



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2013**

**GEOGRAPHY P2  
MEMORANDUM**

**MARKS: 100**

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This memorandum consists of 10 pages.

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**SECTION A****QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

The following statements are based on the 1:50 000 topographical map 2527CA RUSTENBURG WEST, as well as the orthophoto map of a part of the mapped area. Various options are provided as possible answers to the following statements. Choose the correct answer and write only the letter (A–D) in the block next to the statement.

1.1 The major raw mineral mined around the Rustenburg area is ...

- A platinum.
- B coal.
- C diamonds.
- D iron ore.

**A**

1.2 The contour interval on the orthophoto map is ...

- A 5 m.
- B 10 m.
- C 20 m.
- D 2 m.

**A**

1.3 At **5** on the orthophoto map the land use is a/an ....

- A park.
- B hospital.
- C golf course.
- D industry.

**C**

1.4 The physical feature marked **E** in block F4 on the topographical map is a ...

- A mesa.
- B ridge.
- C valley.
- D plateau.

**B**

1.5 The road connecting Rustenburg West with Ventersdorp is a/an ...

- A national road.
- B main road.
- C arterial road.
- D other road.

**A**

1.6 The slope element marked **A** in block G5 on the topographical map is the ... slope.

- A scarp/cliff
- B crest
- C pediment
- D talus/debris/scree

**D**

1.7 The scale of the orthophoto is ...

- A the same as the map.
- B smaller than that of the map.
- C larger than that of the map.
- D impossible to tell from the information available.

**C**

1.8 The feature marked **1** on the orthophoto map is a/an ...

- A dam.
- B sports field.
- C reservoir.
- D excavation.

**B**

1.9 The model aircraft club in block F7 is found in the ...

- A CBD.
- B rural-urban fringe.
- C residential area.
- D slum.

**B**

1.10 The drainage pattern of the area marked **M** in block D2 on the topographical map is ...

- A centripetal.
- B trellis.
- C radial.
- D rectangular.

**C**

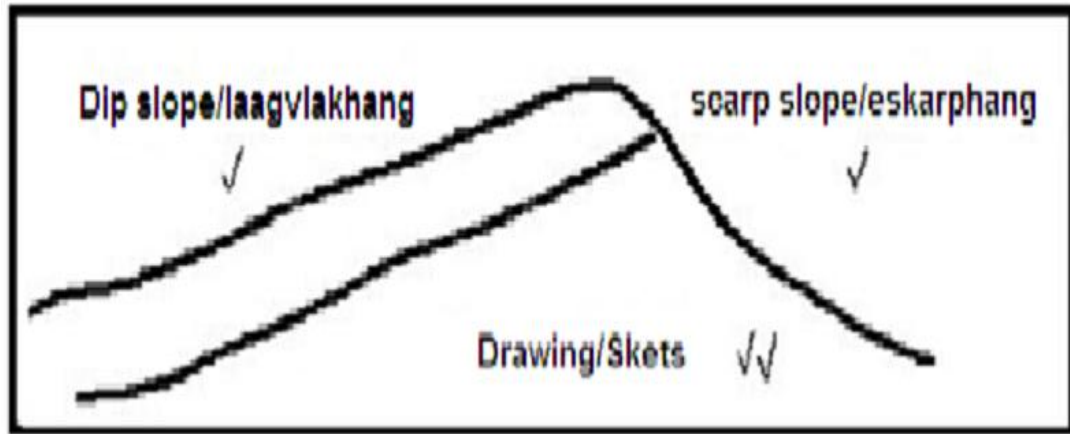
(10 x 2) (20)

**TOTAL SECTION A: 20**

## SECTION B

## QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

- 2.1 Draw a rough cross profile with labels, from spot height •241 (K3) to spot height •666 (J5) to illustrate that Magaliesberg Mountain is a good example of a Cuesta.



(4)

- 2.2 Calculate the magnetic declination for the year 2013. Show ALL calculations.

Declination: 2013 – 1997

16 ✓ years x 2' = 32' ✓

15° 57'

+ ✓ 32'

16°29' ✓

16° 29' W ✓

(5)

- 2.3 Calculate the average gradient from spot height •1153 (4) to spot height •1162 (5) on the orthophoto map. Show ALL your calculations.

$$\text{GRADIENT} = \frac{VI}{HE} \checkmark$$

$$VI = 1\,162 - 1\,153 \text{ m} = 9 \text{ m} \checkmark$$

$$HE = 4,0 \times 0,1 \checkmark = 0,4 \text{ km} (0,4 \times 1\,000) = 400 \text{ m} \checkmark$$

$$\text{Gradient} = \frac{VI}{HE}$$

$$= \frac{9}{400} \text{ m} \checkmark$$

$$= 1: 44 \checkmark$$

$$(\text{Range: } [390 \text{ m}] = 1: 43,3 - [410 \text{ m}] = 1: 45,6)$$

(6)

- 2.4 Is the gradient that you have calculated in QUESTION 2.3 steep or gentle?

**Answer:** Gentle ✓

(1)

- 2.5 Explain your answer to QUESTION 2.4.

**Reason:** For every 1 m you rise vertically you cover 43,3 – 45,5 m. ✓  
Contour lines are far apart. ✓

(1)

- 2.6 Give the direction of the railway station (block F9) from **E** on the topographical map.

**Answer:** East ✓

(1)

- 2.7 Give ONE reason why it would not be economical to build a link road between block H7 and block K5.

Very hilly ✓

Steep gradient ✓

Expensive to excavate ✓

Rockfalls will have huge economic consequences ✓

(1)

- 2.8 Refer to trigonometrical station 228 (block J6) and trigonometrical station 217 (block K8):

State the difference in height between these two points.

$1\,675,5 - 1\,594,2 = 81,3$  metres ✓

(1)

**TOTAL SECTION B: 20**

**SECTION C****QUESTION 3: MAP INTERPRETATION AND ANALYSIS**

- 3.1 "Rainfall over the map area is seasonal and at times unreliable."  
Provide map evidence of any TWO measures farmers have used to overcome the problem of water shortage during times of low rainfall.

Furrows ✓✓

Wind pumps ✓✓

Canals ✓✓

Dams ✓✓

[Any TWO]

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(2 x 2) (4)

- 3.2 Predict TWO ways in which water supply for the future can be assured in this area.

Controlled irrigation ✓✓

Water conservation ✓✓

Water purification ✓✓

Water saving

Reduced pollution of water ✓✓

Interbasin water transfer scheme ✓✓

[Any other facts which are applicable]

[Any TWO]

---

(2 x 2) (4)

- 3.3 Commercial farming is practised at the group of farms (block E5) on the topographical map. Give TWO reasons to substantiate this statement.

It is commercial because there are dams nearby ✓✓

There is a good water supply ✓✓

The farm is well organised ✓✓

There is a road and a railway line nearby ✓✓

The farm has a name ✓✓

There are farm boundaries ✓✓

There are farmsteads ✓✓

[Any TWO]

---

(2 x 2) (4)

- 3.4 Give ONE piece of evidence from the topographical map to show that nature conservation is a priority in the mapped area.

Rustenburg Nature Reserve ✓✓

Magaliesberg Protected Natural Environment ✓✓

[Any ONE]

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(1 x 2) (2)

3.5 Locate the area marked **3** on the orthophoto map.

3.5.1 This area is a low cost-housing scheme. Give ONE piece of evidence from the orthophoto map to support this statement.

Houses appear small ✓✓

Plots appear small ✓✓

Little established vegetation/few trees ✓✓

High density housing ✓✓

[Any ONE]

---

(1 x 2) (2)

3.5.2 The local government in charge of the area marked **3** is posed with many challenges regarding service delivery. Give TWO possible challenges that the authorities will be confronted with.

Ensuring that the houses are sustainable ✓✓

More greenhouse development ✓✓

Non-payment of services ✓✓

Maintaining a good infrastructure ✓✓

Providing recreation and maintaining facilities ✓✓

Reduce crime/corruption ✓✓

[Any other facts which are applicable]

[Any TWO]

---

(2 x 2) (4)

3.6 Expansion of the town of Rustenburg towards the **west** is limited. Provide map evidence of ONE physical factor hindering expansion of the town in this direction.

Hilly/mountainous/rugged terrain ✓✓

Magaliesberg Nature Reserve/Rustenburg Nature Reserve ✓✓

[Any ONE]

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(1 x 2) (2)

3.7 The human activities (block B9) on the topographical map are causing environmental despoliation (damage). State TWO measures that can be adopted to overcome this problem.

Plant vegetation. ✓✓

Do not allow further diggings in the area. ✓✓

Build anti-erosion wall and fill existing dongas. ✓✓

Fence off area ✓✓

Area could be rehabilitated to promote eco-tourism. ✓✓

[Any TWO]

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(2 x 2) (4)

3.8 Find Rustenburg North in block G9 on the topographical map and answer the questions that follow.

3.8.1 Identify the street pattern at Rustenburg North.

Grid iron/block pattern ✓✓

(1 x 2) (2)

3.8.2 Give ONE advantage of the street pattern at Rustenburg North.

Easy to plan layout ✓✓

Shorter distance ✓✓

Do not get lost easily ✓✓

Save petrol ✓✓

[Any ONE]

(1 x 2) (2)

3.8.3 Give TWO disadvantages of the street pattern at Rustenburg North.

Stop at every intersection ✓✓

Easy to hijack ✓✓

Prone to accidents ✓✓

Boring ✓✓

Time wasting ✓✓

[Any TWO]

(2 x 2) (4)

3.9 Refer to the topographical map.

3.9.1 What is the dominant (main) economic activity that is practised in the rural areas of Rustenburg? Give a reason for your answer.

Activity: Primary activity/Mining ✓✓

Reason: Mine dumps ✓✓ Excavations/Diggings ✓✓ Shafts ✓✓

Slime dams ✓✓ Conveyor belts ✓✓

[Any ONE]

(2 x 2) (4)

3.9.2 What is the product that is produced by the economic activity mentioned in QUESTION 3.9.1 above?

Platinum ✓✓

(1 x 2) (2)

**TOTAL SECTION C: 40**



**SECTION D****QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

4.1 Geographical information is obtained in a number of ways.

4.1.1 What is a database?

A storage system with linked tables ✓✓

OR

Data is stored in tables which are linked to other tables ✓✓

[Concept]

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(1 x 2) (2)

4.1.2 Why is it sometimes necessary to manipulate data in a database?

Correct distortions ✓✓

Sharpen definition ✓✓

Ensure colour consistency ✓✓

Correct latitude and longitude registration ✓✓

Makes data more manageable ✓✓

[Any TWO]

---

(2 x 2) (4)

4.2 Classify the following data as either spatial data or attribute data.

4.2.1 A map showing housing density.

Attribute data ✓✓

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(1 x 2) (2)

4.2.2 The shape of a dam.

Spatial data ✓✓

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(1 x 2) (2)

4.3 Define the term *remote sensing*.

Refers to the observation of the earth from a distance using satellites to gather information without having direct contact with an area. ✓✓

[CONCEPT]

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(1 x 2) (2)

- 4.4 Name any TWO natural features on the topographical map that can be studied using remote sensing data.

Built-up area ✓✓  
 Dams ✓✓  
 Churches ✓✓  
 Schools ✓✓  
 Police stations ✓✓  
 Shops ✓✓  
 Hospitals ✓✓  
 Recreational facilities ✓✓  
 Cemetery ✓✓  
 Caravan Park ✓✓  
 Windpumps ✓✓  
 Cultivated land ✓✓  
 Sewage disposal works ✓✓  
 Cemetery ✓✓  
 Slimes dam ✓✓  
 Railway line ✓✓  
 [Any other facts which are applicable]  
 [ANY TWO]

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(2 x 2) (4)

- 4.5 Name any TWO layers that one could overlay to obtain a realistic dataset of the Rustenburg Nature Reserve.

Real landscape ✓✓  
 Buildings ✓✓  
 Roads/Hiking Trails ✓✓  
 Population ✓✓  
 Soil ✓✓  
 Rivers and drainage ✓✓  
 Vegetation/Natural bushes  
 [Any TWO]

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(2 x 2) (4)

**TOTAL SECTION D: 20**  
**GRAND TOTAL: 100**