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75

PHOENIX SOUTH CLUSTER PAPER

GEOGRAPHY

PAPER 2

JUNE 2019

GRADE 11

MARKS: 75

TIME: 1½ hours

NAME :_____

SURNAME :_____

DIVISION :_____

This question paper consists of 13 pages.

RESOURCE MATERIAL

1. An extract from topographical map 2627CD PARYS
2. Orthophoto map 2627 CD 19 PARYS
3. **NOTE:** The resource material must be collected by schools for their own use.

INSTRUCTIONS AND INFORMATION

1. Write your Name, Surname and Division 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 (2627CD PARYS) and an orthophoto map (2627 CD 19 PARYS) 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 use supplied 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 and a magnifying glass.
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
Aerodrome	Vliegveld
Caravan Park	Karavaanpark
Diggings	Uitgrawings
Golf Course	Gholfbaan
Gap	Poort
Holiday Resort	Vakansieoord
Island	Eiland

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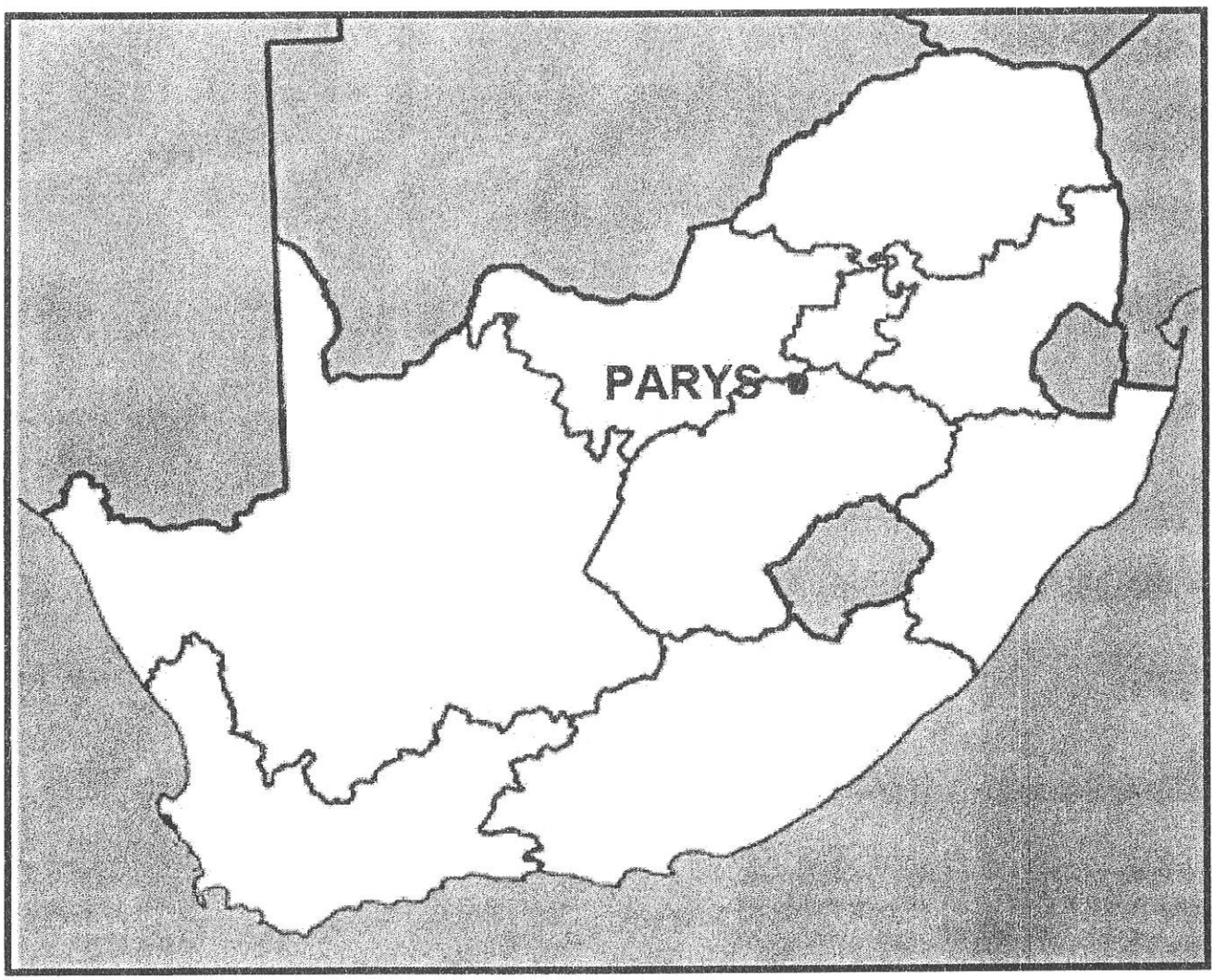
GENERAL INFORMATION ON PARYS

Parys is a town in the Free State in South Africa. It is located on the banks of the Vaal River approximately 115 km south of Johannesburg. The completion of the railway line to Parys in 1905 suddenly made Parys more accessible to the public and this, in turn, led to the growth of the town as a holiday resort and industrial centre. Many artists have settled in the town and the variety of new, interesting shops and attractions make it the ideal breakaway from Gauteng and other big centres. Parys lies within the Vredefort Dome World Heritage Site. The Vredefort Crater is the largest verified impact crater on Earth. The Vredefort Dome was added to the list of UNESCO World Heritage Sites for its geological interest.



Coordinates: 26°54'S 27°27'E

[Adapted from http://en.wikipedia.org/wiki/Parys, South Africa, Freestate]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1:50 000 topographic map (2627 CD PARYS), 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 other.

1.1 The map index/reference of the topographic map north west of Parys is …

A 2627DA
B 2727BA
C 2627CA
D 2727AA

1.2 The topographical map scale of 1:50 000 means that one centimeter on the map represents … kilometres on the ground.

A 0.1
B 0.01
C 0.05
D 0.5

1.3 The topographical map of Parys was drawn using the … projection.

A Gauss conform
B Transversal
C Lambert
D Mercator

1.4 The landform represented by the letter **4** on the orthophoto map is a…

A Spur
B Valley
C Saddle
D Butte

1.5 Parys is located in the … province

A Gauteng
B Kwazulu-Natal
C Orange Free State
D Eastern Cape

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1.6 The area West End (labelled W) on the topographical map is located in the ... part o the orthophoto map,

A North-western
B Northern
C Southern
D North-eastern

1.7 The human made feature found at **K** on the topographical map is a ...

A Power line
B wind pump
C monument
D place of worship

1.8 The type of infrastructure labeled **3** on the orthophoto map is a/an ...

A national road
B telephone line
C secondary road
D main road

1.9 The straight line distance from point **6** to **7** on the orthophoto map is ...

A 7.35 km
B 1.48 km
C 7.35 m
D 1.48 m

1.10 The type of farming taking place a **V** in block **E1** is ... farming.

A poultry
B stock
C fruit
D crop

1.11 The landuse feature **1** on the orthophoto map is a/an ...

A Cemetry
B golf course
C farmlands
D sewerage works

1.12 The height of the index contour line in block **D5** is ... metres.

A 1500
B 1400
C 1600
D 1530

1.13 A tourist travelling on the **R 59** in a north easterly direction from Parys will reach ....

A Viljoenskroon
B Sasolburg
C Fochville
D Dover

1.14 Identify the natural feature in grid block **J3** on the topographical map

A Cultivated land
B Track and hiking trail
C Marsh and Vlei
D Contours

1.15 The orthophoto map uses a contour interval of ... metres.

A 10
B 20
C 15
D 5

15 x 1 [15]

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QUESTION 2: MAP CALCULATIONS AND INTERPRETATION

2.1 Locate the largest dam at Rietpoort in block **F6** and calculate the length of the dam wall in metres. Show all your calculations.

(2 x 1) (2)

2.2 Refer to spot height 1493 in block **D5** and spot height 1573 in block **E6** on the topographical map.

2.2.1 Calculate the average gradient between spot height 1493 and spot height 1573. Show all your calculations

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

(5 x 1) (5)

2.2.2 Interpret your answer to QUESTION 2.2.1.

(1 x 1) (1)

2.2.3 Give the term that is used to describe the fact that the mountain on which spot height 1493 is located can be seen from the ridge where spot height 1573 is located on the topographical map.

(2 x 1) (2)

2.3 Calculate the magnetic declination of Parys for the year 2019.

(5 x 1) (5)

2.4 A cross-section is drawn between points 11 and 12 on the orthophoto map. Assume that the vertical scale is 1cm represents 40m.

2.4.1 Calculate the vertical exaggeration of the cross-section. Show all your calculations.

Formula: Vertical Exaggeration = $\frac{\text{Vertical scale (VS)}}{\text{Horizontal scale (HS)}}$

(5 x 1) (5)

2.4.2 Provide ONE reason why it is necessary for the vertical scale in a cross-section to be exaggerated (made bigger)

(1 x 1) (1)
[20]

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QUESTION 3: APPLICATION OF THEORY/MAP AND PHOTO INTERPRETATION

Refer to both the topographical map and the orthophoto map when answering the questions below.

3.1 The mapped area receives seasonal rainfall. Give TWO points of evidence From the topographical map to substantiate (support) this statement.

_____

_____

_____ (2 x 2) (4)

3.2 Parys is a popular holiday resort.

3.2.1 Give ONE reason why Parys became a popular holiday destination.

_____

_____ (1 x 2) (2)

3.3 State the direction of Westend (**H7**) from Wildehondekop (**J10**).

_____ (1 x 1) (1)

3.4 Orthophoto map evidence indicates that expansion of Parys is most limited in a North Westerly direction. Give ONE reason to support this statement.

_____ (1 x 2) (2)

3.5 Refer to blocks **E1**, **F1** and **F2** on the topographical map. Explain the role of the trees found along the banks of the Vaal River.

_____

_____

_____

_____ (2 x 2) (4)

3.6 Is Commercial or Subsistence farming taking place at Wildehondekop In block **J 10**

_____ (1 x 1) (1)

3.7 Identify the feature above Groot Eiland (**11**) on the orthophoto map that represents height above sea level and state the height of this feature.

_____

_____ (1 + 2) (3)

3.8.1 State the direction in which the river in block **J 8** is flowing.

_____ (1 x 1) (1)

3.8.2 Give TWO reasons to support your answer to question 3.8.1.

_____

_____

_____

_____ (2 x 2) (4)

3.9 State whether the Vaal river is a Seasonal or Perennial river and provide a reason for your answer.

Answer: _____

Reason: _____

_____ (1 + 2) (3)

[25]

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QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Study the topographical map and orthophoto map to answer the questions.

4.1.1 Differentiate between Raster and Vector Data.

Raster: _____

_____

Vector: _____

_____ (2 x 1) (2)

4.1.2 State whether the orthophoto map or topographical map is an Example of Vector Data.

_____ (1 x 1) (1)

4.1.3 Suggest a measure (way) in which data can be collected to do an environmental impact study.

_____

_____ (1 x 2) (2)

4.2 The quality of the orthophoto depends on the type of camera used.

4.2.1 Define the term resolution.

_____

_____ (1 x 1)(1)

4.2.2 The orthophoto map has a medium has a medium resolution. Does this Mean that the orthophoto map has a high level of clarity? Give a reason for your answer.

Answer: _____

Reason: _____

_____

_____ (1 + 2) (3)

4.2.3 Which camera will produce a better-quality picture: 4 or 6 megapixel Camera? Give a reason for your answer.

Camera: _____

Reason: _____

_____ (1 + 2) (3)

4.3 Attribute data provides useful information in a GIS.

4.3.1 Define the term attribute data.

_____

_____ (1 x 1) (1)

4.3.2 Discuss TWO attributes that influenced the location of the hospital in block **G9**.

_____

_____

_____

_____ (2 x 2) (4)

[15]

TOTAL MARKS : 75

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

GREENBURY SECONDARY SCHOOL
DEPARTMENT OF HSS
H.O.D. MR D RAMASAMI
Ramasami
23/05/19

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MEMORANDUM

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1:50 000 topographic map (2627 CD PARYS), 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 other.

1.1 **D**

1.2 **D**

1.3 **A**

1.4 **B**

1.5 **C**

1.6 **D**

1.7 **B**

1.8 **C**

1.9 **B**

1.10 **C**

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1.11 A

1.12 A

1.13 B

1.14 C

1.15 D

15 x 1 [15]

QUESTION 2: MAP CALCULATIONS AND INTERPRETATION

2.1 Locate the largest dam at Rietpoort in block **F6** and calculate the length of the dam wall in metres.

Show all your calculations.

Length = 0,4 x 0,5 x 1000 = 200m (range 150m – 250m)
(range 0,3 – 0,5) (2 x 1) (2)

2.2 Refer to spot height 1493 in block **D5** and spot height 1573 in block **E6** on the topographical map.

2.2.1 Calculate the average gradient between spot height 1493 and spot height 1573. Show all your calculations

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

VI = 1573 – 1493 = 80m

HE = 3,1 x 0,5 x 1000 = 1550 (range 2,9 – 3,3) (1450 – 1650)

= $\frac{80}{1550}$

= $\frac{1}{19,38}$

= 1 : 1938 (1:18,12 - 1:20,6)

(5 x 1) (5)

2.2.2 Interpret your answer to QUESTION 2.2.1.

For every one metre rise, one walks 19,38 metres horizontally. [Concept] (1 x 1) (1)

2.2.3 Give the term that is used to describe the fact that the mountain on which spot height 1493 is located can be seen from the ridge where spot height 1573 is located on the topographical map.

Intervisible / intervisibility (1 x 1) (1)

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2.3 Calculate the magnetic declination of Parys for the year 2019.

Magnetic declination for 2011 = 18^0 52'

Mean annual change = 2' W

Difference in years = 2019 – 2011 = 8 years

Mean annual change = 8 years x 2' = 16'

MD for current year = 18^0 52' + 16'

= 18^0 68'

= 19^0 08' W of True North (5 x 1) (5)

2.4 A cross-section is drawn between points 11 and 12 on the orthophoto map. Assume that the vertical scale is 1cm represents 40m.

2.4.1 Calculate the vertical exaggeration of the cross-section. Show all your calculations.

Formula: Vertical Exaggeration = $\frac{\text{Vertical scale (VS)}}{\text{Horizontal scale (HS)}}$

VS = 1cm : 40m (there 40m = 40 x 100 = 4000)

HS = 1cm : 10 000cm

VE = $\frac{1}{4000} \div \frac{1}{10\,000}$

= $\frac{1}{4000} \div \frac{10\,000}{1}$

= 2,5 times

(5 x 1) (5)

2.4.2 Provide ONE reason why it is necessary for the vertical scale in a cross-section to be exaggerated (mad bigger).

It allows for the relief features to be seen more clearly
If the vertical scale is not exaggerated, the relief feature will be flat.
[Any ONE]

(1 x 1) (1)
[20]

QUESTION 3: APPLICATION OF THEORY/MAP AND PHOTO INTERPRETATION

Refer to both the topographical map and the orthophoto map when answering the questions below.

3.1 The mapped area receives seasonal rainfall. Give TWO points of evidence From the topographical map to substantiate (support) this statement.

Area is dominated by non-perennial rivers
There are dams / windpumps
There are furrows / Reserviors

(2 x 2) (4)

3.2 Parys is a popular holiday resort.

3.2.1 Give ONE reason why Parys became a popular holiday destination.

Its built on the Vredefort Crater
The Vredefort Dome is a World Heritage Site
It is situated along the Vaal river

(1 x 2) (2)

3.3 State the direction of Westend (**H7**) from Wildehondekop (**J10**).

Northwest / Northwesterly

(1 x 1) (1)

3.4 Orthophoto map evidence indicates that expansion of Parys is most limited in a North Westerly direction. Give ONE reason to support this statement.

The area is steep / Mountainous / Rugged landscape

(1 x 2) (2)

3.5 Refer to blocks **E1**, **F1** and **F2** on the topographical map. Explain the role of the trees found along the banks of the Vaal River.
Windbreak to protect cultivated lands
The trees act as a buffer zone
Creates shade for camping, fishing, picnicking,etc
The trees stabilize the river banks
(Any TWO)

(2 x 2) (4)

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3.6 Is Commercial or Subsistence farming taking place at Wildehondekop In block **J 10**

Commercial farming

(1 x 1) (1)

3.7 Identify the feature above Groot Eiland (**11**) on the orthophoto map that represents height above sea level and state the height of this feature.

Bench mark
1378.72 m

(1 + 2) (3)

3.8.1 State the direction in which the river in block **J 8** is flowing.

South Westerly

(1 x 1) (1)

3.8.2 Give TWO reasons to support your answer to question 3.8.1.

Dam walls are facing in a South westerly direction
The tributary joins the main river at an acute angle

(2 x 2) (4)

3.9 State whether the Vaal river is a Seasonal or Perennial river and provide a reason for your answer.

ANSWER: Perennial River

REASON: It consists of a solid blue line that represents perennial rivers on the Map reference.

(1 + 2) (3)

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Study the topographical map and orthophoto map to answer the questions.

4.1.1 Differentiate between Raster and Vector Data.

Raster Data: Data of geographical features shown with grid Cells or pixels

Vector Data: Data of geographical features shown as points, Lines and polygon formats

(2 x 1) (2)

4.1.2 State whether the orthophoto map or topographical map is an Example of Vector Data.

Topographical map (1 x 1) (1)

4.1.3 Suggest a measure (way) in which data can be collected to do an environmental impact study.

Field research
Surveys / Questionnaires
Photographs
Satellite images / Remote sensing
Using existing maps
Physical testing of soil and water quality (1 x 1) (1)

4.2 The quality of the orthophoto depends on the type of camera used.

4.2.1 Define the term resolution.

The clarity of a picture or object (1 x 1)(1)

4.2.2 The orthophoto map has a medium has a medium resolution. Does this Mean that the orthophoto map has a high level of clarity?
Give a reason or your answer.

ANSWER: No.

REASON: Features on the map, although they are clear and visible, require a degree of effort to properly identify them.

(1 + 2) (3)

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4.2.3 Which camera will produce a better-quality picture: 4 or 6 megapixel Camera? Give a reason for your answer.

Camera: **6 megapixel**

Reason: **More pixels**
A higher resolution camera
Clearer picture
Higher definition / better definition
More squares per unit
[Any ONE] (1 + 2) (3)

4.3 Attribute data provides useful information in a GIS.

4.3.1 Define the term attribute data.

It is descriptive information of any feature / object
[Concept] (1 x 1) (1)

4.3.2 Discuss ONE attribute that influenced the location of the hospital in block **G9**.

It is near the arterial route making it more accessible.
It is built on flat land and there is no space for further expansion
It is on the outskirts of the city where it is relatively quiet
[Any TWO]

(1 x 2) (2)

[15]

TOTAL MARKS : 75