education

Department:
Education
PROVINCE OF KWAZULU-NATAL

UTHUKELA DISTRICT : **DRIEFONTEIN CLUSTER**

GEOGRAPHY

MAPWORK TASK

MARCH 2025

GRADE 10

TIME : 1½ HOURS

MARKS : 60

This Question paper consists of 7 pages including cover page.

INSTRUCTIONS AND INFORMATION

1. A 1 : 50 000 topographic map **2931CA VERULAM** and a 1 : 10 000 orthophoto map **2931 CA 11 VERULAM** are provided.

2. The area demarcated in **RED/BLACK** on the topographic map represents the area covered by the orthophoto map

3. Marks will be allocated for steps in calculations.

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

5. Do not leave your final ANSWER in a fraction form.

6. Units of measurement MUST be indicated in your final answer, e.g. 1 020 hPa, 14 °C and 45 m.

7. Use a non-programable calculator.

8. Use the correct numbering system as it used in the question paper.

9. Write neatly and legibly.

GENERAL INFORMATION ON VERULUM
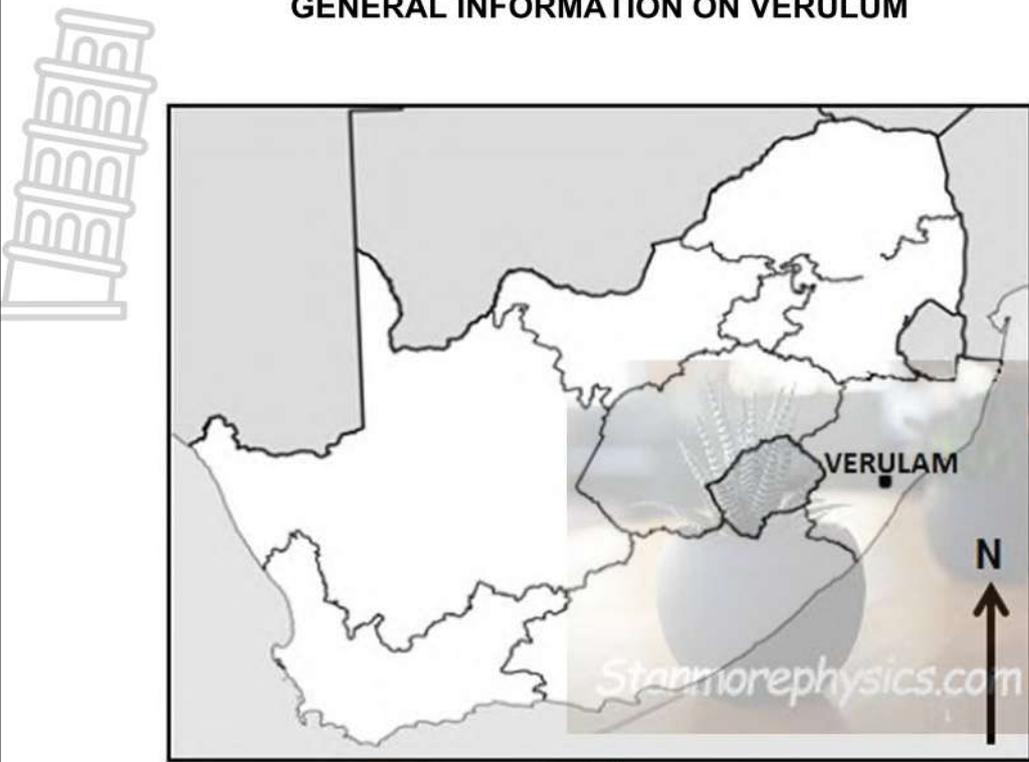
Coordinates: 29°35'S; 31°0'E

The town of Verulam is 170 years old and located to the north of Durban in KwaZulu Natal. It has a population of over 60 000 people. Verulam consists of densely populated residential and industrial areas like Canelands. On the outskirts are large farming areas where the main crop grown is sugar cane. There has been slow but steady progress in modernising the town by providing improved infrastructure to the rural areas.

The Hazelmere Dam, just a few kilometres north of Verulam, is the main source of water for the area and is used for a variety of activities, such as watersports and fishing. One of the main rivers that flows through Verulam is the Mdloti River in which the Hazelmere Dam has been built. An interesting fact is that Verulam is the only town in the world where the main street (Wick Street) ends in a river.

[Adapted from https://www.google.com/search?q=map+of+verulam]

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

ENGLISH	AFRIKAANS
International airport	Internasionale lughawe
River	Rivier
Bridge	Brug
Furrow	Voor

QUESTION 1:   MAPSKILLS AND CALCULATIONS

1.1   Answer the following questions using both orthophoto and topographic map of Verulam. Write only the **NUMBER** and the **LETTER** that matches the description provided. Example 1.1.5 A.

1.1.1   Verulam is a town located in the province of…

A   Gauteng.
B   KwaZulu-Natal.
C   North West.
D   Free State.

1.1.2   The orthophoto map of Verulam was taken in…. using….aerial photograph.

(i)   the morning
(ii)   midday
(iii)   oblique
(iv)   vertical

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

1.1.3   A contour interval for the orthophoto map is…

A   5 metres.
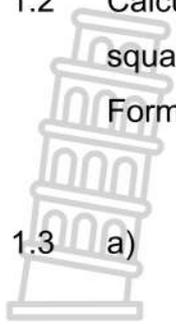B   10 metres.
C   20 metres.
D   25 metres.

1.1.4   The scale of the topographic map is …than that of the orthophoto map and covers a …area.

(i)   5 times larger
(ii)   5 times smaller
(iii)   large.
(iv)   small.

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

                                                                    (4 x 1) (4)

1.2 Calculate the area covered by the orthophoto map on the topographic map in square kilometres. Show ALL calculations.

Formula

AREA = Length x Breadth

(5)

1.3 a) Find the gradient between spot height **98** in block **C4** and spot height **68** in block **C5** on the orthophoto map. Show ALL calculations

Formula $$\text{Gradient} = \frac{\text{VERTICAL INTERVAL (VI)}}{\text{HORIZONTAL EQUIVELENT (HE)}}$$ (5)

b) Is the calculated gradient steep or gentle? (1)

1.4 Calculate the magnetic declination of Verulam for a year 2025.

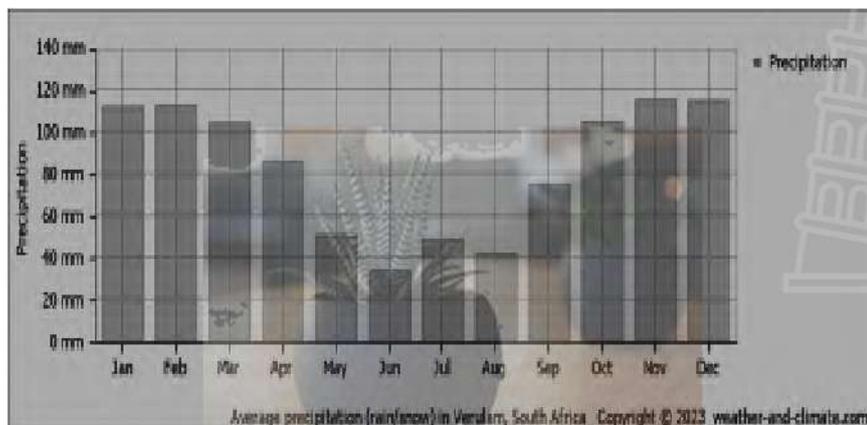Difference in years :

Mean annual change :

Total change :

MD for 2025 : (5)

QUESTION 1 [20]

QUESTION 2: **MAP INTERPRETATION**

2.1 Refer to the graph below showing the amount of precipitation received in Verulam.

Average precipitation (rain/snow) in Verulam, South Africa Copyright © 2023 weather-and-climate.com

2.1.1 Define the term *precipitation*. (1 x 2)(2)

6

2.1.2 In which season *(summer / winter)* does Verulam receives highest precipitation? (1 x 1) (1)

2.1.3 Support your answer in QUESTION 2.1.2. (1 x 2) (2)

2.2 Is uMdloti River in block **D5** on the topographic map a *(perennial / non-perennial)* river? (1 x 1) (1)

Refer to Hazelmere Dam in block **A1** on the topographic map.

2.3 Name THREE economic advantages of Hazelmere Dam in Verulam.

(3 x 2) (6)

2.4 Explain why crop farming is successful in block **B 2** on the topographic map.

(2 x 2) (4)

2.5 Refer to the orthophoto map and the extract below.

As the planet heats up, climate disasters will hit coastal cities and nearby towns with greater force. Durban's recovery from the April 2022 floods highlights the uncertainties such cities face and gives insight into how they can prepare for a sustainable and resilient future.

[https://perfectstorm.theoutlier.co.za/]

2.5.1 Give the term that best describe *"the planet heats up"*. (1 x 1) (1)

2.5.2 The orthophoto map indicates that there are many trees planted to reduce the heats up of the planet. Name the greenhouse gas that is absorbed by plants to lower global temperatures. (1 x 2) (2)

2.5.3 Describe THREE sustainable strategies that can be implemented to reduce the global rise of temperatures. (3 x 2) (6)

[25]

QUESTION 3:   **GIS**

3.1   Study the illustration below on GIS components.
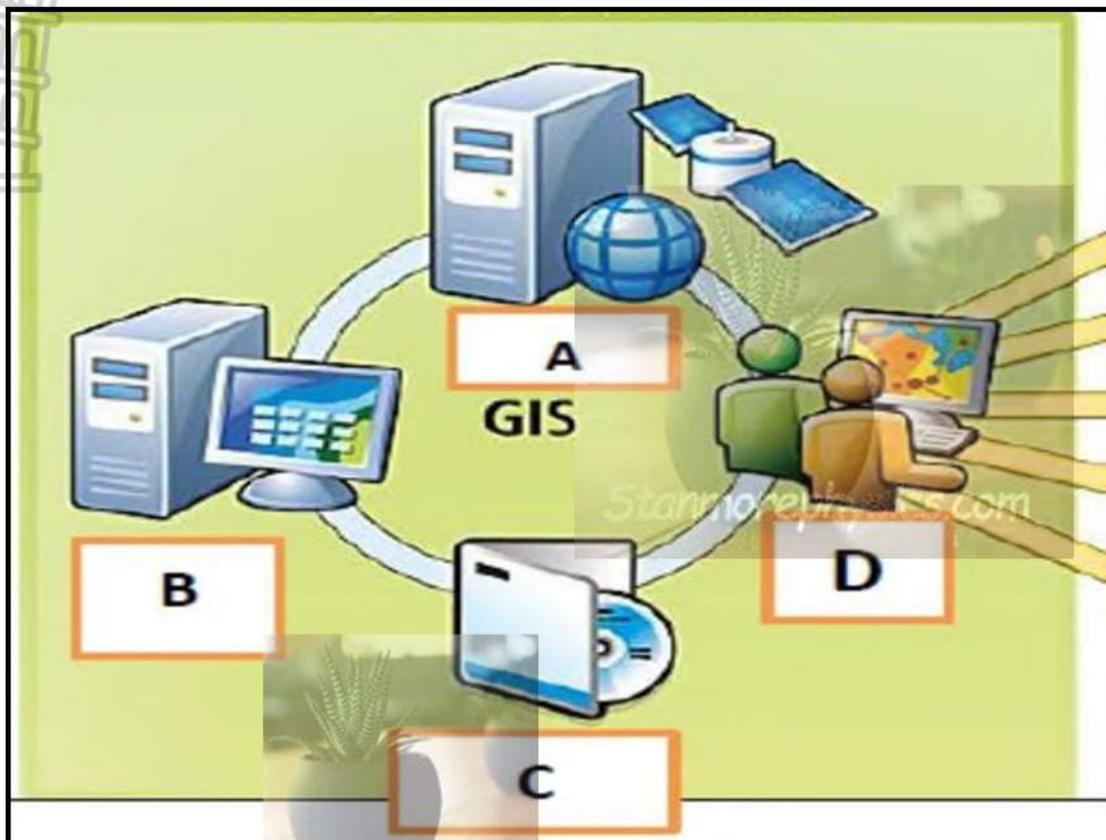
3.1.1 Name GIS component **A** to **D**   (4 x 1) (4)

3.1.2 State ONE role component **D** on GIS.   (1 x 2) (2)

3.2   Differentiate between *attribute data* and *spatial data*.   (2 x 2) (4)

3.3   Identify the following Vector data in block **D4** on the topographic map.

       a)   Polygon feature

       b)   Line feature

       c)   Point feature   (3 x 1) (3)

3.4   Why is the orthophoto map having high resolution?   (1 x 2) (2)

                                                                                                              [15]

                                                                                     GRAND TOTAL   [60]

education
Department:
Education
PROVINCE OF KWAZULU-NATAL

UTHUKELA DISTRICT **: DRIEFONTEIN CLUSTER**

GEOGRAPHY

MAPWORK TASK

FEBRUARY 2025

MARKING GUIDELINE

GRADE 10

TOTAL   : 60

This MARKING GUIDELINE consists of 4 pages including cover page.

QUESTION 1   MAP SKILLS AND CALCULATIONS

1.1   1.1.1 B (1) *(KwaZulu Natal)*

1.1.2 C (1) *(ii and iv)*

1.1.3 A (1) *(5 metres)*

1.1.4 A (1) *(ii and iii)*

1.2   **AREA = L x B**

L	= 3.7cm✔ x 0.5km	*Range [3.6 cm – 3.8 cm]*	
	= *1.85 km*	*Range [1.8 km – 1.9 km]*	
B	= 3.2cm✔ x 0.5km	*Range [3.1 cm – 3.3 cm]*	
	= *1.6 km*	*Range [1.55 km – 1.65km]*	
	= 1.85 km✔ x 1,6 km✔		
	= *2.96 km²*✔	*Range [2.7km² - 3,14 km²]*	(5)

1.3 a)   Gradient = $\frac{VI}{HE}$

VI	=	98 m – 68m		
	=	*30 m*✔		
HE	=	3.6 cm✔ x 100m		
	=	*360 m*✔		
Gr	=	$\frac{30}{360}$		
	=	$\frac{1}{12}$✔		
Gr	=	1: 12 ✔	*Range[1: 11.67 – 1:12.33]*	(5)

b)   Steep (1)   (1 x 1)(1)

1.4	Difference in years	= 2025 – 2016
		= 9 years ✓
	Mean Annual change	= 9' W
	Total Change	= 9' x 9 years
		= 81' W ✓
	MD for 2025	= 25°04'
		+ ✓81'
		= 25°85'✓
		= 26°25' West of the True North✓

(5 x 1) (5)

[20]

QUESTION 2: MAP INTERPRETATION

2.1.1 **Precipitation:** *is the falling down of any form of water from the atmosphere to the earth's surface. [Concept] (2)* (1 x2) (2)

2.1.2 *Summer (1)* (1x1) (1)

2.1.3 *Summer months record highest amount of rainfall (2)/ **Jan, Feb, March, Oct, Nov and Dec show the highest recording***

*Winter months record lowest rainfall month (2)/ **April, May, June, July and August show the lowest recording of precipitation.***

[Any One] (1 x 2) (2)

2.2 *Perennial River (1)* (1x1) (1)

2.3 *Fishing can be practiced (2)*

Water sports (2)

Attract tourist (2)

Provide water for irrigation and improve farming output (2)

Improve swimming skills (2) [Any THREE] (3 x2) (6)

2.4 *Land is flat for an easy use of machines (2)*

Close access to water (2)

Fertile soil (2) as a result of deposition on the inner bank

Access to road (2) for transportation [Any TWO] (2 x 2) (4)

2.5 2.5.1 *Global warming (1)* (1 x 1) (1)

2.5.2 *Carbon dioxide (2) /CO_2* (1 x 2 (2)

2.5.3 Reduce the use of greenhouse gases (2)

Plant more trees / Afforestation (2)

Use solar and wind energy (2)

Education campaign (2)

Impose fine to industries producing gasses that damages the ozone layer (2)

Encourage the use of public transport (2)

[Any THREE]   (3x2) (6)

QUESTION 3: GIS

3.1   3.1.1   A   data (1)

B   hardware (1)

C   software (1)

D   humans/ GIS professionals (1)   (4 x 1) (4)

3.1.2   - Collect data (2)

- Analyze, present and manage data (2)

- Link hardware, software and the data to perform various functions (2)   [Any ONE]   (1 x 2) (2)

3.2   Attribute data: refers to the characteristics of geographic features (2)/ descriptive data (2)

spatial data: refers to the shape and the location of geographical features (2)

[Concept]   (2 x 2) (4)

3.3   a)   Polygon feature: Cultivated land/ excavation (1)

b)   Line feature: river (perennial and non-perennial)/ Road (other road) (1)

c)   point feature: Buildings (1)

(3 x 1) (3)

3.4   It has larger scale (2)

Features are large and clear (2)   [Any One]   (1 x 2) (2)

[15]

[60]