GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

# PREPARATORY EXAMINATION

# 2017

# MARKING GUIDELINES

**GEOGRAPHY (P2) (10782)**

**10 pages**

**GAUTENG DEPARTMENT OF EDUCATION**

**PREPARATORY EXAMINATION**

**GEOGRAPHY**
**(Second Paper)**

**MEMORANDUM**

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**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

The questions below are based on the 1:50 000 2529 AB GROBLERSDAL topographic map, 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 correct answer and write only the letter (A-D) in the block next to each question.

1.1 Groblersdal is situated in … province.

A Mpumalanga
B Limpopo
C KwaZulu-Natal
D Gauteng

**B**

1.2 The origin of Groblersdal is due to the … in the area.

A transport network
B fertile soil
C irrigation scheme
D flat land

**C**

1.3 The orthophoto map code north of 2529 AB 18 is …

A 2529 AB 23.
B 2529 AB 13.
C 2529 AB 19.
D 2529 AB 17.

**B**

1.4 The contour lines at **1** on the orthophoto map indicates a ... gradient.

A convex
B concave
C gradual
D steep

**D**

1.5 The grid reference of the excavation site point **R** in Block **J5** is …

A 25°11.1'S 29°23.5'E / 25°11'6"S 29°23'30"E.
B 25°11.3'S 29°23.7'E / 25°11'18"S 29°23'42"E.
C 25°11.1'E 29°23.5'S / 25°11'6"E 29°23'30"S.
D 25°11.3'E 29°23.7'S / 25°11'18"E 29°23'42"S.

**A**

1.6 The straight-line distance from the benchmark 929.9, point **M** in Block **J6** to the hospital, point **N** in Block **I6** on the topographic map, is … km.

A 19
B 3,8
C 1,9
D 38

**C**

1.7 The general direction of flow of the Lepele River in Block **K8** is ...

A north.
B northeast.
C south.
D southwest.

**A**

1.8 The landform at line **2** on the orthophoto map illustrates a …

A spur.
B valley.
C neck.
D saddle.

**A**

1.9 The stream order of the river at point **O** in Block **B9** is …

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

**C**

1.10 The drainage pattern of the river in **C8** on the topographic map is …

A rectangular.
B trellis.
C dendritic
D radial.

**B**

1.11 The major land-use zone found in Block **J6** is the …

A industrial zone
B residential area
C rural-urban fringe
D commercial zone

**C**

1.12 The dominant shape of the rural settlement at Vin Kol in Block **I8** is …

A linear.
B crossroad.
C dispersed.
D clustered.

**A**

1.13 the street pattern indicated as **3** on the orthophoto map is …

a grid-iron.
b planned irregular.
c radial.
d unplanned irregular

**B**

1.14 The type of mining used to extract minerals at the Blue Ridge Mine in Block **K11** is …

A dredging.
B open cast.
C fracking
D shaft..

**D**

1.15 The main primary activity that is taking place in Block **E5** is …

A forestry.
B Crop farming.
C fishing.
D mining.

**B**

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

## QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 2.1.1 Calculate the area of the demarcated area at **4** on the orthophoto map in km². Show ALL calculations. Marks will be awarded for calculations.

Formula: Area = length x breadth

= (9.5 √ cm x 0.1 km)(4.1 √ cm x 0.1 km)
(9.4 cm - 9.6 cm) (4 cm - 4.2 cm)
= 0.95 √ km x 0.41 √ km
= 0.39 km² √
*[Range: 0.378 km² – 0.40 km²]* (5 x 1) (5)

2.1.2 Why does the demarcated area on the orthophoto map look larger than the same area on the topographic map?

*Orthophoto map's scale is larger than the scale of the topographic map* √
*Orthophoto map's scale is 5 times larger than the scale of the topographic map* √
*1:10 000 is a larger scale than 1:50 000* √
*(Any ONE)* (1 x 1) (1)

2.2 2.2.1 (a) Calculate the average gradient between spot height 1179 in Block **A9** and Trigonometrical station 97 in Block **A11** on the topographic map. Show ALL calculations. Marks will be awarded for calculations.

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

*VI = 1 402 m – 1179 m*
*= 223 m √*

*HE = 5 √ cm x 500 m*
*[Range: 4.9 cm – 5.1 cm]*

*= 2 500 m √*
*[Range 2 450 m – 2 550 m]*

*G = 223 √*
*2 500*

*[Mark allocated for correct substitution]*

*= 1*
*11.21*

*= 1:11.21 / 1 in 11.21 √*

*[Range: 10.98 – 11.44]*

**OR**

*VI = 1 402 m – 1 179 m*
*= 223 m √*

*HE = 5 √ cm x 50 000*
*100*

*= 2 500 m √*

*G = 223 √*
*2 500*

*= 1*
*11.21*

*= 1:11.21 / 1 in 11.21 √*

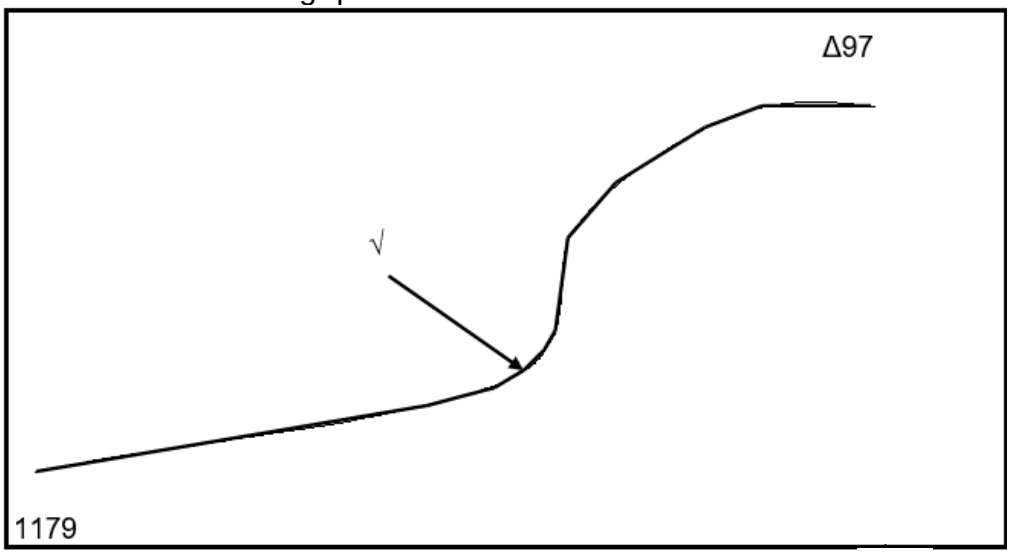
(5 x 1) (5)

(b) The average gradient, that you calculated in QUESTION 2.2.1 (a) is steep. Give a reason to support this statement.

*For every 1 unit vertically we move 11.21 units horizontally √*
*HE is below 20 √*
*Small ratio between VI and HE √*
*(Any ONE)*

(1 x 1) (1)

2.2.2 Below is a free-hand (rough) cross-section from spot height 1179 in Block **A9** to Trigonometrical Station 97 in Block **A11**. Use the sketch to answer the following questions.




(a) Indicate the secondary road on the above sketch. (1 x 1) (1)

(b) Give a reason, evident on the cross-section or topographic map, for the position of the secondary road.

*The gradient in this area is relatively gentle* √
*It is cheaper to construct the secondary road in this region* √
*(Any ONE)* (1 x 1) (1)

2.3 2.3.1 Calculate the magnetic declination of Groblersdal for the present year.

*Difference in years:* *= 2017 – 2014 = 3 years* √

*Mean annual change:* *= 4' W* √

*Total change:* *= 3 x 4' = 12' W* √

*Magnetic declination for 2017: = 17°16' W + √ 12' W = 17°28' W* √

(5 x 1) (5)

2.3.2 State the importance of calculating the current magnetic declination in order to determine the magnetic bearing of an area.

*If you don't calculate the current magnetic declination your magnetic bearing won't be for the current year* √
*(Any ONE)* (1 x 1) (1)

**[20]**

**QUESTION 3: APPLICATION AND INTERPRETATION**

3.1 Refer to the valley in Blocks **I1** and **2** and **J1** and **2** on the topographic map

3.1.1 Identify the wind that will develop in the valley during the day.

*Anabatic wind* √ (1 x 1) (1)

3.1.2 Explain the main factor that is responsible for the formation of the wind, identified in QUESTION 3.1.1.

*The slopes are heated and this causes the air above the slope to heat and rise up the slope* √√ (1 x 2) (2)

3.1.3 Explain TWO factors that influenced the site of Oude Stad in Block **I1**.

*Flat land which makes construction and farming easier* √√
*Next to the canal for water supply* √√
*Fertile soil* √√
(*Any TWO*) (2 x 2) (4)

3.2 Refer to Block **C7** and **D7** on the topographical map to answer the following questions.

3.2.1 Identify the stream channel pattern labelled **P** in Blocks **C7** and **D7**.

*Meander* √ (1 x 1) (1)

3.2.2 Give TWO physical reasons from the topographic map that would have influenced the development of this stream channel pattern.

*Gradual slope* √
*Velocity of river slows down* √
*Deposition of material on the inside curve of meander*√
(*Any TWO*) (2 x 1) (2)

3.2.3 The stream channel pattern identified in QUESTION 3.2.1, and the physical reasons (answer to QUESTION 3.2.2), are characteristics of which stage of the river?

*Middle stage* √ (1 x 1) (1)

3.3 Refer to Groblersdal in Block **H5** and Motetema in Block **D9**.

3.3.1 Give TWO points of evidence that both Groblersdal and Motetema are central place towns.

*Schools,* √ *hospital / clinic,* √ *church,* √ *recreation,* √ *shop,* √ *police station,*√ *college* √
*(Any TWO)* (2 x 1) (2)

3.3.2 (a) Which settlement, Groblersdal or Motetema, is a higher order sevice centre?

*Groblersdal* √ (1 x 1) (1)

(b) Using the medical facilities available in Groblersdal and Motetema give a reason for your answer for your answer to QUESTION 3.3.2 (a).

*Groblersdal has a hospital and clinic and Motetema only has a clinic* √√ (1 x 2) (2)

3.4 Refer to the Krokodildrif farm in Blocks **D6** and **D7**.

3.4.1 Is small-scale or large-scale farming being practised at Krokodildrif?

*Large-scale farming*. √ (1 x 1) (1)

3.4.2 Give TWO points of evidence from the topographic map to support your answer to QUESTION 3.4.1.

*Large area cultivated* √
*Irrigation / dams / furrow / canal* √
*Variety of crops* √
*Many roads lead into the town / accessibility* √
*Many dwellings imply large labour force* √
*(Any TWO)* (2 x 1) (2)

3.5 Is conservation taking place in the area covered by the topographic map? Give a reason for your answer.

Answer: *Yes* √
Reason: *There is a protected area in the south eastern section of the map.* √ √
(1 + 2) (3)

3.6 Refer to the dams in Blocks **A3** and **A4**.

3.6.1 State the main agricultural product for which the dams supply water.

*Grapes* / fruit√ (1 x 1) (1)

3.6.2 Explain the importance of these dams to this agricultural product in the mapped area.

*It supplies water during the winter season when the area receives very little rainfall.* √√
*Is a water resource for times of drought* √√
*(Any ONE*) (1 x 2) (2)

**[25]**

## QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Refer to the orthophoto and topographic maps

4.1.1 Define the term *resolution*.

*It refers to the degree of detail and accuracy of an image* √
*(Concept)* (1 x 1) (1)

4.1.2 Does the orthophoto or topographic map show raster data? Give a reason for your answer.

Map: *Orthophoto map* √
Reason *The orthophoto map is an image / photo* √√
*The orthophoto map is made up of pixels* √√
*Topographic map is made up of points, lines and polygons* √√
*(Any ONE reason)* (1 + 2) (3)

4.1.3 In order to improve the quality of the orthophoto map would you use a 6 or a 16 megapixel camera? Give a reason for your answer.

Camera: 16 megapixel √
Reason: *It has more digital blocks / megapixels which makes the image clearer* √√ (1 + 2) (3)

4.2 Refer to **Q** in Blocks **H6** and **I7**.

4.2.1 Define the concept *buffering.*

*To indicate an imaginary zone of interest / protective boundary around an area.*√
*(Concept)* (1 x 1) (1)

4.2.2 Give ONE reason why the area next to the Lepelle (Olifants) River, indicated as **Q** on the topographic map, was buffered.

*To indicate the area that will be flooded after heavy rain* √√
*To indicate boundaries where no activity can take place due to chances of flooding* √√
*To limit the effect of pesticides / insecticides / fertilizer on the river* √√
*(Any ONE)* (1 x 2) (2)

4.3 The farmer decides to use data manipulation on his farm situated in Blocks **C7/8** to **D7/8** to assist him in practising sustainable farming methods.

4.3.1 Explain the term *data manipulation.*

*When different layers of data are standardized and integrated to use to study a specific problem / query* √
(Concept) (1 x 1) (1)

4.3.2 Evaluate how data manipulation will assist the farmer in Blocks **C7/8** to practise sustainable farming methods.

*The farmer will evaluate the gradient,* √√ *drainage density* √√ *and soil profile (data layers)* √√ *to decide what product, type of farming and farming methods to use to gain maximum use of the area* √√
*(Any TWO)* (2 x 2) (4)

**[15]**

**TOTAL: 75**