatial resolution or low spatial resolution?

High spatial resolution √ (1x1) (1)

b) Give a reason for your answer in ***3.1.2. a***. (1x1) (1)

Images are clear and detailed √

Images are made of many small pixels √ **(ANY ONE)**

c) How would the high resolution map assist a tourist in navigating the area covered by the orthophoto map? (1x2) (2)

Tourist will be able to identify/find places quickly. √ √

This will save travelling costs . √ √

And reduce travelling time. √ √ **(ANY ONE)**

3.1.3 The coordinates for spot height 1438 in block **C3** are: $31^0$47'59"S; $26^0$47'15"E.

a) Is the information above an example of *spatial* or *attribute data*. (1x1) (1)
Spatial data √ √

b) Give a reason for your answer in 3.1.3. a. (2x1) (2)
It gives a location of a place √ √
It uses coordinates/ numbers √ √

3.2

3.2.1 Define *buffering*. (2)
Refers to the process of demarcating an area around a feature. √ √
(concept)

3.2.2 Rural areas have lower temperatures than urban areas. Give **TWO** reasons for the difference in temperatures evident in block **B1** on the topographic map. (2x2) (4)
Rural areas have more vegetation cover √ √
There is low building density √ √
There are no geometric shapes of buildings √ √
There are non-perennial rivers and waters that are a moderating effect√ √

There are no artificial surfaces √ √

There are no efficient drainage systems √ √ **(ANY TWO)**
[16]

GRAND TOTAL: 60