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**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2017

**GEOGRAPHY P2
MARKING GUIDELINE**

MARKS: 75

This marking guideline consists of 12 pages.

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographic map 3224 BA and BC GRAAFF-REINET, as well as the orthophoto map of a part of the mapped area. Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) in the block next to each question.

1.1 The map reference of the orthophoto map north of Graaff-Reinet is ...

- A 3224BA21.
- B 3224BC1.
- C 3224BC6.
- D 3224BC7.

A

1.2 The line of latitude marked **A** on the general information map on page 3 is ...

- A 24°S.
- B 32°E.
- C 25°E.
- D 32°S.

D

1.3 The Sondagsrivier/Sundays River in block **G2**, on the topographic map flows in a ... direction.

- A north-easterly
- B southerly
- C north-westerly
- D westerly

B

1.4 The map projection used on the Graaff-Reinet map is the ... projection.

- A transversal
- B Lambert
- C Mercator
- D Gauss conform

D

1.5 The number, **1**, on the orthophoto map refers to a ...

- A secondary road.
- B arterial road.
- C railway line.
- D main road.

B

1.6 The type of slope of the landscape from **2** to **3** on the orthophoto map is ...

- A steep.
- B concave.
- C convex.
- D stepped.

B

- 1.7 The approximate time the orthophoto was taken would be ...
- A between 08:00–10:00.
 - B between 10:00–12:00.
 - C between 12:00–14:00.
 - D exactly at 17:00.
- 1.8 The dams that are found in the rural area of Graaff-Reinet are mainly used for ...
- A recreation.
 - B agricultural purposes.
 - C industrial purposes.
 - D domestic purposes.
- 1.9 The landform labelled **4** between spot height 1338 to trigonometric station 1303 on the orthophoto map is a ...
- A plain.
 - B saddle.
 - C spur.
 - D pass.
- 1.10 The Camdeboo National Park marked **B** on the topographic map is situated in the ...
- A Drakensberg.
 - B Graaff-Reinet Mountains.
 - C Sneeu Berg Mountains.
 - D Outeniqua Mountains.
- 1.11 The location (co-ordinates) of the trigonometric station number 202 in block **D13** is ...
- A 24°42'16"S 32°12'22"E / 24°42,2'S 32°12,3'E.
 - B 32°12'55"S 24°47'20"E / 32°12,9'S 24°47,3'E.
 - C 24°44'10"E 32°12'40"S / 24°44,1'E 32°12,6'S.
 - D 32°12'22"S 24°42'21"E / 32°12,3'S 24°42,2'E.
- 1.12 Identify the man-made feature found at **6** on the orthophoto map.
- A Golf course
 - B Excavation
 - C Farm lands
 - D Dry pans

1.13 The true bearing from the Conical Hill, in block **A12** to trigonometrical station 202 in block **D13**, on the topographic map is ...

- A 22°.
- B 338°.
- C 142°.
- D 158°.

D

1.14 Feature **E** in block **H14/I14** on the topographic map is a ...

- A ravine / kloof.
- B poort.
- C pass.
- D waterfall.

A

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

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

B**[15]**

QUESTION 2: MAPWORK CALCULATIONS AND TECHNIQUES

- 2.1 2.1.1 The scale of the topographic map is 1 : 50 000. Write down as a word scale.

One centimetre on the map represents 50 000 cm in reality ✓

(1 x 1) (1)

- 2.1.2 What is the straight-line distance from **G** in block **I2** to **H** in block **H2**? Give your answer in metres.

4,2 ✓ cm x 0,5 = 2,1 km OR 4,2 ✓ cm ÷ 2 = 2,1 km

= 2 100 metres ✓

(2 x 1) (2)

- 2.2 Using the information on the topographic map, determine the magnetic declination for 2017.

Show ALL calculations. Marks will be awarded for calculations.

Difference in years: 2017 – 2009 = 8 years ✓

Mean annual change: 7' W ✓ [(W) must be included]

Total change: 8 x 7' W = 56' W ✓

Magnetic declination for 2017: 25° 07' W + ✓ 56' W = 26° 03' W ✓

(5 x 1) (5)

- 2.3 Locate points **C** (block **A10**) and **D** (block **B11**) on the topographic map.

- 2.3.1 Calculate the average gradient between point **C** and point **D** on the topographic map.

Show ALL calculations. Marks will be awarded for calculations.

Formula: Gradient = $\frac{\text{Vertical interval (VI)}}{\text{Horizontal equivalent (HE)}}$

VI = 1132 m – 944 m = 188 m ✓

HE = $\frac{3,2 \text{ cm} \checkmark \times 50\,000}{100}$ [3,1 cm – 3,3 cm] HE = 3,2 cm ✓ x 500
= 1600 m ✓ [1500 m – 1700 m] = 1600 m ✓

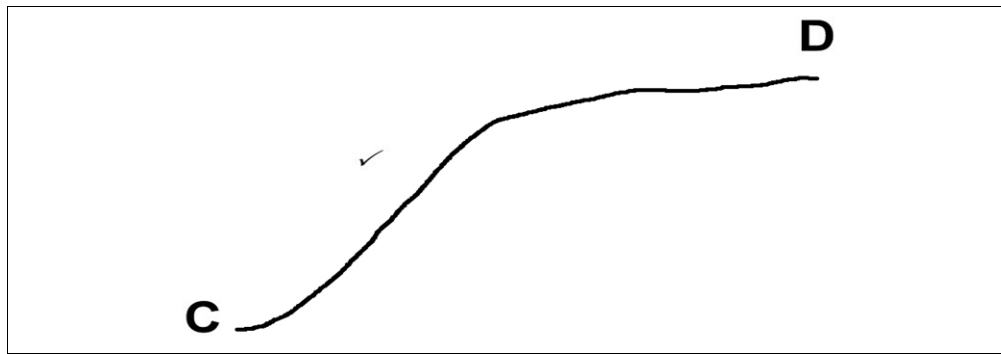
Gradient = $\frac{188 \text{ m}}{1600 \text{ m}}$ ✓ = $\frac{188 \text{ m}}{1\,600 \text{ m}}$ ✓
= 1 : 8,5 or $\frac{1}{8,5}$ ✓ = 1 : 8,5 or $\frac{1}{8,5}$ ✓

[Range: 1 : 8,2 – 1 : 8,8]

$\frac{1}{8,2}$ – $\frac{1}{8,8}$

(5 x 1) (5)

- 2.3.2 Refer to points **C** and **D** on the topographic map and draw a free-hand cross-section.



(1 x 1) (1)

- 2.3.3 Is there intervisibility between point **C** and point **D**?

Give a reason for your answer.

Answer: *Not visible / No* ✓

Reason:

*The shape of the slope forms an obstacle between the two places /
There is a convex slope* ✓

(1 + 1) (2)

- 2.3.4 Assume that a rough cross-section you drew in QUESTION 2.3.2 is using a vertical scale of 1 cm = 20 m. Calculate the vertical exaggeration of the cross-section.

Show ALL calculations. Marks will be awarded for calculations.

Formula: $VE = \frac{VS}{HS}$

$VS = 1 \text{ cm} : 20 (100) = 2\,000 \text{ cm}$

$1 \text{ cm} : 2\,000 \text{ cm}$

$1 : 2\,000$ ✓

$HS = 1 : 50\,000$ ✓

$VE = \left(\frac{VS = 1:2\,000}{HS = 1:50\,000} \right) \checkmark \left(\frac{1}{2\,000} \div \frac{1}{50\,000} \right)$

$VE = \left(\frac{1:2\,000}{1:50\,000} \right)$ Correct substitution

$= \left(\frac{1}{2} \checkmark \frac{50}{1} \right) \checkmark \text{OR} \left(\frac{1}{2\,000} \times \frac{50\,000}{1} \right) \checkmark$

OR $\frac{1}{20\,000} \div \frac{1}{50\,000}$

$\frac{VS}{HS} = \frac{1:2\,000}{1:50\,000} \checkmark$

$\left(\frac{1}{2\,000} \times \frac{50\,000}{1} \right)$

OR $\left(\frac{1}{2} \times \frac{50}{1} \right)$

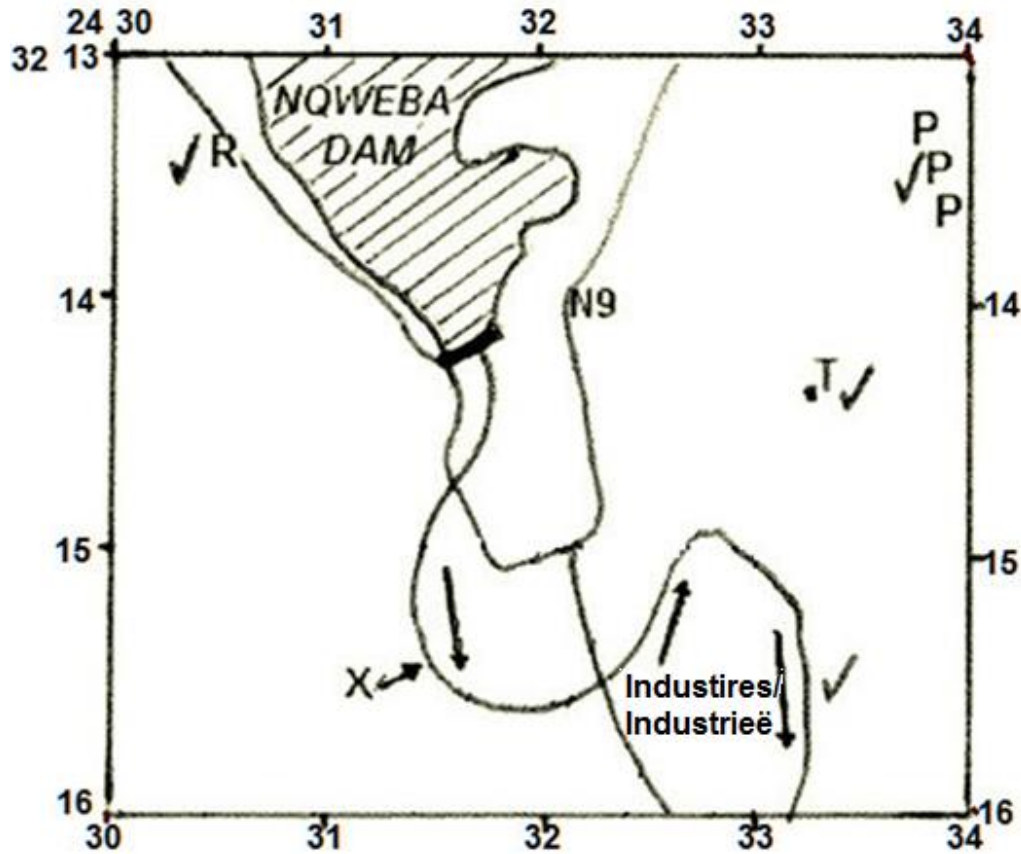
$VE = 25 \text{ times}$ ✓ (learner must indicate times or x ✓)

(4 x 1) (4)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

- 3.1 The sketch map below represents the area covered on the topographic map in the following blocks **E1, 2, 3, 4 / F1, 2, 3, 4** and **G1, 2, 3, 4**. Study the topographic map and then indicate the features, referred to in QUESTIONS 3.1.1–3.1.5 as accurately as possible on the sketch map.



- 3.1.1 Use arrows (→ →) to show the flow direction of the river at **X**.

On the sketch ✓ (1 x 1) (1)

- 3.1.2 Use the letter **R** to indicate where the R63 links Graaff-Reinet with Murraysburg.

On the sketch ✓ (1 x 1) (1)

- 3.1.3 Use the letter **T** to indicate on the sketch the position of Lokasiekop trigonometric beacon.

On the sketch ✓ (1 x 1) (1)

3.1.4 Indicate the human activity found at **P**.

P = Excavation ✓

(1 x 1) (1)

3.1.5 If the prevailing wind is north-west, name ONE residential area that will be affected by air pollution from the factories in block **G3**, on the topographic map.

Kroonvale ✓

Asherville ✓

[Any ONE]

(1 x 1) (1)

3.2 The mapped area surrounding Graaff-Reinet has been exposed to drought and desertification.

3.2.1 Define the term *drought*.

A lengthy period of time with little or no rain that impacts on the demands of human activities ✓

[Concept]

(1 x 1) (1)

3.2.2 Identify and explain ONE major environmental impact of drought in the Graaff-Reinet area, in block **C10**.

Soil erosion ✓

(1)

Little vegetation ✓✓ cover – absence of vegetation will lead to loss of top soil ✓✓

Dry and barren – loss of top soil ✓✓ / loss of soil fertility ✓✓

Crop failure ✓✓ / loss of grazing lands ✓✓

[Any ONE] (2)

(1 + 2) (3)

3.2.3 Local water supplies are of great importance in the Graaff-Reinet area.

List FOUR measures that the farmer in blocks **D9/10** has used to solve the negative effects of drought.

Reservoir ✓

Windpump ✓

Dam ✓

Furrows ✓

(4 x 1) (4)

3.3 Refer to blocks **D10**, **D11** and the picture below of the road cutting through the mountains and answer the following questions.

3.3.1 Name the *mass movement* that is likely to occur along the road.

Rock falls ✓

(1 x 1) (1)

3.3.2 Suggest TWO solutions to prevent further mass movement as identified in QUESTION 3.3.1.

Measures to prevent:

Place nets over exposed slope ✓✓

Build retainer walls at the foot of slope ✓✓

Use rock bolts to hold rocks in place ✓✓

Ensure slopes remain vegetated ✓✓

Cement over the exposed slope where rockfall occurs ✓✓

Build a half tunnel over the more dangerous area ✓✓

[Solutions must be linked to rockfalls]

[Any TWO]

(2 x 2) (4)

3.4 Refer to the horizontal landforms labelled **F** (block **F10**) and **G** (block **I2**) on the topographic map.

3.4.1 Name the landforms found at **F** and **G** respectively.

F = Mesa ✓

G = Conical hill ✓

(2 x 1) (2)

3.4.2 Which igneous intrusion forms the hard cap at the top of the feature labelled **F**? Sill **or** Dyke.

Sill ✓

(1 x 1) (1)

3.4.3 Evaluate TWO negative consequences that this type of landscape has on the economic potential of the area.

Difficult to get water from the bottom to areas due to slopes being steep ✓✓

Transport is limited due to relief of area – expensive to build bridges ✓✓

[Any TWO]

(2 x 2) (4)

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 4.1.1 Is the orthophoto map of Graaff-Reinet, a vector or raster map?

Raster ✓

[Linked Question – if Q 4.1.1 is correct, than mark Q 4.1.2]

(1 x 1) (1)

4.1.2 Give a reason to support your answer to QUESTION 4.1.1.

Shows graphics as rows and columns of tiny rectangular pixels to form a grid ✓

(1 x 2) (2)

4.2 Identify a polygon feature, a line feature and a point feature respectively in block **A3**.

Polygon = Orchard & vineyard / Erosion ✓

Line = Perennial river / non-perennial river / Fence / Hiking trail / Contour lines ✓

Point = Spot heights (826, 816, 807) / Windpump / Weir / trees ✓

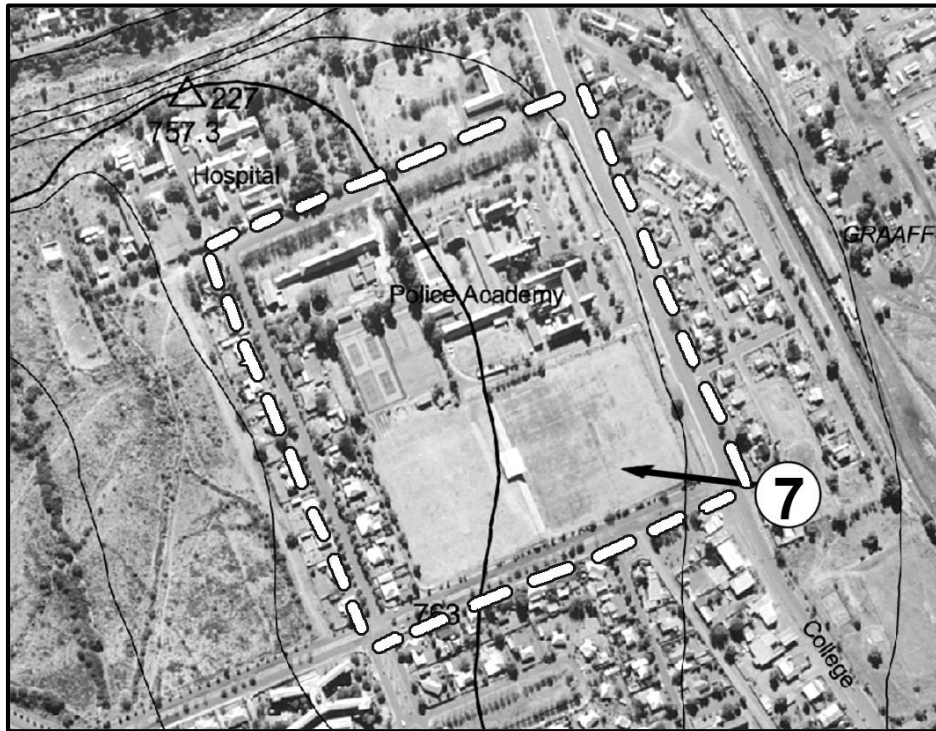
(3 x 1) (3)

4.3 Refer to the Police Academy labelled **7** on the orthophoto map and the TWO inserts **A** and **B** below.

A



B



[Source: Orthophoto map extract Graaff-Reinet]

4.3.1 Define the term *spatial resolution*.

Refers to the detail with which a map depicts the location and shape of the features ✓

[Concept]

(1 x 1) (1)

4.3.2 Which picture, **A** or **B**, has the higher resolution?

B ✓

(1 x 1) (1)

4.3.3 Give ONE reason to your answer in QUESTION 4.3.2.

The smaller the size of grid cell, the better its resolution and more accuracy ✓✓

Outline of buildings are clear ✓✓

Text is clear ✓✓

More detail about the surroundings of buildings can be obtained ✓✓

[Any ONE]

(1 x 2) (2)

- 4.4 Refer to the Police Academy marked **7** on the orthophoto map and answer the following questions.

4.4.1 Define the term *attribute data*.

Further information about an area in addition to its location ✓
[Concept]

(1 x 1) (1)

4.4.2 You are tasked to create an attribute table for the Police Academy database. Name THREE attributes you would consider including in your GIS.

Academy address ✓
Contact information ✓
Geographical position ✓
No. of police officers ✓
No. of rooms / offices / classrooms ✓
Type of buildings ✓
Type of roof covering ✓
Furniture in rooms ✓
No. of sport fields ✓
[Any other applicable answer]

(3 x 1) (3)

4.4.3 Give the spatial position of the Police Academy labelled **7**.

Co-ordinates: 32°15'44"S 24°32'17"E ✓
South of Graaff-Reinet ✓
[or in relation to any other feature]

(1 x 1) (1)
[15]

TOTAL: 75