GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION

2019

MARKING GUIDELINES

GEOGRAPHY (PAPER 2) (10782)

12 pages

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographical map 3318 DD STELLENBOSCH, 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 The province situated directly north of Stellenbosch is …

A Western Cape.
B Eastern Cape.
C Northern Cape.
D KwaZulu-Natal.

C

1.2 The index code of the map directly north-west of the Stellenbosch map is …

A 3318 DB
B 3318 DC
C 3318 DA
D 3318 BA

C

1.3 The direct distance between spot height 1210 in block **E14** and trigonometrical station 390 in block **F10** on the topographical map, is … km.

A 6,25
B 6,45
C 6,14
D 6,34

A

1.4 The dam wall (**J**) in block **B7** is … metres above sea level.

A 240
B 220
C 200
D 260

B

1.5 The landform at **1** on the orthophoto map is a …

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

C

1.6 Point **K** in block **H3** on the topographic map, where the Eerste River and the Bloukliprivier meet, is called a / an …

A watershed.
B interfluve.
C confluence.
D source.

C

1.7 The stream order at **L** in block **E13** on the topographic map is a … order.

A first
B second
C fourth
D third

B

1.8 The Eerste River in block **G5** on the topographic map is an example of a / an … river.

A Permanent
B exotic
C periodic
D episodic

A

1.9 The blue dotted line at **M** in block **H10** on the topographic map indicates a / an …

A non-perennial river.
B perennial river.
C underground tunnel.
D underground pipeline.

D

1.10 The street pattern at **2** on the orthophoto map is ...

A linear.
B irregular.
C radial.
D gridiron.

B

1.11 Stellenbosch is an example of a … town.

A gap
B industrial
C central place
D specialised

D

1.12 The tertiary economic facility at **3** on the orthophoto map is ...

A educational.
B a medical clinic.
C a shopping centre.
D a financial institution.

A

1.13 The type of rural settlements found at **N** in block **D3** on the topographic map is …

A linear.
B round.
C T-shaped.
D stellar.

A

1.14 The point symbol in block **E6** on top of the Papegaaiberg is a …

A communications tower.
B monument.
C place of worship.
D cemetery.

A

1.15 The large-scale farming activity in Jonkershoek in block **G11** on the topographic map is …

A fishing.
B livestock.
C fruit.
D forestry.

D

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

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the area indicated as **4** on the orthophoto map.

Calculate the area of the farm indicated as **4** in km². Show ALL calculations. Marks WILL be awarded for calculations. Clearly indicate the unit of measurement in your final answer.

Formula: **Length x Breadth**

Length: (4,7 cm√ x 0,1 km) RANGE: [4,6 cm – 4,8 cm]

Breadth: (4,7 cm√ x 0,1 km) RANGE: [4,6 cm – 4,8 cm]

0,47 km√ x 0,47 km√ RANGE: [0,46 km – 0,48 km] [0,46 km – 0,48 km]

0,22km² √ RANGE: [0,21 km – 0,23 km] (5 x 1) (5)

2.2 With reference to the calculation of gradient on the topographical map:

2.2.1 Calculate the gradient of the slope between trigonometrical beacon 397 (block **G9**) and trigonometrical beacon 404 (block **G9**) on the topographical map. Show ALL calculations. Marks WILL be awarded for calculations

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

VI = 928 m – 579,7 m
= 348,3 m √

HE = 2,2 cm √ x 500 m
= 1 100 m √
RANGE: (2cm – 2,4 cm)

G = $\frac{348,3}{1\,100}$ √

(For correct substitution)

= $\frac{1}{3,15}$

= 1 : 3,15 √

OR

VI = 928 m – 579,7 m
= 348,3 m √

HE = $\frac{2,2 \text{ cm } √ \text{ x } 50\,000}{100}$
= 1 100 m √
(2 cm – 2,4 cm)

G = $\frac{348,3}{1\,100}$ √

(For correct substitution)

= $\frac{1}{3,15}$

= 1 : 3,15 √

Range [1 : 2,87 – 1 : 3,45] (5 x 1) (5)

2.2.2 Comment on the gradient of the slope calculated in QUESTION 2.2.1.

The slope is steep. √ For every 3.15 m you walk horizontally, the slope increases by 1 m. √

(2 x 1) (2)

2.3 Refer to the topographical map.

2.3.1 Calculate the magnetic bearing from spot height 1104 in block **G13** to spot height 1110 in block **G15** for the current year. Show ALL calculations. Marks WILL be awarded for calculations.

Difference in years: ***2019 – 2015 = 4 yrs***

Mean Annual Change: ***7' westwards***

Total Annual change: ***28' West of True North***√

Magnetic declination: ***25°03' + 28' = 25°31' West***

True bearing: ***83°***√ ***RANGE: [82° – 84°]***

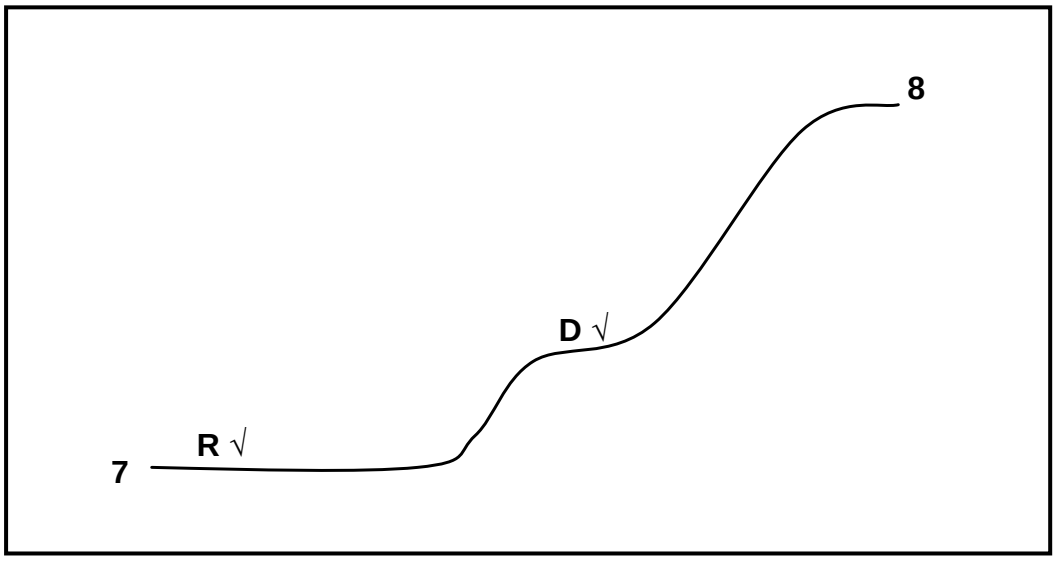
Magnetic bearing for: ***25°31' + 83°***√

108°31'√***West of True North*** (4 x 1) (4)

2.3.2 Explain why true bearing is used rather than compass direction in the aviation industry.

True bearing is more accurate than compass direction √√ (1 x 2) (2)

2.4 Refer to line **7** – **8** on the orthophoto map. The following is a free hand cross-profile from **7** to **8** on the orthophoto map.



Indicate the exact location of the following on the cross profile.
Use the key indicated below:

Dam – D
Recreational area – R (2 x 1) (2)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the Jonkershoek area in the south-eastern corner of the topographic map.

3.1.1 Identify the landform found between **O** and **P** in Jonkershoek.

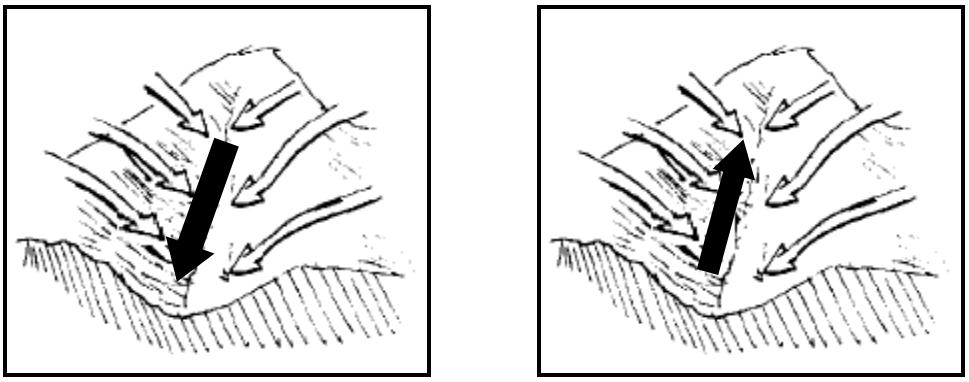
Valley √ (1 x 1) (1)

3.1.2 Name the local wind that will develop during the night at the landform identified in QUESTION 3.1.1.

Katabatic wind √ (1 x 1) (1)

3.1.3 (a) Which one of the following, FIGURE 3.1.3 **A** or 3.1.3 **B** illustrates the wind identified in QUESTION 3.1.2.

FIGURE 3.1.3 A **FIGURE 3.1.3 B**



[Source: *http://raanz.org.nz/wiki/pmwiki.php?n=TM.Meteorology*]

A √ (1 x 1) (1)

(b) Explain your answer to QUESTION 3.1.3 (a).

At night the valley slopes cool down. Cold air moves down the valley slopes. √√ (1 x 2) (2)

3.1.4 Describe the weather conditions and precipitation that the settlement next to the dam in block **H12** will experience because of the nocturnal winds.

Cold windy conditions with the possible development of frost √√ (1 x 2) (2)

3.2 Refer to the Banghoekriver drainage basin in blocks **F13** and **F14** on the topographic map.

3.2.1 Identify the drainage pattern formed by the river system in blocks **F13** and **F14**.

Dendritic √ (1 x 1) (1)

3.2.2 With reference to the topographical map, name TWO physical features that caused the river system to form the drainage pattern identified in QUESTION 3.2.1.

Underlying rock structure √
The gradient of the slope √ (2 x 1) (2)

3.2.3 (a) Is the drainage density of the Banghoekrivier system in blocks **F13** and **F14** high or low?

High √ (1 x 1) (1)

(b) Explain how the TWO physical features identified in your answer in QUESTION 3.2.2 influenced the drainage density of the drainage basin.

The resistant underlying rock structure resulted in more run-off and a higher density. √√
The steep gradient of the slopes resulted in more run-off and a higher density. √√ (2 x 2) (4)

3.3 Refer to the settlements Partysval**l**ei in blocks **D6** and **D7** and Idasvallei in blocks **E8** and **E9** on the topographic map.

3.3.1 Compare the settlements Partysvallei and Idasvallei by completing the following table.

	PARTYSVALLEI	**IDASVALLEI**
Street pattern	***Planned irregularly*** √	***Grid Iron*** √
Flow of traffic	***Good*** √ **Free-flowing** √	***Traffic congestion*** √

(4 x 1) (4)

3.3.2 In which land-use zone did both these residential areas develop?

Rural-Urban Fringe √

(1 x 1) (1)

3.4 Refer to the Kanonkop farm in block **A7*.***

3.4.1 Identify the main product farmed on the Kanonkop farm.

Fruit √ / **Grapes** √
(Any ONE) (1 x 1) (1)

3.4.2 Is this farmer practising intensive or extensive farming?

Intensive √ (1 x 1) (1)

3.4.3 (a) Does Kanonkop farm practise small-scale or large-scale farming?

Large-scale farming √ (1 x 1) (1)

(b) Motivate your answer with evidence from the topographical map.

Large area cultivated √ √
The construction of dams to collect water for irrigation of orchards √ √
Evidence of large buildings to process the product farmed √ √
Good access to transport routes for the transportation of processed products to the market √ √
(Any ONE) (1 x 2) (2)
[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 You are contracted by the municipality of Stellenbosch to do a paper GIS of the town's accessibility and infrastructure in block **E10** on the topographic map.

4.1.1 What is *data layering*?

Different type of information themes placed on top of each other to see the overall picture√ (1 x 1) (1)

4.1.2 Identify TWO layers of data from block **E10** on the topographic map that you will use to draw a paper GIS map.

Vegetation√
Road√
Water
Built-up area√
Contour lines √ (2 x 1) (2)

4.1.3 Explain with reference to block **E10** how these different data layers can be used effectively to study the accessibility and infrastructure of an area.

The contour lines, drainage features, vegetation and gradient can provide information on the topography of the area to determine whether transport infrastructure can be developed. √√ (1 x 2) (2)

4.2 Refer to the orthophoto map.

4.2.1 What is *spatial resolution*?

Amount of details shown by a map or image√ (1 x 1) (1)

4.2.2 Study the following TWO extracts from the orthophotomap.

PHOTO A PHOTO B



(a) Which of the above photo extracts has a higher resolution?

Photo A √ (1 x 1) (1)

(b) Give a reason for your answer to QUESTION 4.2.2(a).

Many/smaller pixels are used to produce a very clear image √√

(1 x 2) (2)

4.3 The circles on the orthophoto map indicate the sphere of influence and threshold around the University of Stellenbosch **(9)** and a school **(10).**

4.3.1 Suggest a reason for the difference in the sphere of influence of the University and the school.

The demography of the University and school differs √√
A University is a high order function therefore people travel far to attend √√
There are many schools so people travel to the closest one. √√
(Any ONE) (1 x 2)

4.3.2 Describe the type of data that needs to be gathered to be able to draw these circles on the orthophoto map.

Attribute data is needed from the enrolment statistics from the University. √√
Address database of the university students / school learners' needs to be captured √√
Information on how attribute values are distributed √√
Spatial trends of the students / learners in the data √√
(2 x 2) (4)

[15]

TOTAL: 75