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TOTAL
MARKS

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INTERNATIONAL SECONDARY CERTIFICATE EXAMINATION
MAY 2024

GEOGRAPHY: PAPER II

EXAMINATION NUMBER

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Time: 1½ hours

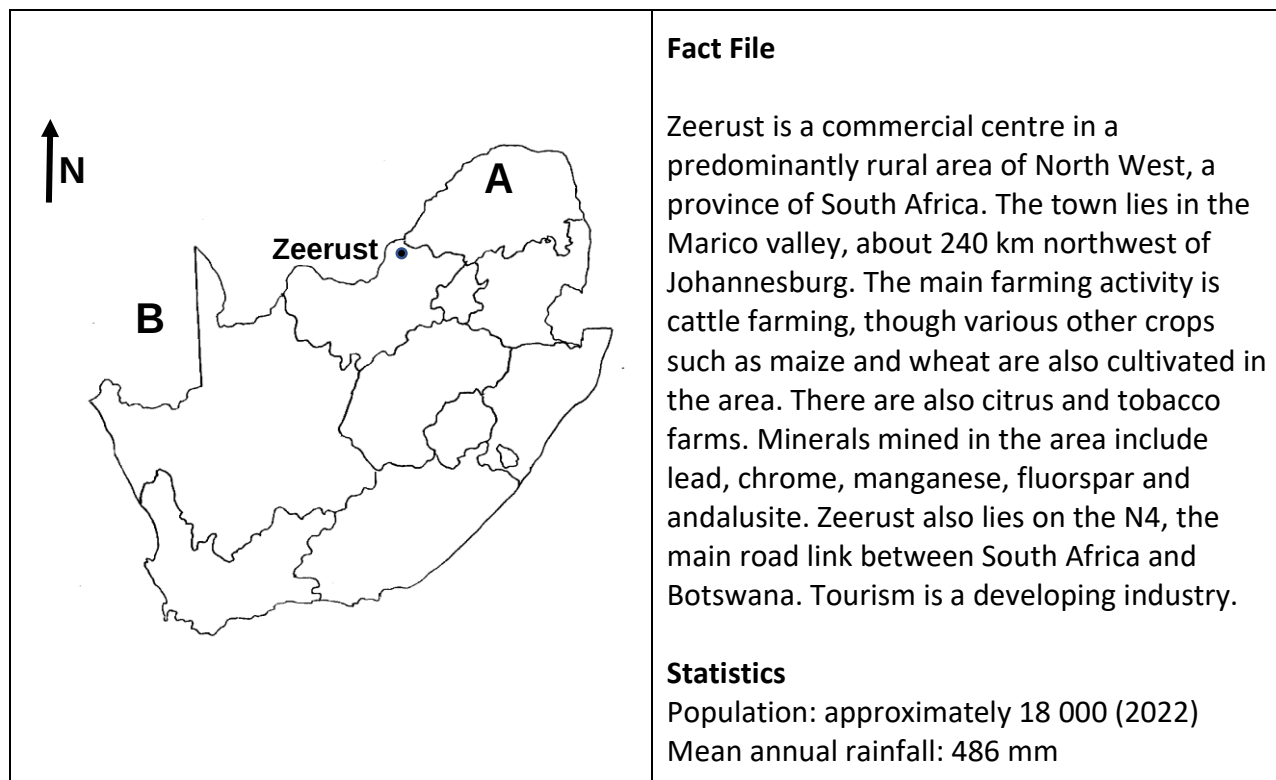
100 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This paper consists of 20 pages, a topographic map extract with a symbol sheet, an orthophoto map extract and a yellow equipment sheet. Please check that your question paper is complete.
2. Read the questions carefully.
3. **Write your examination number in the blocks provided above.**
4. Carefully study the 1:50 000 topographic map extract 2526CA ZEERUST (Map 1), the orthophoto map extract of 2526CA ZEERUST (Map 2).
5. The topographic map extract has grid lines with markings A to E and 1 to 10 that may be used to identify locations according to blocks.
6. The equipment sheet can be used instead of a ruler and a protractor not brought to the examination venue. It may also be used for rough work. There is a fold mark indicating where it should be folded.
7. A magnifying glass and calculator may be used.
8. **Answer ALL the questions on the question paper. Your completed question paper must be handed to the invigilator at the end of the examination.** The maps and photos may be kept by the school for future use.
9. It is in your own interest to write legibly and to present your work neatly.
10. TWO blank pages (pages 19–20) have been included at the end of the paper. If you run out of space for an answer, use these pages. Clearly indicate the number of your answer should you use this extra space.

FOR MARKERS' USE ONLY

Question	1	2	3	4	Total
Marks	27	30	8	35	100
Obtained					

Figure 1 – Location map of Zeerust[Adapted from: <<https://en.wikipedia.org/wiki/Zeerust>>]**QUESTION 1 ATLAS USE, MAP ORIENTATION AND TECHNIQUES**

1.1 Refer to Figure 1, a location map, as well as the topographic map extract 2526CA ZEERUST (Map 1) to answer the following questions. Tick (✓) the correct box.

1.1.1 The province labelled **A** on the location map above is ...

Free State.	
Gauteng.	
Limpopo.	
Mpumalanga.	

(1)

1.1.2 The country labelled **B** on the location map above is ...

Botswana.	
Eswatini.	
Lesotho.	
Namibia.	

(1)

1.1.3 Identify the feature at 25° 32' 21" S and 26° 04' 33" E.

Cemetery	
Church	
Hospital	
School	

(1)

1.1.4 The length of the Rifle Range in A5 is ... metres.

0,95	
95	
950	
1 900	

(2)

1.2 1.2.1 Calculate the present-day magnetic declination for the topographic map extract 2526CA ZEERUST (Map 1) given the following information for the map.

Magnetic declination is 18° 04' west of True North (2020). The mean annual change is 06' westwards.

Difference in years: _____ (1)

Total change: _____ (1)

Magnetic declination in 2024: _____ (2)

Calculations:

1.2.2 (a) Select the correct answer.

The true bearing of the communication tower at spot height 1467 (A6) from the trigonometrical station 119 in C9 is ...

30°.	
60°.	
120°.	
300°.	

(2)

- (b) (i) Are the two points referred to in Question 1.2.2 (a) intervisible?

Yes	
No	

(1)

- (ii) Provide ONE reason for your answer to Question 1.2.2 (b) (i).

(2)

1.3 Orthophotograph Analysis

Refer to the orthophoto map extract, 2526CA Zeerust (Map 2), as well as the topographic map extract 2526CA ZEERUST (Map 1) to answer the following questions.

- 1.3.1 Identify the land-use of the areas labelled **C** and **D** on the orthophoto map. State a reason for their location.

	Land-use	Reason for location
C		
D		

(4)

- 1.3.2 What activity is taking place at **E** on the orthophoto map?

(1)

- 1.3.3 Explain how you would identify a river course on an aerial photograph / orthophoto map.

(2)

- 1.3.4 The site labelled **F** on the orthophoto map is the newly constructed Zeerust Truck Stop. Design a map symbol that could be used to indicate such a feature on the map.

Truck Stop / Port	Map symbol
-------------------	------------

(2)

- 1.3.5 Calculate the area (in square metres) of the Truck Stop (**F**), marked by a green block on the orthophoto map extract 2526CA ZEERUST (Map 2).

Show your workings as set out below:

(a) Length of Truck Stop: _____ m (1)

(b) Width of Truck Stop: _____ m (1)

(c) Area of the Truck Stop: _____ m² (1)

(d) Given that 1 hectare (ha) = 10 000 m², work out how many hectares the Truck Stop is.

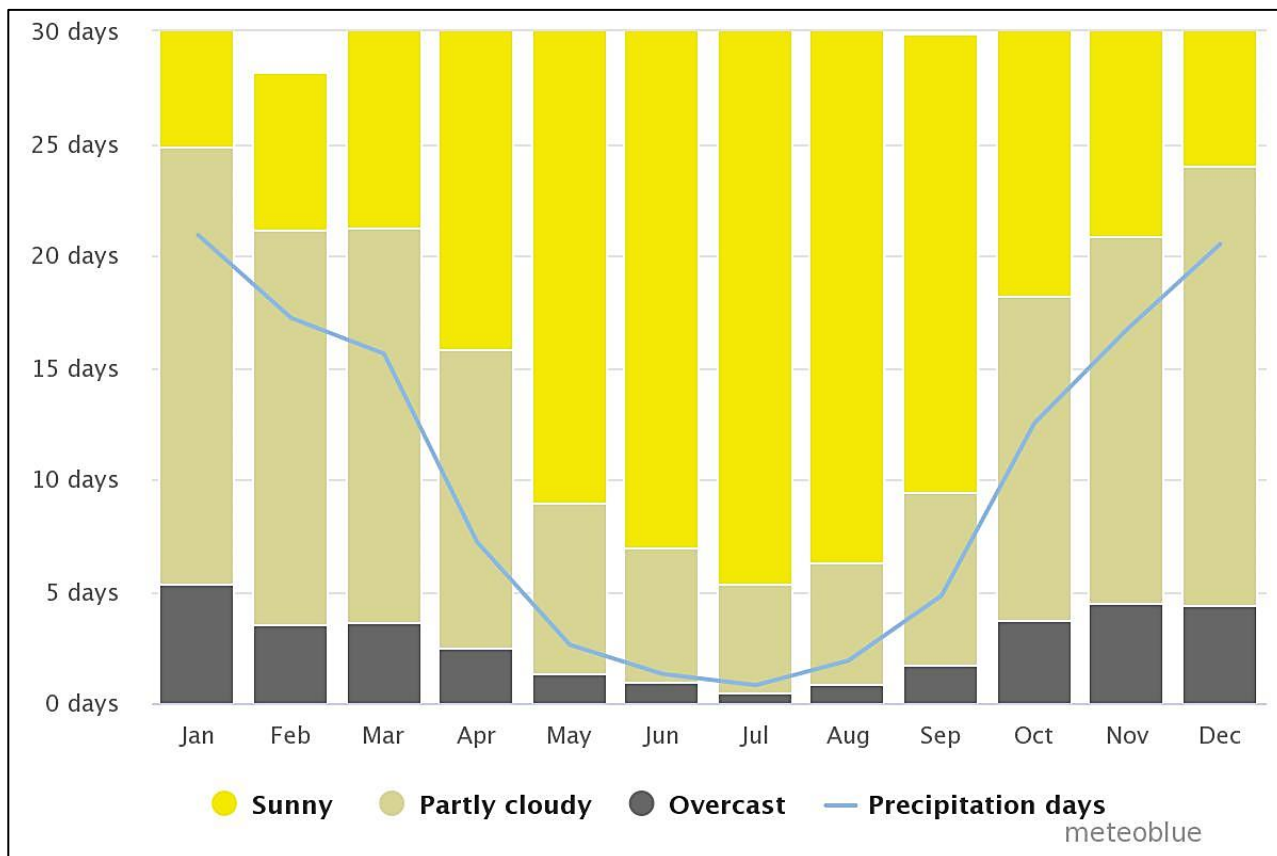
Area: _____ ha.

Calculations:

(1)

[27]

Q1 subtotal

QUESTION 2 THE PHYSICAL GEOGRAPHY OF THE ZEERUST AREA**Refer to Figure 2.****Figure 2 – Graph of the number of sunshine hours and precipitation in Zeerust**

[Source: <https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/zeerust_south-africa_937136>]

2.1 Climate

2.1.1 State the month that experiences the following:

(a) Most sunny days: _____ (1)

(b) Most overcast days: _____ (1)

2.1.2 (a) During which season does Zeerust experience most of its rainfall?

_____ (1)

(b) With reference to Figure 2, provide ONE piece of evidence for your answer to Question 2.1.2 (a).

_____ (2)

2.2 Fluvial Geomorphology

Refer to the topographic map extract 2526CA ZEERUST (Map 1) and the orthophoto map extract 2526CA ZEERUST (Map 2).

- 2.2.1 Name the perennial river that flows into the Klein Maricopoort Dam from the southwest (C7).

(1)

- 2.2.2 Using geographical evidence (Map 1 and Map 2; Figure 2), verify why most of the tributaries in the area are non-perennial.

(2)

- 2.2.3 The dam lies in a poort* formed by a river. Provide TWO descriptive phrases that would describe the geomorphological characteristics and TWO characteristics that relate to the economic importance of a poort.

	Geomorphological characteristics	Economic importance
1.		
2.		

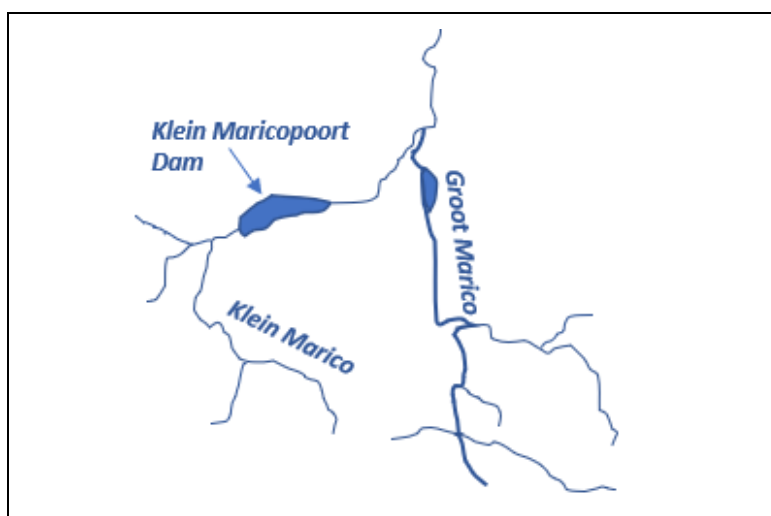
(4)

Glossary

*poort – a narrow pass through mountains

- 2.2.4 Study Figure 3 below, which shows the upper catchment areas of the Klein* and Groot** Marico rivers. Only the perennial rivers have been drawn.

Figure 3 – The Klein and Groot Marico River Catchment areas



*Klein – small

**Groot – large

- (a) Order the streams in Figure 3. Complete the table below.

Order	1st	2nd	3rd	4th
Number of tributaries				

(4)

- (b) Explain the law of stream orders, describing the relationship between stream order and the number of streams. Use the data / information recorded in the table above.

(2)

- (c) Select the correct answer. The drainage density of this catchment area (Figure 3) is:

Low	
Fine	
Dense	
High	

(1)

- (d) Suggest ONE reason for your answer to Question 2.2.4 (c) above.

(2)

2.3 Relief Features in the Zeerust Area

Refer to Figure 4A and Figure 4B, the cross section drawn from X (Spot height 1412) to Y (Trigonometrical station 124) (B7–C7 on Map 1).

Figure 4A – An extract from Map 1 showing the cross-section line X–Y

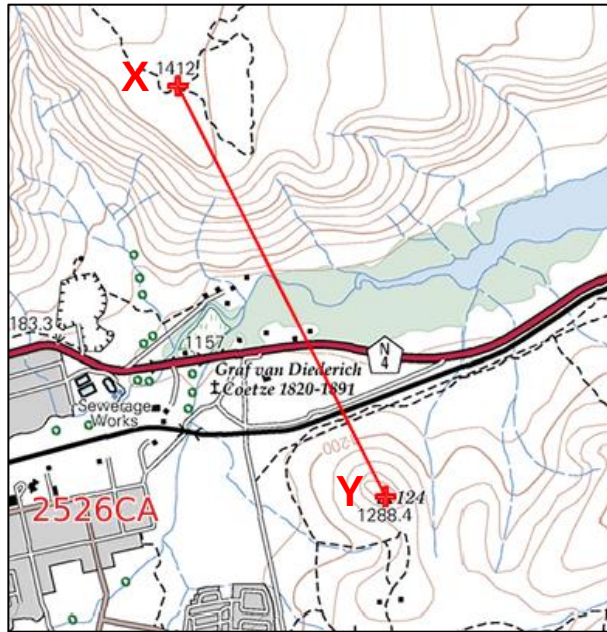
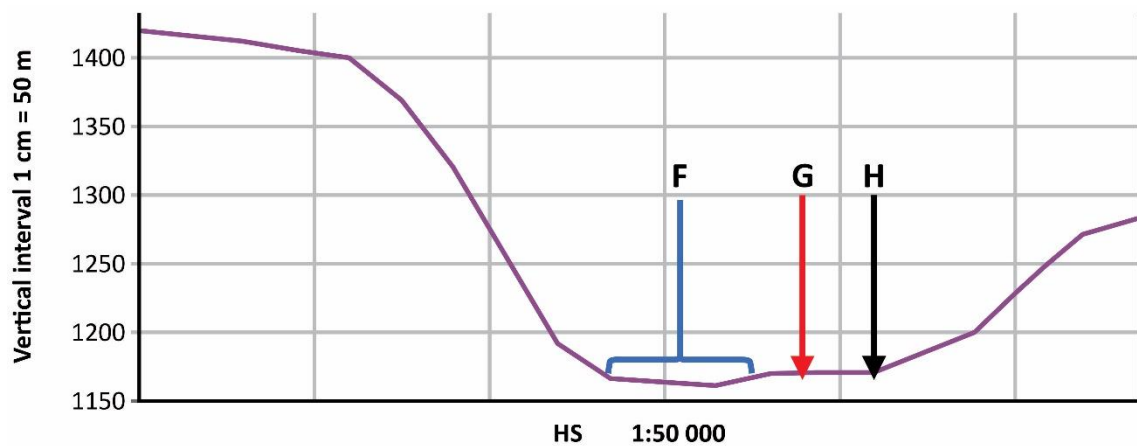


Figure 4B – Cross section from X to Y



2.3.1 (a) Identify the features (F–H) that have been labelled on the cross section.

F: _____

G: _____

H: _____

(3)

(b) Correctly label the start and end points (the features labelled X and Y) on the cross section above.

(2)

2.3.2 Calculate the vertical scale of the cross section on page 9.

1 : _____ (2)

2.3.3 Work out the vertical exaggeration of this cross section on page 9.

VE: _____

Calculations:

(2)

[30]

Q2 subtotal

QUESTION 3 SETTLEMENT

3.1 Refer to the topographic map extract 2526CA ZEERUST (Map 1), as well as the orthophoto map extract 2526CA ZEERUST (Map 2) to answer the following questions. Tick (✓) the correct box.

3.1.1 The town of Zeerust may be classified as a ... settlement.

break-of-bulk	
central place	
mining	
specialised	

(1)

3.1.2 The predominant street pattern in Zeerust is ...

organic.	
haphazard.	
grid.	
cobweb.	

(1)

3.1.3 The rural farming landscape surrounding Zeerust shows a ... settlement pattern.

dispersed	
nucleated	
patchwork	
small holding	

(1)

3.2 Locate the Ramosa Riekert Holiday Resort (E8).

3.2.1 Suggest THREE types of adventure activities that could be undertaken at this resort.

1 _____

2 _____

3 _____

(3)

3.2.2 Provide ONE well-reasoned answer to support your suggestions in Question 3.2.1 on page 11.

Reason: _____

(2)
[8]

Q3 subtotal

QUESTION 4 ECONOMIC ACTIVITIES AND GIS**4.1 Zeerust Solar Park**

Refer to Figure 5 below. This is a satellite image of the Zeerust Solar Park. Read the infographic on the Zeerust Solar Park provided in Figure 6 on page 15. The area is marked off with a red polygon on the topographic map extract 2526CA ZEERUST (Map 1), in E4 and E5.

Figure 5 – Satellite image of Zeerust Solar Park



[Source: Google Earth]

4.1.1 Identify the constructed features labelled **P** and **Q** above.

P: _____

Q: _____
(2)

4.1.2 In which economic sector would the Zeerust Solar Park be classified?

(1)

4.1.3 Provide ONE site factor and ONE situational factor for the location of this Solar Park.

Site: _____

Situation: _____

(4)

4.1.4 (a) In which direction are the solar panels facing?

(1)

(b) Provide ONE reason for your answer.

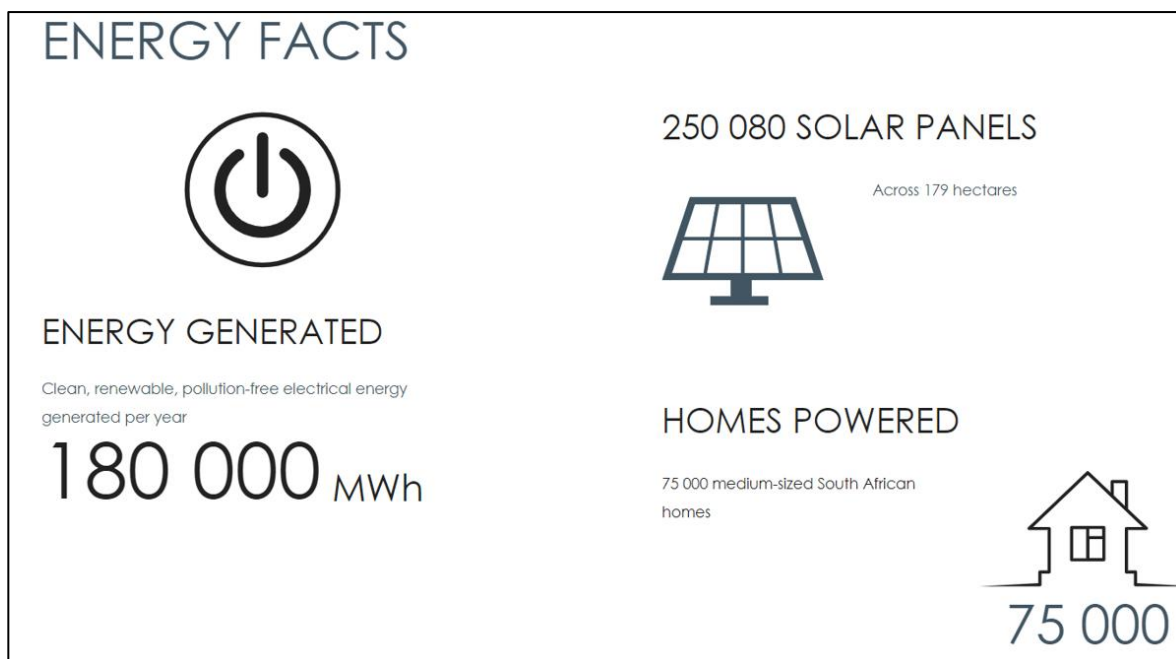
(2)

4.1.5 Using map evidence (Map 1) together with Figure 5 on page 13, provide TWO pieces of evidence to show that sound environmental principles are being used for this energy project.

(4)

4.1.6 Refer to the infographic (Figure 6) below as well as the topographic map extract 2526CA ZEERUST (Map 1).

Figure 6 – Infographic on Zeerust Solar Park



[Source: <<https://zeerustsolar.co.za/solar-field/#fact-sheet>>]

(a) Name the farm that the Solar Park is developed on.

_____ (1)

(b) How many homes can this Solar Park supply energy to?

_____ (1)

(c) Refer to Figure 2 (page 6) as well as Figure 6, the infographic. Evaluate the potential of the Zeerust Solar Park to be able to provide this area with all of their energy needs.

_____ (6)

4.2 New N4 Bypass

Refer to the Fact File and Figure 7 below. Figure 7 shows the proposed alternative route for the N4.

Fact File Trans-Kalahari Corridor (N4)

The Trans-Kalahari Corridor (TKC) is a road network spanning approximately 1 900 km across the territories of Botswana, Namibia and South Africa.

It starts in Gauteng in South Africa and continues through Rustenburg and Zeerust in North West and through Lobatse and Kanye in Botswana.

The Zeerust Truck Stop is purely for diesel filling and a safe place for truckers to spend the night. There is a Wellness Centre on the premises as well. This is labelled **F** on the orthophoto map (Map 2).



[<<http://www.tkcmc.com/index.php/about-us>>]

[Source: <<https://za.africabz.com/north-west/mbt-zeerust-truck-stop-23139>>]

Figure 7 – Proposed N4 bypass



[Adapted from Open Street Maps by Examiner]

- 4.2.1 Refer to Photograph 1 below. This shows a scene along the main street (N4) that runs through Zeerust.

Photograph 1 – Main street of Zeerust



[Source: <<https://www.facebook.com/snowreportsa>>]

- (a) Identify ONE traffic problem you notice in Photograph 1.

(1)

- (b) Suggest ONE cause of this traffic problem.

(2)

- 4.2.2 Refer to the Fact File on page 16. Suggest why the new Zeerust Truck Stop is a solution to the problem identified in Question 4.2.1 (a) above.

(2)

4.2.3 Refer to the topographic map extract 2526CA ZEERUST (Map 1) and Figure 7 on page 16.

- (a) Identify TWO GIS data sets of information the municipality would need to consider when proposing the new alternative route for the N4 to bypass the town of Zeerust.

1. _____

2. _____

(2)

- (b) Explain why the road construction company would use a buffer zone on either side of the proposed road when drawing up the plans for the bypass.

(2)

4.2.4 Comment on TWO disadvantages of this bypass road system for the businesses in the centre of Zeerust.

(4)

[35]

Q4 subtotal

Total: 100 marks

ADDITIONAL SPACE (ALL QUESTIONS)

**REMEMBER TO CLEARLY INDICATE AT THE QUESTION THAT YOU USED THE
ADDITIONAL SPACE TO ENSURE ALL ANSWERS ARE MARKED.**

[illegible]

[illegible]