75

Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P2

PREPARATORY EXAMINATION

SEPTEMBER 2017

MARKS: 75

TIME: 1.5 Hours

This question paper consists of 14 pages and 1 page for rough work.

NAME: _____

DIVISION: _____

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RESOURCE MATERIAL

1. An extract from topographic map 2729BD VOLKSRUST (EXTRACT).
2. Orthophoto map 2729 BD 13 VOLKSRUST.
3. **NOTE:** The resource material must be collected by schools for their own use.

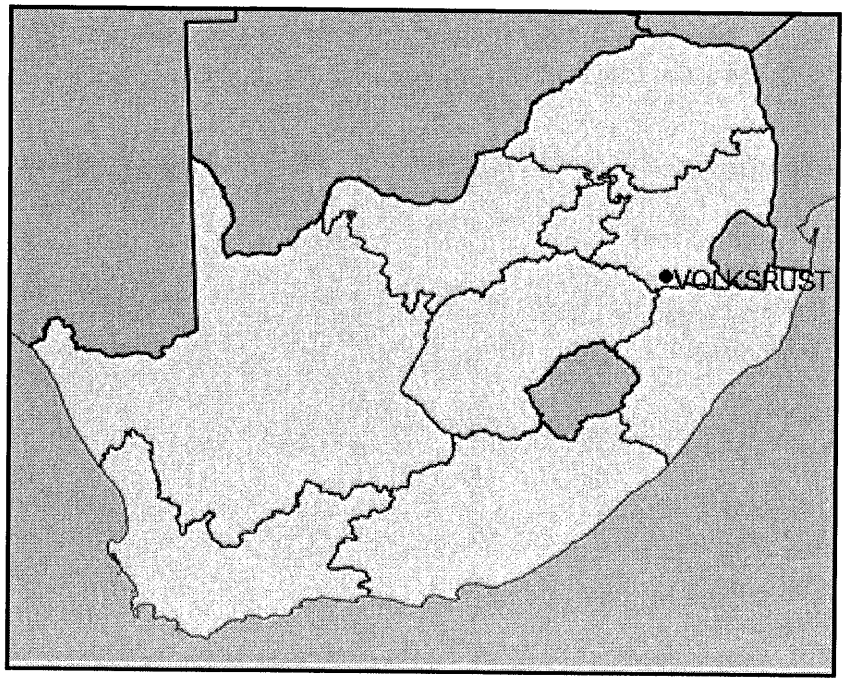
INSTRUCTIONS AND INFORMATION

1. Write your NAME and DIVISION in the spaces on the cover page.
2. Answer ALL the questions in the spaces provided in this question paper.
3. You are provided with a 1 : 50 000 topographic map 2729BD VOLKSRUST (EXTRACT) and an orthophoto map 729 BD 13 VOLKSRUST of a part of the mapped area.
4. You must hand the topographic map and the orthophoto map to the invigilator at the end of this test session.
5. You may use the blank page at the back of this question paper for all rough work and calculations. Do NOT detach this page from the question paper.
6. Show ALL calculations and formulae, where applicable. Marks will be allocated for these.
7. Indicate the unit of measurement in the final answer of calculations.
8. You may use a non-programmable calculator.
9. The area demarcated in red on the topographic map represents the area covered by the orthophoto map.
10. The following English terms and their Afrikaans translations are shown on the topographic map:

ENGLISH	AFRIKAANS
Aerodome	Vliegveld
Diggings	Uitgrawings
Furrow	Voor
Golf Course	Gholfbaan
Rifle Range	Skietbaan
River	Rivier
Sawmills	Saagmeule
Sewage Works	Rioolwerke
Silos	Graansuiers

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GENERAL INFORMATION ON VOLKSRUST



Volksrust is a town in Mpumalanga on the border of KwaZulu-Natal. It is located 240 km southeast of Johannesburg. The town has important beef, dairy, maize, sorghum, wool and sunflower seed industries. Volksrust has an average annual rainfall of 648 mm, with the lowest rainfall (1 mm) in July and the highest rainfall (117 mm) in January. Most of the rain falls in the summer. The average midday temperatures for Volksrust range from 15,9°C in June to 24,3°C in January. June is the coldest period when the mercury can drop to an average of 0,5°C during the night.

Source: https://en.wikepedia.org/wiki/volksrust

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QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1:50 000 topographic map 2729BD VOLKSRUST as well as the orthophoto map as part of the mapped area. 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 The map index/reference of the orthophoto map to the north of Volksrust is ...

A 2729 BD 7 in KwaZulu-Natal.
B 2729 BD 8 in Mpumalanga.
C 2729 BD 8 in KwaZulu-Natal.
D 2729 BD 7 in Mpumalanga.

1.2 The direction of Belfast from benchmark 1677.9 in block I 2 is...

A east north east.
B west north west.
C west south west.
D west north west

1.3 The type of infrastructure found at **8** to **9** on the orthophoto map is a ...

A canal.
B tunnel.
C power line.
D pipe line.

1.4 The type of slope found at **6** on the orthophoto map is a ... slope.

A steep
B terraced
C gentle
D concave

1.5 Recreational feature **7** on the orthophoto map is a ...

A hiking trail.
B soccer field.
C park.
D golf course.

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1.6 The approximate height of the land on which the reservoir in block **D2** is located is … metres.

A 1705
B 1680
C 1700
D 1720

1.7 The contour interval on the orthophoto map is … metres.

A 5
B 10
C 15
D 20

1.8 The land-use zone in block **D2** on the topographic map is known as the …

A industrial zone.
B zone of decay.
C rural-urban fringe.
D commercial zone.

1.9 Volksrust has hilly areas predominantly to the north east and south west and can therefore be regarded as a/an … town.

A gap
B mining
C recreation
D educational

1.10 The predominant (major) street pattern at **L** in blocks **D3/4** on the topographic map was designed for …

A reducing traffic congestion.
B defence purposes.
C easy layout.
D creating aesthetic appeal.

1.11 The pattern of the rural settlement found at **T** in block **J3** is a … settlement.

A nucleated
B isolated
C dispersed
D linear

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1.12 The stream order of the river at **K** in block **A6** on the topographic map is ...

A 4.
B 3.
C 2.
D 1.

1.13 The actual distance of the Volksrust runway in block **D2/3** on the topographic map is ... kilometres.

A 1.4
B 3.8
C 1.8
D 2.4

1.14 The human-made feature **2** on the orthophoto map is a ...

A perennial water.
B sewerage works.
C purification plant.
D water works.

1.15 The stream found at **A** is a non-perennial stream that flows down a steep gradient and is dominated by ... flow.

A turbulent
B laminar
C straight
D meandering

(1 x 15) **[15]**

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QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

2.1 Refer to both the topographic map and the orthophoto map when answering the questions below.

2.1.1 Which one, the topographic map or the orthophoto map, has a larger scale?

_____ (1 x 1) (1)

2.1.2 Give ONE reason to support your answer to QUESTION 2.1.1.

_____

_____

_____ (1 x 1) (1)

2.1.3 Give the grid reference of spot height 1606 in block **I 6** labelled **M**.

_____

_____ (2 x 1) (2)

2.2 Refer to trigonometrical station 235 and spot height 1686 in block **E8**.

2.2.1 Give the true bearing of trigonometrical station 235 from spot height 1686.

_____ (1 x 1) (1)

2.2.2 Is there intervisibility between trigonometrical station 235 and spot height 1686?

_____ (1 x 1) (1)

2.2.3 Give a reason for your answer to QUESTION 2.2.2.

_____

_____ (1 x 1) (1)

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2.3 Refer to the demarcated area in RED on the topographic map which represents the orthophoto map. Use the demarcated area to calculate the surface area of the orthophoto map in km². Show ALL calculations. Marks will be awarded for calculations.

Formula: Area = length × breadth

(5 x 1) (5)

2.4 Locate points **1** and **10** on the orthophoto map.

2.4.1 Calculate the average gradient between points **1** and point **10** on the orthophoto map. Show ALL calculations. Marks will be awarded for calculations.

(5 x 1) (5)

2.4.2 Is the average gradient answer to QUESTION 2.4.1 steep or gentle?

(1 x 1) (1)

2.4.3 Explain why your answer to QUESTION 2.4.2.

(1 x 1) (1)

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2.4.4 The town planners of Volksrust intend to create a viewing site at point **10** with the aim of attracting tourists, however, the steep gradient poses a challenge in the construction of a road to point **A**. Suggest ONE methods of road construction civil engineers can use to overcome this challenge.

_____

_____

_____

_____ (1 x 1) (1)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the general information on page 3 and the topographic map to answer the following questions.

3.1.1 Does Volksrust receive seasonal or perennial rainfall?

_____

_____ (1 x 1) (1)

3.1.2 Give ONE point of evidence from the information sheet and ONE point of evidence from the topographic map to support your answer to QUESTION 3.1.1.

Information Sheet: _____

_____

_____

_____

Topographic Map: _____

_____

_____

_____ (2 x 1) (2)

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3.1.3 Taking your answer to QUESTION 3.1.1 into account, was the orthophoto map taken in summer or winter? Give a reason for your nswer.

_____

_____

_____

_____ (1 + 2) (3)

3.2 Refer to block **J5**

3.2.1 State the general flow direction of the Buffelsrivier River.

_____

_____ (1 x 1) (1)

3.2.2 Give ONE reason from the topographic map for your answer to QUESTION 3.2.1.

_____

_____

_____ (1 x 1) (2)

3.3 Refer to the drainage pattern in block **A6**.

3.3.1 Identify the drainage pattern in block **A6**.

_____ (1 x 1) (1)

3.3.2 State the underlying rock structure associated with this drainage pattern, answer to QUESTION 3.3.1.

_____ (1 x 1) (1)

3.4 If Volksrust had to experience extremely high rainfall over a short period of time, explain how the amount of vegetation would influence the chances of flooding in the north eastern section of the town.

_____

_____

_____ (1 x 2) (2)

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3.5 Refer to block **C10** on the topographic map.

3.5.1 Does the farmer at Wynvale practise large scale or small scale farming?

_____ (1 x 1) (1)

3.5.2 Give ONE reason from the topographic map to support your answer to QUESTION 3.5.1.

_____

_____ (1 x 2) (2)

3.5.3 State ONE physical factor that favours farming in block **C10**.

_____ (1 x 1) (1)

3.5.4 Explain the importance of the rows of trees found around the cultivated lands in block **C1**

_____

_____

_____ (1 x 2) (2)

3.6 The residential area Jubapark on the orthophoto map is a high-income residential area. Give ONE piece of evidence from the orthophoto map to support this statement.

_____

_____

_____ (1 x 1) (1)

3.7 The area around the Amajuba Forest to the south west of the topographic map has important historical significance. Support this statement by using evidence from the topographic map.

_____

_____

_____ (1 x 1) (1)

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3.8 Evaluate possible environmental injustices that could have been caused by the excavation occurring in blocks **C4** and **E3/4**.

_____

_____

_____

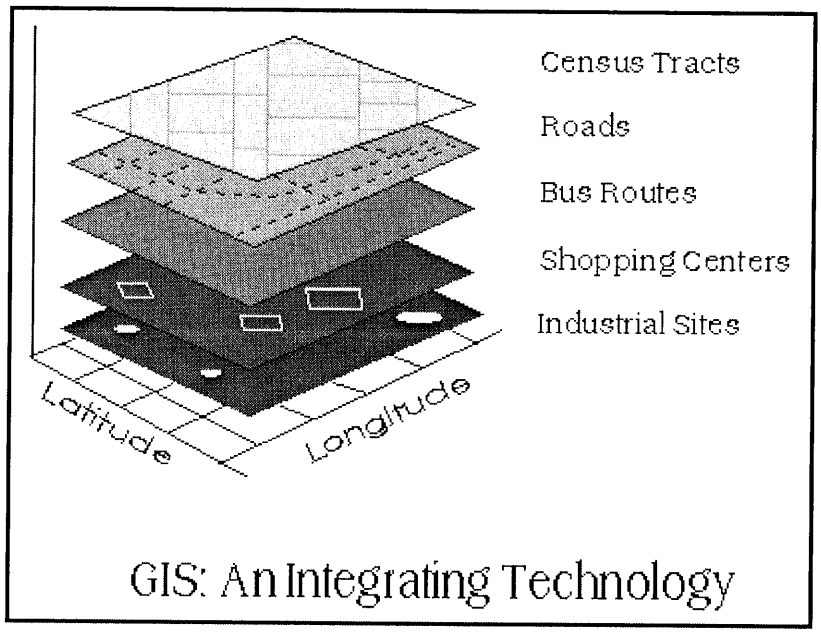
_____

_____ (2 x 2) (4)

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 The diagram below illustrates the concept of data integration. Study the diagram carefully and answer the questions that follow.



4.1.1 Define the term *data integration*.

_____

_____

_____ (1 x 1) (1)

4.1.2 List TWO types of data that a farmer in Volksrust will consider before cultivation.

_____

_____ (2 x 1) (2)

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4.1.3 With reference to the data identified in QUESTION 4.1.3 explain how the farmer at **S** in block **B7** could use the process of data layering to decide on the best location for his farm.

_____

_____

_____ (1 x 2) (2)

4.2 Two grade 12 learners from a school in Volksrust have an assignment on fluvial features and as part of the assignment they have to take photographs of the Papale River Waterfall located at **Y** in block **F6**. One has a 2.0 megapixel camera and the other has a 3.5 megapixel camera. The resolution of the photographs taken by the boys will differ.

4.2.1 Define the term *resolution*.

_____

_____

_____ (1 x 1) (1)

4.2.2 Which one of the cameras will take better quality pictures? Explain your answer.

_____

_____

_____

_____

_____ (1 + 2) (3)

4.3 An urban and regional planner wants to determine the impact that urban sprawl may have in the north western part of the town of Volksrust.

4.3.1 State and define the GIS process that an urban and regional planner would use to limit the impact of urban sprawl in this area.

_____

_____

_____

_____

_____ (2 x 1) (2)

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4.3.2 Suggest how the GIS process identified in QUESTION 4.3.1 will impact positively on the north western part of the town of Volksrust on the primary activities.

_____

_____

_____

_____

_____

_____

_____

_____ (2 x 2) (4)

[15]

TOTAL MARKS: 75

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Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

GEOGRAPHY P2

PREPARATORY EXAMINATION

MARKING GUIDELINE

SEPTEMBER 2017

NATIONAL
SENIOR CERTIFICATE

GRADE 12

MARKS: 75

This marking guideline consists of 12 pages.

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QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1:50 000 topographic map 2729BD VOLKSRUST as well as the orthophoto map as part of the mapped area. 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 The map index/reference of the orthophoto map to the north of Volksrust is ...

A 2729 BD 7 in KwaZulu-Natal.
B 2729 BD 8 in Mpumalanga.
C 2729 BD 8 in KwaZulu-Natal.
D 2729 BD 7 in Mpumalanga.

B✓

1.2 The direction of Belfast from benchmark 1677.9 in block I 2 is...

A east north east.
B west north west.
C west south west.
D west north west

B✓

1.3 The type of infrastructure found between **8** and **9** on the orthophoto map is a ...

A canal.
B tunnel.
C power line.
D pipe line.

C✓

1.4 The type of slope found at **6** on the orthophoto map is a ... slope.

A steep
B terraced
C gentle
D concave

A✓

1.5 Recreational feature **7** on the orthophoto map is a ...

A hiking trail.
B soccer field.
C park.
D golf course.

D✓

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1.6 The approximate height of the land on which the reservoir in block **D2** is located is ... metres.

A 1705
B 1680
C 1700
D 1720

B✓

1.7 The contour interval on the orthophoto map is ... metres.

A 5
B 10
C 15
D 20

A✓

1.8 The land-use zone in block **D2** on the topographic map is known as the ...

A industrial zone.
B zone of decay.
C rural-urban fringe.
D commercial zone.

C✓

1.9 Volksrust has hilly areas predominantly to the north east and south west and can therefore be regarded as a/an ... town.

A gap
B mining
C recreation
D educational

A✓

1.10 The predominant (major) street pattern at **L** in blocks **D3/4** on the topographic map was designed for ...

A reducing traffic congestion.
B avoiding hilly areas.
C easy layout.
D creating aesthetic appeal.

C✓

1.11 The pattern of the rural settlement found at **T** in block **J3** is a ... settlement.

A nucleated
B isolated.
C dispersed.
D linear.

A✓

1.12 The stream order of the river at **K** in block **A6** on the topographic map is ...

A 4.
B 3.
C 2.
D 1.

C✓

1.13 The actual distance of the Volksrust runway in block **D2/3** on the topographic map is ... kilometres.

A 1.4
B 3.8
C 1.8
D 2.4

A✓

1.14 The human-made feature **2** on the orthophoto map is a ...

A perennial water.
B sewerage works.
C purification plant.
D water works.

B✓

1.15 The stream found at **A** is a non-perennial stream that flows down a steep gradient and is dominated by ... flow.

A turbulent
B laminar
C straight
D meandering

A✓

(1 x 15) **[15]**

QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

2.1 Refer to both the topographic map and the orthophoto map when answering the questions below.

2.1.1 Which one, the topographic map or the orthophoto map, has a larger scale?

Orthophoto map ✓ (1 x 1) (1)

2.1.2 Give ONE reason to support your answer to QUESTION 2.1.1.

Orthophoto maps scale is 5 times larger than the scale of the topographic map ✓
Features are larger compared to the topographic map ✓
1:10 000 is a larger scale than 1:50 000✓
[Any ONE] (1 x 1) (1)

2.1.3 Give the grid reference of spot height 1606 in block **I 6** labelled **M**.

27°27'50" S [44" to 56"]✓ 29° 55'40"E[34" to 46"]✓
27° 27' 8"S [27. 7' to 27, 9]✓29° 55'6" E[55. 5' to 55, 7']✓ (2 x 1) (2)

2.2 Refer to trigonometrical station 235 and spot height 1686 in block **E8**.

2.2.1 Give the true bearing of trigonometrical station 235 from spot height 1686.

34° ✓ (Range 33° – 35°) (1 x 1) (1)

2.2.2 Is there intervisibility between trigonometrical station 235 and spot height 1686?

Yes (1 x 1) (1)

2.2.3 Give a reason for your answer to QUESTION 2.2.2.

There are no obstructions /obstacles between trigonometrical station 235 and spot height 1686✓ (1 x 1) (1)

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2.3 Refer to the demarcated area in RED on the topographic map which represents the orthophoto map. Use the demarcated area to calculate the surface area of the orthophoto map in km². Show ALL calculations. Marks will be awarded for calculations.

Formula: Area = length × breadth

Length = 10,3 ✓ cm x 0,5 = 5.15 km (Range 10.2 cm – 10.4 cm) (5.1 km – 5.2 km)

Breadth = 10 ✓ cm x 0,5 = 5 km (Range 9.9 cm – 10.1 cm) (4,95 km – 5.05 km)

= 5,15 ✓km x 5 ✓ km

= 25,75 km² ✓

[Range: 25.24 –26.26 km²] (5 x 1) (5)

[Accept other formulas to calculate area]

2.4 Locate points **1** and **10** on the orthophoto map.

2.4.1 Calculate the average gradient between points **1** and point **10** on the orthophoto map. Show ALL calculations. Marks will be awarded for calculations.

Formula: $\textbf{Gradient} = \frac{\textbf{vertical interval (VI)}}{\textbf{horizontal equivalent (HE)}}$

VI = 1725.7 m – 1680 m
= 45.7 m ✓

HE = 2.2 cm x 100 ✓
[Range 2.1cm – 2.3cm
= 220 m ✓
[Range 210m – 230m]

G = $\frac{45.7}{220}$ ✓

[Mark allocated for substitution]

= $\frac{1}{4.8}$

= 1:4.8 / 1 in 4.8 ✓

OR

VI = 1400 m – 1220 m
= 45.7 m ✓

HE = $\frac{2.2 \text{ cm} \times 10\,000}{100}$ ✓
= 220 m ✓

G = $\frac{45.7}{220}$ ✓

= $\frac{1}{4.8}$

= 1:4.8 / 1 in 4.8 ✓

Range [1 : 4.50 – 1 : 5.03] (5 x 1) (5)

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2.4.2 Is the average gradient answer to QUESTION 2.4.1 steep or gentle?

Steep ✓ (1 x 1) (1)

2.4.3 Explain why your answer to QUESTION 2.4.2

For every 1 unit vertically we move 4.8 units horizontally ✓
Small ratio between height and distance ✓
[Any ONE] (1 x 1) (1)

2.4.4 The town planners of Volksrust intend to create a viewing site at point **10** with the aim of attracting tourists, however, the steep gradient poses a challenge in the construction of a road to point **A**. Suggest ONE method of road construction civil engineers can use to overcome this challenge.

Cuttings✓
Embankment ✓
[Any ONE] (1 x 1) (1)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the general information on page 3 and the topographic map to answer the following questions.

3.1.1 Does Volksrust receive seasonal or perennial rainfall?

Seasonal ✓ (1 x 1) (1)

3.1.2 Give ONE point of evidence from the information sheet and ONE point of evidence from the topographic map to support your answer to QUESTION 3.1.1.

<u>Information Sheet:</u>
Highest rainfall during summer months (November– March) ✓
Lowest rainfall in the winter months (May–September) ✓
1 mm in July and 117 mm in January ✓
[Any ONE]

<u>Topographic map</u>: ***Non-perennial/periodic rivers***✓
Many dams ✓
Reservoirs ✓
Windpump ✓
[Any ONE] (2 x 1) (2)

3.1.3 Taking your answer to QUESTION 3.1.1 into account, was the orthophoto map taken in summer or winter? Give a reason for your answer. (1 + 2) (3)

QUESTION 3.1.3 HAS BEEN DELETED DUE TO TECHNICAL ERROR. RECALCULATE FINAL TOTAL.

3.2 Refer to block **J5**

3.2.1 State the general flow direction of the Buffelsrivier River.

South ✓ (1 x 1) (1)

3.2.2 Give ONE reason from the topographic map for your answer to QUESTION 3.2.1.

Higher-lying ground in the north ✓✓
Tributaries join main stream from the north ✓✓
V-shaped contour line (H5) crossing river point upstream ✓✓ (1 x 2) (2)
[Any ONE]

3.3 Refer to the drainage pattern in block **A6**.

3.3.1 Identify the drainage pattern in block **A6**.

Dendritic ✓ (1 x 1) (1)

3.3.2 State the underlying rock structure associated with this drainage pattern, answer to QUESTION 3.3.1.

rock structure with uniform resistance to erosion ✓ (1 x 1) (1)

3.4 If Volksrust had to experience extremely high rainfall over a short period of time, explain how the amount of vegetation would influence the chances of flooding in the north eastern section of the town.

Vegetation will reduce the water flow and decrease the impact of flooding ✓✓

The lack of vegetation will increase the water flow and increase the impact of flooding. ✓✓ (1 x 2) (2)
[Any ONE]

3.5 Refer to block **C10** on the topographic map.

3.5.1 Does the farmer at Wynvale practise large scale or small scale farming?

large scale farming ✓ (1 x 1) (1)

3.5.2 Give ONE reason from the topographic map to support your answer to QUESTION 3.5.1.

Large areas cultivated ✓✓
Farms have boundaries ✓✓
Good transport network ✓✓
[Any ONE] (1 x 2) (2)

3.5.3 State ONE physical factor that favours farming in block **C10**.

Fertile soil ✓
Availability of water ✓
Flat land ✓
[Any TWO] (1 x 1) (1)

3.5.4 Explain the importance of the rows of trees found around the cultivated lands in block **C1**

The trees serve as protection for the farmland against strong winds ✓✓
Serves as a farm boundary ✓✓
[Any ONE] (1 x 2) (2)

3.6 The residential area Jubapark on the orthophoto map is a high-income residential area. Give ONE piece of evidence from the orthophoto map to support this statement.

Away from the industries and CBD ✓
Near the recreational facilities ✓
Larger houses ✓
Larger plots / low density ✓
Larger stands ✓
More trees ✓
[Any ONE] (1 x 1) (1)

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3.7 The area around the Amajuba Forest to the south west of the topographic map has important historical significance. Support this statement by using evidence from the topographic map.

Majuba 1881 momument ✓
58th Regiment ✓
Battlefield ✓
[Any ONE] (1 x 1) (1)

3.8 Evaluate possible environmental injustices that could have been caused by the excavation occurring in blocks **C4** and **E3/4**.

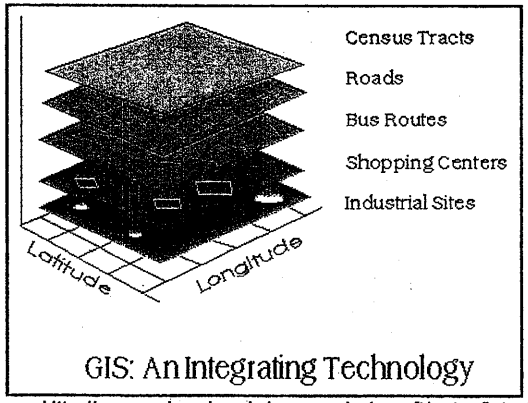
Unhealthy environment can lead to spread of diseases and ill health ✓
Destruction of natural vegetation could cause the extinction of flora and fauna ✓
Destroys ecosystem/biodiversity/habitat ✓
Soil erosion could result in siltation of dams and the choking of rivers ✓
Destroy aesthetic appeal resulting in loss in tourism ✓
Scars the land causing environmental despoliation ✓
Mass movement will result in landslides causing nearby homes to be affected ✓
[Any TWO] (2 x 2) (4)

[25]

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QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 The diagram below illustrates the concept of data integration. Study the diagram carefully and answer the questions that follow.



Source: Http://www.colorado.edu/geography/gcraft/notes/intro/html

4.1.1 Define the term *data integration*.

The combining of data from different maps into one map which summarises the overlaying process ✓
[Concept] (1 x 1) (1)

4.1.2 List TWO types of data that a farmer in Volksrust will consider before cultivation.

Availability of water ✓
Fertility of soil ✓
Relief of the land (slope)
Microclimate ✓
Access to infrastructure ✓
Access to transport ✓
[Any TWO] (2 x 1) (2)

4.1.3 With reference to the data identified in QUESTION 4.1.3 explain how a farmer at **S** in block **B7** could use the process of data layering to decide on the best location for his farm.

The farmer can select data layers such as **availability of water, availability of flat land and areas of fertile soil and make a decision on the most suitable area for farming** ✓✓ (1 x 2) (2)

4.2 Two grade 12 learners from a school in Volksrust have an assignment on fluvial features and as part of the assignment they have to take photographs of the Papale River Waterfall located at **Y** in block **F6**. One has a 2.0 megapixel camera and the other has a 3.5 megapixel camera. The resolution of the photographs taken by the boys will differ.

4.2.1 Define the term *resolution*.

The clarity of a picture or object ✓
[Concept] (1 x 1) (1)

4.2.2 Which one of the cameras will take better quality pictures?

Explain your answer.

ANSWER: The 3.5 megapixel camera ✓

EXPLANATION:

Because it is a higher resolution camera ✓✓
Higher definition / better definition ✓✓
More squares per unit area ✓✓
Smaller pixels which lead to clear picture ✓✓ (1 + 2) (3)

4.3 An urban and regional planner wants to determine the impact that urban sprawl may have in the north western part of the town of Volksrust.

4.3.1 State and define the GIS process that an urban and regional planner would use to limit the impact of urban sprawl in this area.

Buffering ✓

A demarcation around the geographical feature/area ✓ (2 x 1) (2)
[Concept]

4.3.2 Suggest how the GIS process identified in QUESTION 4.3.1 will impact positively on the north western part of the town of Volksrust on the primary activities.

It will prevent the invasion of farmland. ✓✓
The destruction of the water course will result in the shortage of water needed for farming. ✓✓ (2 x 2) (4)

[15]

TOTAL MARKS: 75

Recalculation of Total

QUESTION 3.1.3 HAS BEEN DELETED DUE TO TECHNICAL ERROR. RECALCULATE FINAL TOTAL.

The final total will be calculated out of 72 marks and thereafter re-caculated back to 75 marks.

2.4.2 Is the average gradient answer to QUESTION 2.4.1 steep or gentle?

Steep ✓ (1 x 1) (1)

2.4.3 Explain why your answer to QUESTION 2.4.2

For every 1 unit vertically we move 4.8 units horizontally ✓
Small ratio between height and distance ✓
[Any ONE] (1 x 1) (1)

2.4.4 The town planners of Volksrust intend to create a viewing site at point **10** with the aim of attracting tourists, however, the steep gradient poses a challenge in the construction of a road to point **A**. Suggest ONE method of road construction civil engineers can use to overcome this challenge.

Cuttings✓
Embankment ✓
[Any ONE] (1 x 1) (1)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the general information on page 3 and the topographic map to answer the following questions.

3.1.1 Does Volksrust receive seasonal or perennial rainfall?

Seasonal ✓ (1 x 1) (1)

3.1.2 Give ONE point of evidence from the information sheet and ONE point of evidence from the topographic map to support your answer to QUESTION 3.1.1.

<u>Information Sheet:</u>
Highest rainfall during summer months (November– March) ✓
Lowest rainfall in the winter months (May–September) ✓
1 mm in July and 117 mm in January ✓
[Any ONE]

<u>Topographic map</u>: ***Non-perennial/periodic rivers***✓
Many dams ✓
Reservoirs ✓
Windpump ✓
[Any ONE] (2 x 1) (2)

3.1.3 Taking your answer to QUESTION 3.1.1 into account, was the orthophoto map taken in summer or winter? Give a reason for your answer. (1 + 2) (3)

QUESTION 3.1.3 HAS BEEN DELETED DUE TO TECHNICAL ERROR. RECALCULATE FINAL TOTAL.

3.2 Refer to block **J5**

3.2.1 State the general flow direction of the Buffelsrivier River.

South ✓ (1 x 1) (1)

3.2.2 Give ONE reason from the topographic map for your answer to QUESTION 3.2.1.

Higher-lying ground in the north ✓✓
Tributaries join main stream from the north ✓✓
V-shaped contour line (H5) crossing river point upstream ✓✓ (1 x 2) (2)
[Any ONE]

3.3 Refer to the drainage pattern in block **A6**.

3.3.1 Identify the drainage pattern in block **A6**.

Dendritic ✓ (1 x 1) (1)

3.3.2 State the underlying rock structure associated with this drainage pattern, answer to QUESTION 3.3.1.

rock structure with uniform resistance to erosion ✓ (1 x 1) (1)

3.4 If Volksrust had to experience extremely high rainfall over a short period of time, explain how the amount of vegetation would influence the chances of flooding in the north eastern section of the town.

Vegetation will reduce the water flow and decrease the impact of flooding ✓✓

The lack of vegetation will increase the water flow and increase the impact of flooding. ✓✓ (1 x 2) (2)
[Any ONE]