basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS

GEOGRAPHY P2

2016

MARKS: 75

TIME: 1½ hours

EXAMINATION NUMBER:													
CENTRE NUMBER:													

	M	In	SM	In	DM	In	CM	In	IM	In	MC	EA	EX	RM	In
Q1															
Q2															
Q3															
Q4															
TOT															

This question paper consists of 12 pages and 1 page for rough work and calculations.

RESOURCE MATERIAL

1. An extract from topographical map 2525DC MAFIKENG

2. Orthophoto map 2525 DC 13 MAFIKENG

3. **NOTE:** The resource material must be collected by schools for their own use.

INSTRUCTIONS AND INFORMATION

1. Write your EXAMINATION NUMBER and CENTRE NUMBER in the spaces on the cover page.

2. Answer ALL the questions in the spaces provided in this question paper.

3. You are provided with a 1 **:** 50 000 topographical map (2525DC MAFIKENG) and an orthophoto map (2525 DC 13 MAFIKENG) of a part of the mapped area.

4. You must hand the topographical map and the orthophoto map to the invigilator at the end of this examination session.

5. You may use the blank page at the back of this question paper for all rough work and calculations. Do NOT detach this page from the question paper.

6. Show ALL calculations and formulae, where applicable. Marks will be allocated for these.

7. Indicate the correct unit of measurement in the final answer of calculations. No marks will be allocated for answers with incorrect units.

8. You may use a non-programmable calculator.

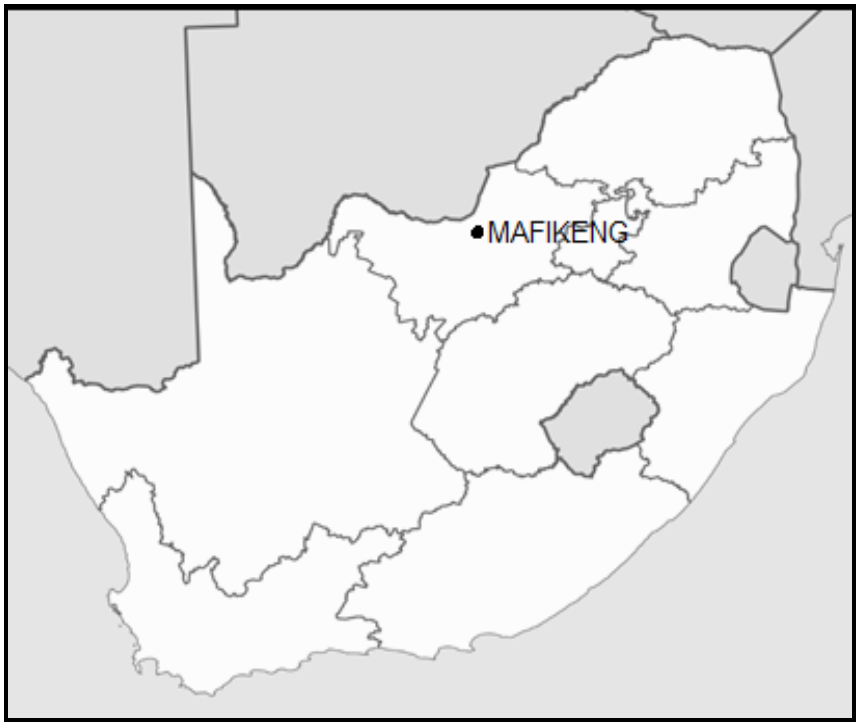
9. The area demarcated in RED on the topographical map represents the area covered by the orthophoto map.

10. The following English terms and their Afrikaans translations are shown on the topographical map:

ENGLISH	**AFRIKAANS**
Diggings	Uitgrawings
Furrow	Voor
Gold Mine	Goudmyn
Golf Course	Gholfbaan
Landing Strip	Landingstrook
River	Rivier
Sewage Works	Rioolwerke
Waterworks	Waterwerke

GENERAL INFORMATION ON **MAFIKENG**

Mafikeng, now known as Mahikeng, is the capital city of the province of North West in South Africa. In 2001 it had a population of 49 300. In 2007 Mafikeng was reported to have had a population of 250 000. The town is built on open veld at an elevation of approximately 1 500 m on the banks of the Upper Molopo River. The Madibi Goldfields are approximately 15 km south of the town. Mafikeng also briefly served as the capital city of Bophuthatswana in the 1970s. The temperature averages 18,5 °C. Mafikeng has an average annual rainfall of 559 mm.



[Source: Examiner's map]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographical map 2525DC MAFIKENG, 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 During the apartheid era Mafikeng was part of the … homeland.

A Ciskei
B Bophuthatswana
C Transkei
D Venda

1.2 The map index/reference of the topographical map to the south-west of Mafikeng is …

A 2525CD.
B 2625BB.
C 2625AB.
D 2625BA.

1.3 The direction of **1** from **2** on the orthophoto map is …

A north-east.
B south-west.
C south-east.
D north-west.

1.4 The true bearing of spot height 1306 (**K**) in block **G9** from trigonometrical station 101 (**L**) in block **H9** is …

A 201°.
B 207°.
C 21°.
D 27°.

1.5 The diggings (**O**) in block **J10** indicates that this is a/an …

A archaeological site.
B agricultural area.
C construction site.
D mining area.

1.6 The grid reference/coordinates/position of the excavation in block **A6** is …

A 25°46'30"S 25°37'06"E/25°46,5'S 28°37,1'E.
B 25°37'06"S 25°46'30"E/28°37,1'S 25°46,5'E.
C 25°46'48"S 25°37'30"E/25°46,8'S 28°37,5'E.
D 25°37'30"S 25°46'48"E/28°37,5'S 25°46,8'E.

1.7 The general street pattern of the urban area in block **F7** is …

A radial.
B planned irregular.
C unplanned irregular.
D a gridiron.

1.8 Features are larger on the orthophoto map than on the topographical map because the orthophoto map …

A is bigger.
B has a smaller scale.
C covers a larger area.
D has a larger scale.

1.9 The actual distance between (**P**) in block **I1** and (**Q**) in block **H4** is …

A 10 km.
B 5 km.
C 12 km.
D 7 km.

1.10 The general direction of the flow of the river in block **F2** is …

A north-west.
B south-west.
C north-east.
D south-east.

1.11 Feature **3** on the orthophoto map is a/an …

A main road.
B other road.
C canal.
D railway line.

1.12 Land-use zone **4** on the orthophoto map is a …

A residential area.
B heavy industrial area.
C light industrial area.
D central business district.

1.13 The feature found at **5** on the orthophoto map is …

A a water purification system.
B a man-made lake.
C a water storage facility.
D sewage works.

1.14 The stream order at **N** in block **J2** is …

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

1.15 The primary activity in the mapped area is …

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

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

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the magnetic declination indicated on the topographical map.

2.1.1 Calculate the magnetic declination of 2525DC Mafikeng for the present year. Indicate the unit of measurement in your final answer. Show ALL calculations. Marks will be awarded for calculations.

Difference in years: _____

_____

Mean annual change: _____

Total change: _____

_____

Magnetic declination for 2016: _____

_____

(5 x 1) (5)

2.1.2 State the importance of calculating the magnetic declination for the present year.

_____

_____

(1 x 1) (1)

2.2 Refer to the area demarcated in RED on the topographical map, which represents the area covered by the orthophoto map. Use the demarcated area to calculate the surface area of the orthophoto map in km². Indicate the unit of measurement in your final answer. Show ALL calculations. Marks will be awarded for calculations.

Formula: **area = length (L) × breadth (B)**

_____

_____

_____

_____

_____

_____

(5 x 1) (5)

2.3 Refer to spot height 1306 (**K**) in block **G9** and trigonometrical station 101 (**L**) in block **H9** on the topographical map.

2.3.1 Calculate the average gradient between spot height 1306 (**K**) and trigonometrical station 101 (**L**). Show ALL calculations. Marks will be awarded for calculations.

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

_____

_____

_____

_____

_____

_____

(5 x 1) (5)

2.3.2 Is the average gradient between spot height 1306 and trigonometrical station 101 calculated in QUESTION 2.3.1 a true reflection of the gradient in reality? Give a reason for your answer.

_____

_____

_____

(1 + 1) (2)

2.3.3 Is spot height 1306 visible from trigonometrical station 101? Give a reason for your answer.

_____

_____

(1 + 1) (2)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the table below, the information on Mafikeng (on page 3) and the topographical map to answer the questions that follow.

Average monthly precipitation (mm) for Mafikeng

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
114	81	68	49	21	4	1	5	10	52	72	82

3.1.1 Name the season that experiences the lowest precipitation.

_____

(1 x 1) (1)

3.1.2 Name the high-pressure cell that is responsible for the low precipitation in the season named in QUESTION 3.1.1.

_____

(1 x 1) (1)

3.1.3 Explain why the high-pressure cell in the answer to QUESTION 3.1.2 causes a low precipitation.

_____

_____

(1 x 2) (2)

3.1.4 State TWO ways, visible on the topographical map, in which farmers around Mafikeng have prepared for drought conditions often experienced in South Africa.

_____

_____

(2 x 1) (2)

3.2 The post-apartheid industrial development committee is considering developing Mafikeng. Refer to the topographical map and the orthophoto map and discuss TWO favourable factors that they should consider.

_____

_____

_____

_____

(2 x 2) (4)

3.3 Compare block **F6** on the topographical map with the same area on the orthophoto map and state ONE way in which the democratic government has provided the poorer communities with basic needs.

_____

_____

_____

(1 x 2) (2)

3.4 3.4.1 State ONE advantage and ONE disadvantage of the Upper Molopo River flowing through the town of Mafikeng.

Advantage:_____

_____

Disadvantage: _____

_____

(2 x 1) (2)

3.4.2 Explain TWO ways in which the Mafikeng municipality can limit the effects of the disadvantage in your answer to QUESTION 3.4.1.

_____

_____

_____

_____

_____

(2 x 2) (4)

3.5 Refer to the industrial area in blocks **E6** and **E7**.

3.5.1 Is this a heavy industrial area or a light industrial area?

_____

(1 x 1) (1)

3.5.2 Discuss TWO factors that influenced the location of this industrial area.

_____

_____

_____

_____

(2 x 2) (4)

3.6 State ONE difference between the settlement pattern at **M** in block **B4** and the settlement pattern at **R** in block **D2**.

M: _____

R: _____

(2 x 1) (2)

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Refer to the topographical map and the orthophoto map of Mafikeng.

4.1.1 Which one, the topographical map or the orthophoto map, is made up of:

Pixels/Grid cells: _____

Point, line and polygon symbols: _____

(2 x 1) (2)

4.1.2 State TWO ways in which a high resolution will be of greater assistance when examining features.

_____

_____

_____

(2 x 1) (2)

4.2 Refer to the golf course in block **C7**.

4.2.1 Explain the term *data layer*.

_____

_____

(1 x 1) (1)

4.2.2 Name TWO data layers that influenced the location of the golf course.

_____

_____

_____

(2 x 2) (4)

4.3 Spatial data and attribute data are used when examining features on a map.

4.3.1 Differentiate between *spatial data* and *attribute data.*

_____

_____

_____

_____

(2 x 2) (4)

4.3.2 State TWO attributes of the stream (**N**) in block **J2** on the topographical map.

_____

_____

(2 x 1) (2)
[15]

TOTAL: 75

ROUGH WORK AND CALCULATIONS
(NOTE: Do NOT detach this page from the question paper.)