NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY EXAMINATION MARCH 2016

GEOGRAPHY: PAPER II

MARKING GUIDELINES

Time: 1½ hours | 100 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

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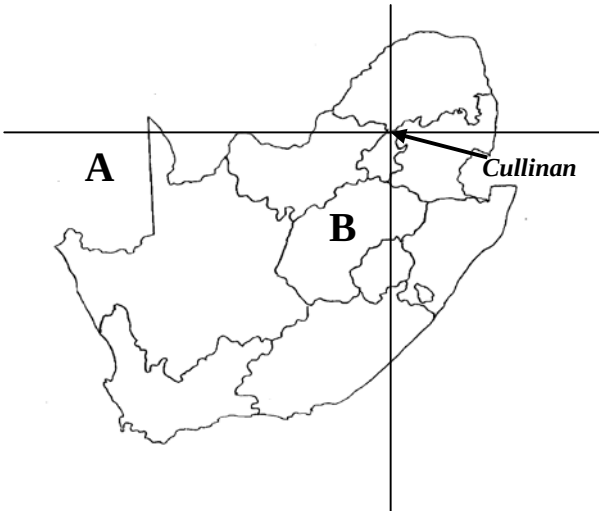
LOCATION MAP: LOCATION OF CULLINAN IN SOUTH AFRICA



Cullinan is a peaceful, Victorian village, situated about 35 km north-west of Pretoria. The town was established in 1902 and named after Sir Thomas Cullinan who discovered a very rich diamond pipe in the area. Over week-ends, artists, bikers and city dwellers escape to this semi-rural community. As a result, many restaurants and Bed-and-Breakfast establishments have opened. Tours of the diamond mine are popular as well as township tours to Refilwe.

The vintage train runs between Pretoria and Cullinan over the weekend. Petra Mining Company purchased the mine from De Beers in 2008.

[Source: <www.cullinanmeander.wozaonline.co.za>]

QUESTION 1 ATLAS USE, MAP ORIENTATION AND TECHNIQUES

1.1 Refer to the location map above, as well as the topographic map extract 2528DA CULLINAN, to answer the following questions. Tick the correct box.

1.1.1 The neighbouring country labelled A on the location map above is …

Angola	
Botswana	
Lesotho	
Namibia	

(1)

1.1.2 The province labelled B on the location map above is …

Gauteng	
Free State	
North West	
Northern Cape	

(1)

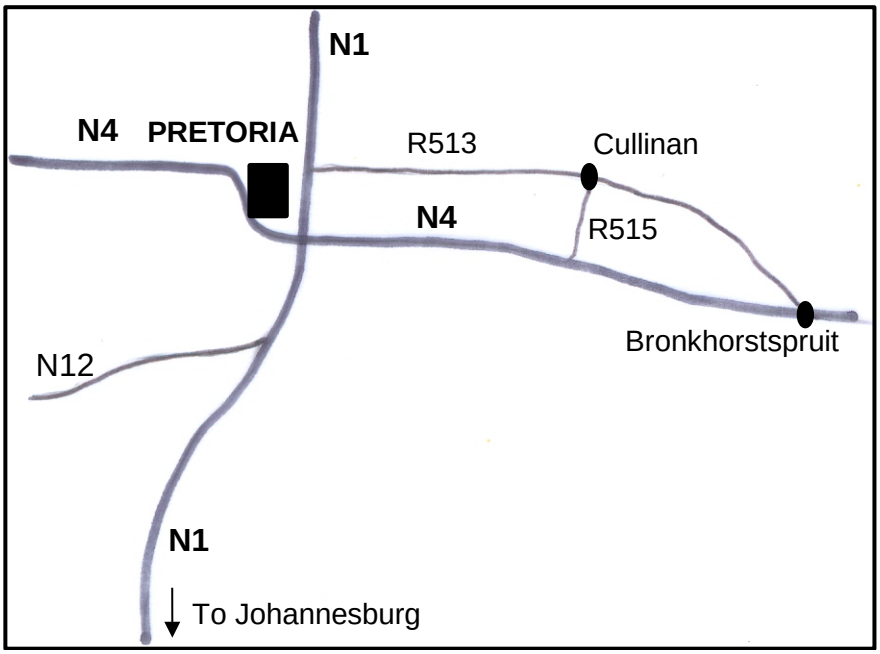
1.1.3 The rail distance (km) to Pretoria station from Rayton station (I2) is …

4 km	
38 km	
42 km	
48 km	

(2)

1.1.4 Study Figure 1, a route map.

Figure 1: A route map showing the area around Cullinan



(a) **Outline** the route you would take to Cullinan if you were travelling from Johannesburg.

Travel along N1 northwards, past Pretoria. Turn onto the R513 to Cullinan / OR

Travel along N1. Take N4 East towards Bronkhorstspruit. Turn left onto R515. (2)

(b) **Justify** your choice of route in Question 1.1.4 (a) above.

Easiest route as you travel along the N1 until the off-ramp for R513/ OR Most of the trip is on national freeway. This is quicker and the roads should be in good condition. Only short distance on R515. (2)

1.2 Geographic techniques

1.2.1 **Complete** the following information for trigonometrical station 44 (F2).

Latitude	25°41'47" S	Range of minutes (42"– 50")
Longitude	28°31' 5" E	Range of minutes (2"– 10")
Altitude	1521,7 m	

(6)

1.2.2 The magnetic declination for the topographic map extract 2528DA CULLINAN in 2016 will be …

16° 52' W of True North	
17° 00' W of True North	
18° 44' E of True North	
18° 44' W of True North	

2016 – 2002 = 14 years
8' × 14 years = 112' charge westwards
16° 52' + 1° 52'
18° 44'W of TN

(2)

1.2.3 The approximate true bearing of trigonometrical station 44 (F2) from trigonometrical station 53 (D2) is …

20°	
70°	
160°	
190°	

(2)

1.2.4 Locate the Premier Diamond Mine in E1/E2. Assume the mine is a rectangle. The approximate area (m^2) is …

0,45 m^2	
900 m^2	
400 000 m^2	
900 000 m^2	

(2)

Calculation

Assume the mine is a rectangle

A = ℓ × b

ℓ = 1,8 cm × 500 = 900 m

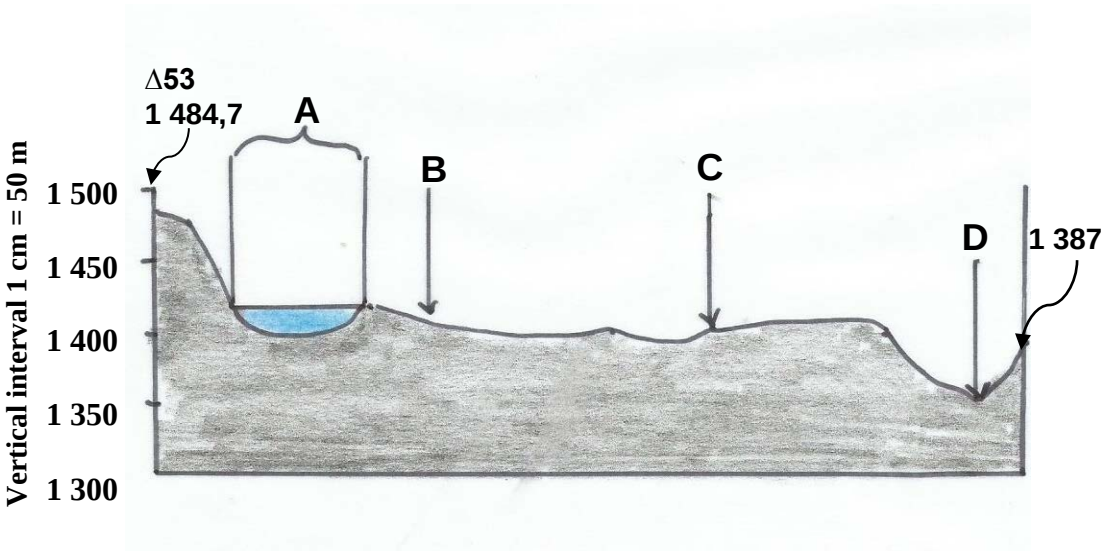
b = 0,9 cm × 500 = 450 m

= 405 000 m^2

1.2.5 ***Cross section and relief analysis***

Study the cross section from trigonometrical station 53 (D2) to spot height 1387 (B4) below. The vertical interval of 1 cm to 50 m is used on the cross section.

Cross section from trigonometrical station 53 (D2) to spot height 1387 (B4)



(a) A number of features have been labelled on the cross section. **Identify** these features.

A Dam

B R515 (Main Road)

C Avenue (row) of trees

D Elands River (4)

(b) **Calculate** the vertical scale of the cross section as a representative fraction.

1: 5 000 (2)

Calculation (b) 1 cm = 50 m × 100 cm 1 cm = 5 000 cm VS 1: 5 000

(c) **Calculate** the vertical exaggeration of the cross section (page 5).

VE = 10 times (2)

Calculation

$$VE = \frac{VS}{HS} = \frac{\frac{1}{5000}}{\frac{1}{50000}} = \frac{1}{5000} \times \frac{50000}{1}$$

= 10 times

1.2.6 (a) Is trigonometrical station 44 (F2) intervisible from trigonometrical station 53 (D2)? Tick the correct answer.

YES	
NO	

(1)

(b) **Justify** your answer.

Justification: No higher land in-between, line of vision not blocked

(2)

[31]

Q1 subtotal

QUESTION 2 DRAINAGE IN THE AREA

2.1 Refer to the topographic map extract 2528DA CULLINAN.

2.1.1 In which general direction is the Elands River flowing at point X (B4)?

Northerly direction (1)

2.1.2 **Provide** ONE reason for your answer.

Dam walls face towards the North/Dam wall is downstream/Water collects south of the dam wall

Contours show the direction

Interfluves indicate this shape (2)

2.2 Locate the farm named Skonsie (D4).

2.2.1 The owners of this farm have planned their water resources effectively. **Verify** this statement.

- Have 3-4 dams on a tributary which enters the Elands River
- Reservoir on farm (groundwater)

(4)

2.2.2 **Suggest** the effect that the water management strategies on Skonsie may have on the flow and quality of water entering the Elands River (D5).

Flow: Reduced flow

Quality: Silted, could be polluted

(4)
[11]

Q2 subtotal

QUESTION 3 PHOTOGRAPH ANALYSIS, GIS CONCEPTS AND LAND-USE

Refer to Photograph 1 below, as well as the topographic map extract 2528DA CULLINAN, to answer the following questions. A colour image is provided in the Colour Insert. The area shown on Photograph 1 is marked by a black block outline on the topographic map extract 2528DA CULLINAN.

Photograph 1: Land-use around Premier Diamond Mine

[<Google earth image>]

3.1 FOUR features (A – D) have been labelled on Photograph 1.
Identify these features.

A Dam (perennial water)

B Golf course

C Waste dump/ mine dump

D Excavation (8)

3.2 The following average summer temperatures have been recorded for the area at sites B, C and E on photograph 1 (page 9/colour insert).

Average Temperature	**24 °C**	**21 °C**	**19 °C**
3.2.1 Site (B, C or E)	**C**	**E**	**B**
3.2.2 Reason	Dark in colour Absorbs heat Little reflection	Light in colour Building density absorbs heat but reflects in the evening	Vegetation Absorbs heat, but has a cooling effect as heat is not radiated

3.2.1 With reference to the features labelled on Photograph 1, **match** an area (B, C or E) with its respective temperature on the table above. (3)

3.2.2 **Provide** a reason for each choice. (6)

3.3 The current mine office block is too small for the expanding mining operations. A site marked Y (Photograph 1) has been earmarked for the construction of new offices, a hospital and an administration block.

A GIS firm has been contracted to carry out an Environmental Impact Assessment (EIA) on the feasibility of site Y as the new proposed mine office site.

3.3.1 **Outline** ONE physical theme/ set of data the GIS specialists need to consider when conducting this study.

- Relief of land: flat or hilly (contours/ heights)
- Proximity to dam – is it above the flood line? Will the offices be safe from flooding? (2)

3.3.2 **Suggest** ONE locational theme/ set of data that would be required to analyse the suitability of this site.

- Close to transport routes
- Close to Refilwe – labour supply (2)

3.3.3 **Outline** the importance of high resolution photographs in compiling an accurate EIA.

Clarity and detail is important

Features are easily identified (Accept suitable reasons) (2)

[23]

Q3 subtotal

QUESTION 4 SETTLEMENT

Refer to the topographic map extract 2528DA CULLINAN.

4.1 **Indicate** if the following statements are True or False. Tick the correct box.
Provide a reason for your answer.

Locate the settlement of Kiepersol in H2.

4.1.1 Kiepersol is an example of a small town.

True	
False	

Reason Only has a few services, if any.

(3)

4.1.2 Originally, Kiepersol was positioned on a good defence site.

True	
False	

Reason On a hill (contours)

(3)

4.1.3 Kiepersol is an example of a wet-point settlement.

True	
False	

Reason Only 2 reservoirs, no rivers in the area or flowing from the hill

(3)

4.2 Refer to the topographic map extract 2528DA CULLINAN, as well as Photograph 1. The existence and location of Refilwe (C2) is a legacy of the South African city model.

Provide TWO pieces of evidence to prove this statement.

- The township is located away from the town of Cullinan (rural-urban fringe)
- Accessible through main roads (R515) (R513)
- The name of the area – Refilwe (4)

4.3 **Compare** the building density in Refilwe (C2) and Cullinan (E2).

Refilwe high building density; street blocks very small – more buildings per unit area. (darker grey - key)

Cullinan low building density; street blocks longer – fewer buildings per unit area. (lighter grey - key) (4)

4.4 **Comment** on the suitability of the site of the sewage disposal works in F4.

Above the Elands River. Water flows into dams before reaching the wetland. These act to filter water further.

(2)
[19]

Q4 subtotal

QUESTION 5 ECONOMIC ACTIVITIES

Refer to the topographic map extract 2528DA CULLINAN.

5.1 **Provide** ONE example of each of the following economic activities that take place in the mapped area. Give the block reference for the activity.

Economic activity	Example	Block reference
Primary	Farming Mining	D4 – various D1, E1
Tertiary	W – Shop PS – Police Station S – School	All in E2

Suitable answers must be considered (4)

5.2 **Suggest** ONE benefit of mining to the settlement of Cullinan.

- Employment – generates income
- Services needed; better services offered (Accept valid suggestions) (2)

5.3 Apart from being a mining town, Cullinan has become very popular with tourists over the past few years. A popular tour is that of the Petra Diamond Mine, a working mine.

Design an information page for a tourism website for the Cullinan area.

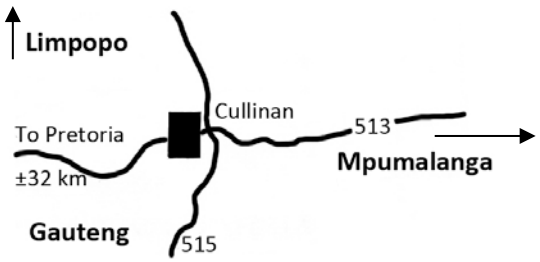
Include information on location, the variety of activities to do and where to stay.

Use the template on page 14.

CULLINAN TOURISM HOME PAGE

Location
(Include a location map)

- Only 2 marks if no map given – just description
- GPS point (co-ords) 2 marks



(4)

What to do? Historical

- Vintage Train on Sundays
- Museum
- Tours of the diamond mine
- Victorian architecture

(2)

What to do? Cultural

- Township tours
- Museum
- Art and crafts

(2)

Where to stay?

- Bed & breakfast places
- Hotel

(2)

Accept any geographically/cartographically relevant point.

[16]

Q5 subtotal

Total: 100 marks

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