



Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1 (THEORY - SECTION A) &
GEOGRAPHY P2 (MAPWORK - SECTION B)

COMMON TEST

MARCH 2018

MARKS: 100 (THEORY 75 + MAPWORK 25)

TIME: 1½ hour (THEORY 1 hour + MAPWORK 30 minutes)

N.B. This question paper consists of 12 pages and
an Annexure of 4 pages.

INSTRUCTIONS

1. The question paper consists of **TWO** sections: **SECTION A (Paper 1)** and **SECTION B (Paper 2)**
2. Both sections must be written in **ONE** session: 1.5 hours.
3. SECTION A: Paper 1: CLIMATE AND WEATHER AND GEOMORPHOLOGY
(1 HOUR)
MARKS: 75
4. SECTION B: Paper 2: MAPWORK (30 MINUTES)
MARKS: 25
5. ALL diagrams in **SECTION A** are included in the **Annexure**.
6. Answer **ALL** questions.

SECTION A – PAPER 1**QUESTION 1**

- 1.1 Refer to **FIGURE 1.1**, showing a cross-section of a tropical cyclone that often occurs along the east coast of southern Africa. Choose the correct word in brackets to make the statement TRUE. Write down only the correct word(s)/number next to the question number (1.1.1 – 1.1.8) in the ANSWER BOOK, e.g. 1.1.9 North.

- 1.1.1 FIGURE 1.1 represents the [developing / mature] stage of a tropical cyclone.
- 1.1.2 The diameter of this weather system is [50 / 500] km.
- 1.1.3 The main cloud type associated with this weather system [nimbostratus / cumulonimbus] clouds.
- 1.1.4 The centre of a tropical cyclone is called the [eye / wall].
- 1.1.5 The rotation of air around this weather system is [anticlockwise / clockwise].
- 1.1.6 Upper air [divergence / convergence] takes place in a tropical cyclone.
- 1.1.7 The general movement of this weather system is [eastwards / westwards].
- 1.1.8 A tropical cyclone is known as a [typhoon / hurricane] in the United States of America. (8 x 1) (8)

- 1.2 Refer to **FIGURE 1.2** based on a river system.

- 1.2.1 Name the river profile that shows the side view of a river from the source to the mouth.
- 1.2.2 Name the landform that is likely to form sand deposits at the river mouth.
- 1.2.3 Which course of the river is steep and deep?
- 1.2.4 In which course of the river is deposition dominant?
- 1.2.5 Name the steep concave outer bend of a meander.
- 1.2.6 State the type of flow characteristic where water flows over an uneven river bed.
- 1.2.7 Which course of the river is characterized by lateral and vertical erosion? (7 x 1) (7)

MID-LATITUDE CYCLONE

1.3 Refer to **FIGURE 1.3** showing a mid-latitude cyclone.

- 1.3.1 Identify the front labelled **X**. (1 x 1) (1)
- 1.3.2 Describe the air movement around the low pressure. (1 x 1) (1)
- 1.3.3 (a) In which stage of development is the mid-latitude cyclone shown in **FIGURE 1.3**. (1 x 1) (1)
- (b) Give ONE reason for your answer to QUESTION 1.3.3(a). (1 x 2) (2)
- 1.3.4 Explain, ONE weather condition associated with the passing of the front labelled **X**. (1 x 2) (2)
- 1.3.5 Outline, in a paragraph of approximately eight lines, the negative impact associated with a mid-latitude cyclone on farming activities in the Southwestern Cape. (4 x 2) (8)

SLOPE ASPECT

1.4 Refer to **FIGURE 1.4** illustrating slope aspect in the southern hemisphere.

- 1.4.1 Define the term *slope aspect*. (1 x 1) (1)
- 1.4.2 Give ONE point of evidence from the diagram that these are slopes in the southern hemisphere. (1 x 1) (1)
- 1.4.3 Give the climatological term used to describe the layer of warm air found along **A - B**. (1 x 1) (1)
- 1.4.4 Draw a simple, labelled diagram to illustrate the development of a katabatic wind along slope **A**. (2 x 1) (2)
- 1.4.5 Describe the impact of katabatic winds on place **C** during winter nights. (2 x 2) (4)
- 1.4.6 As head of the agricultural institute of this region, what advice would you offer to an upcoming farmer in planning his farming activities around areas labelled **A**, **B** and **C**? (3 x 2) (6)

DRAINAGE BASIN AND DRAINAGE DENSITY

1.5 Refer to **FIGURE 1.5** in the Annexure showing a Drainage Basin.

- 1.5.1 Name ONE source of water for the drainage basin. (1 x 1) (1)
- 1.5.2 Differentiate between the terms *drainage basin* and *drainage density*. (2 x 1) (2)
- 1.5.3 Explain how permeability and gradient could influence the drainage density of a river system. (2 x 2) (4)
- 1.5.4 Discuss the importance of preserving vegetation cover in the drainage basin. (2 x 2) (4)
- 1.5.5 Explain how conservation of wetlands could contribute to sustainable management of a drainage basin. (2 x 2) (4)

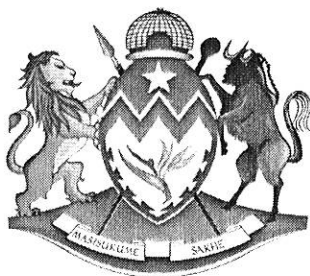
RIVER CAPTURE

1.6 Refer to **FIGURE 1.6** in the Annexure showing River Capture.

- 1.6.1 Define the term *river capture*. (1 x 1) (1)
- 1.6.2 Explain why the Altamaha River will erode at a faster rate after river capture has occurred. (2 x 1) (2)
- 1.6.3 Suggest TWO possible reasons why the stream order of the Alapaha River will decrease after river capture has taken place. (2 x 2) (4)
- 1.6.4 Write a paragraph of approximately 8 – 10 lines to describe the negative impact that river capture would have on the people and environment along the misfit stream. (4 x 2) (8)

TOTAL MARKS: [75]

25



Basic Education

KwaZulu-Natal Department of Basic Education
REPUBLIC OF SOUTH AFRICA

GEOGRAPHY P2 (MAPWORK) – SECTION B

COMMON TEST

MARCH 2018

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MARKS: 25

TIME: 30 minutes

NAME: _____

DIVISION: _____

RESOURCE MATERIAL

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

INSTRUCTIONS AND INFORMATION

1. Write your NAME 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 (2627CD 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 formulae, where applicable. Marks will be allocated for these.
7. Indicate the unit of measurement in the final answer of calculations.
8. You may use a non-programmable calculator.
9. The following English terms and their Afrikaans translations are shown on the topographical map:

ENGLISH

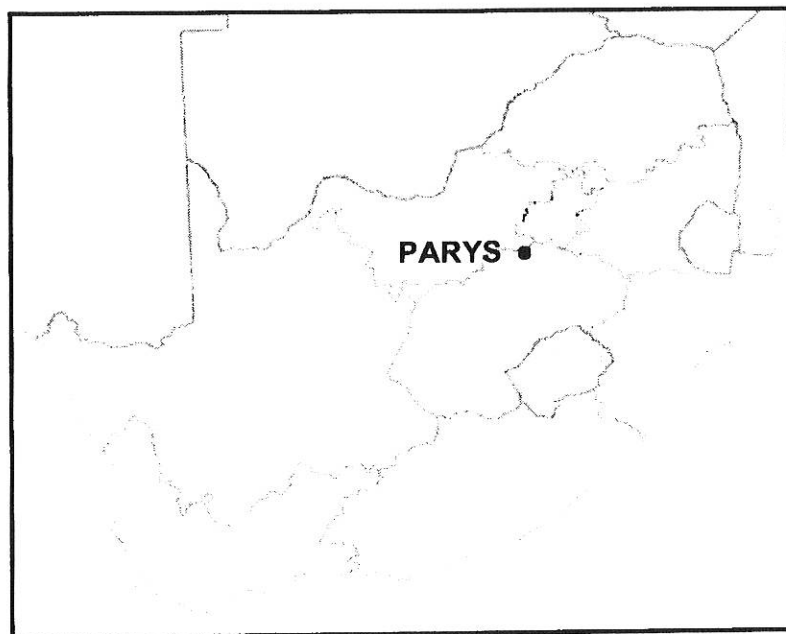
Aerodome
Caravan Park
Diggings
Golf Course
Gap
Holiday Resort
Island
Purification Plant
River
Sewage Works

AFRIKAANS

Vliegveld
Karavaanpark
Uitgrawings
Gholfbaan
Poort
Vakansieoord
Eiland
Watersuiweringsaanleg
Rivier
Rioolwerke

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](http://en.wikipedia.org/wiki/Parys,_South_Africa,_Freestate)]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1:50 000 topographical map (2627 CD PARYS), as well as the orthophoto map (2627CD 19 PARYS) as 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 Parys is located in the ... province.

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

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

- A 5
- B 10
- C 15
- D 20

1.3 The area West End (labelled W) on topographical is located in the ... part of the orthophoto map .

- A north-western
- B northern
- C southern
- D north-eastern

1.4 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.

1.5 The type of infrastructure labelled **3** on the orthophoto map is a/an ...

- A national road.
- B telephone line.
- C other road.
- D main road

5 x 1 [5]

QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

2.1 Locate points **6** and **7** on the orthophoto map.

2.1.1 Calculate the average gradient between points **6** and point **7** on the orthophoto map. Show ALL calculations. Marks will be awarded for calculations.

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

(5 x 1) (5)

2.1.2 Interpret your answer to QUESTION 2.1.1.

(1 x 2) (2)

[7]

QUESTION 3: APPLICATION AND INTERPRETATION

- 3.1 Name the wind that will influence the settlement, at **(L)** in block **D2**, at night.

_____ (1 x 1) (1)

- 3.2 Refer to block **I1** and block **I2**.

- 3.2.1 Identify the drainage pattern in the area.

_____ (1 x 1) (1)

- 3.2.2 Explain why this drainage pattern mentioned in QUESTION 3.2.1 developed in this area.

_____ (1 x 2) (2)

- 3.3 Explain why the section of the Vaal River in the mapped region shows characteristics of the middle and lower course of a river.

_____ (2 x 2) (4)

[8]

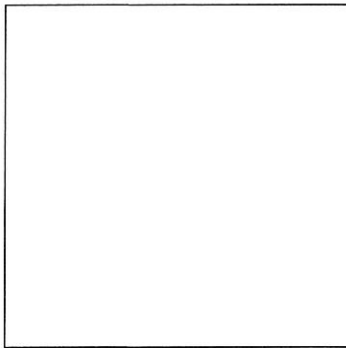
QUESTION 4: MAP PROJECTION AND GEOGRAPHICAL INFORMATION SYSTEMS**PAPER GIS**

4.1 Refer to block I1 on the topographical map.

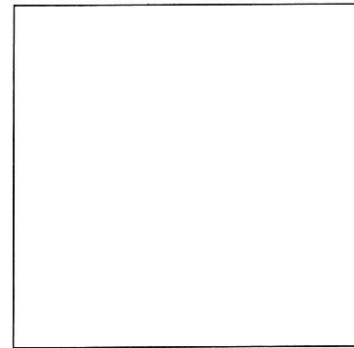
4.1.1 Draw the following layers found in block I1.

- (a) Drainage layer as a line feature in block A below.
- (b) A polygon feature in block B below.

**BLOCK A
DRAINAGE LAYER**



**BLOCK B
POLYGON LAYER**



(2 x 1) (2)

4.1.2 Draw and label the key below for each layer.

KEY:





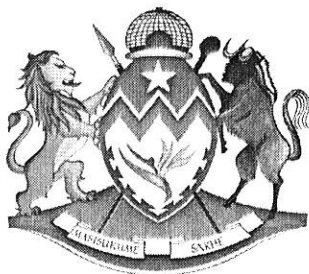
(2 x 1) (2)

4.1.3 Name **ONE** attribute of the drainage feature you have drawn in QUESTION 4.1.1.

(1 x 1) (1)

[5]

TOTAL MARKS: [25]



Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

**GEOGRAPHY P1 (THEORY - SECTION A) &
GEOGRAPHY P2 (MAPWORK - SECTION B)**

**ANNEXURE
COMMON TEST**

MARCH 2018

**NATIONAL
SENIOR CERTIFICATE**

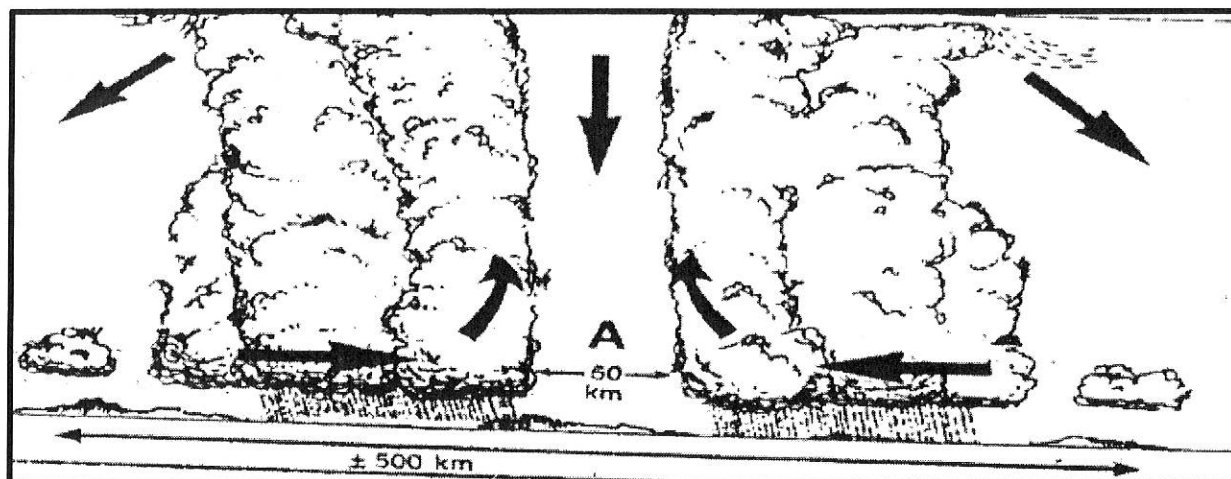
GRADE 12

MARKS: 100 (THEORY 75 + MAPWORK 25)

TIME: 1½ hour (THEORY 1 hour + MAPWORK 30 minutes)

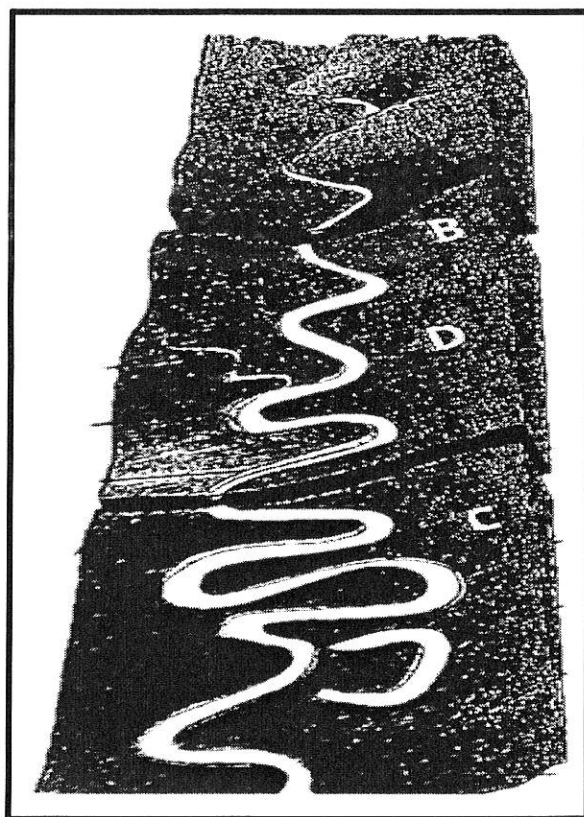
N.B. This Annexure consists of 4 pages including this page.

FIGURE 1.1: TROPICAL CYCLONE



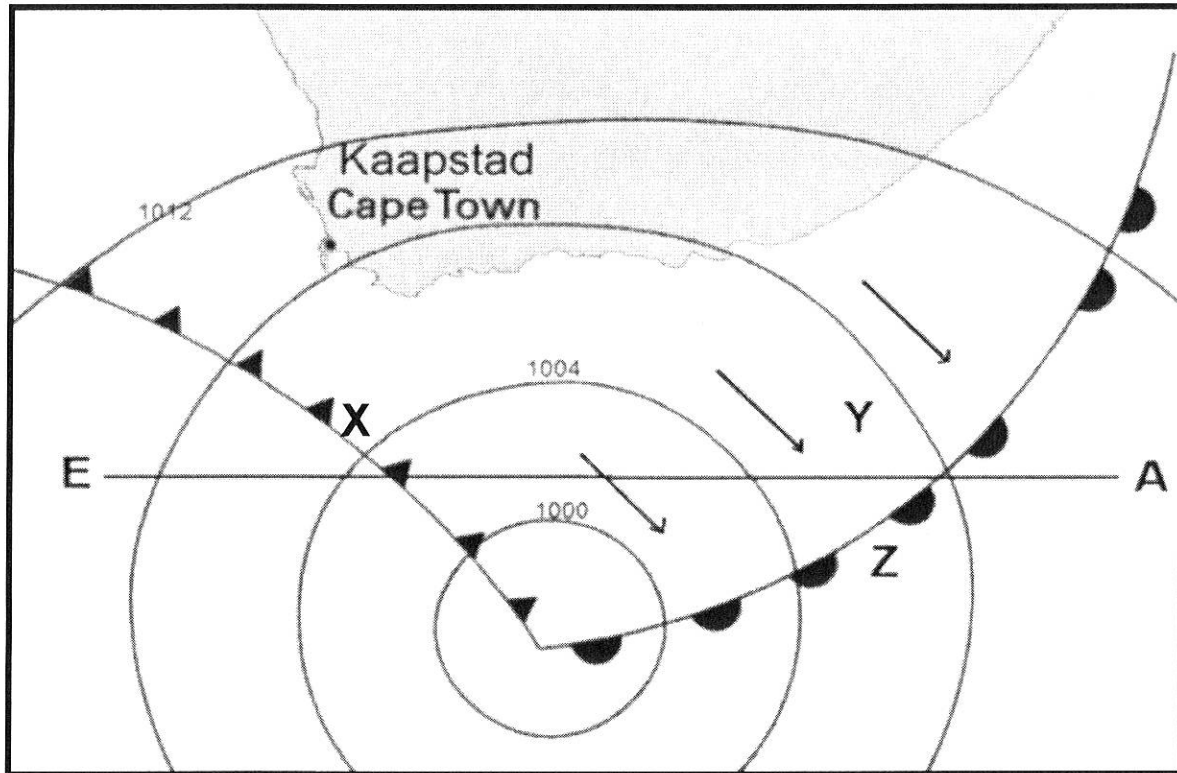
Source: South African Weather Patterns

FIGURE 1.2: RIVER SYSTEM



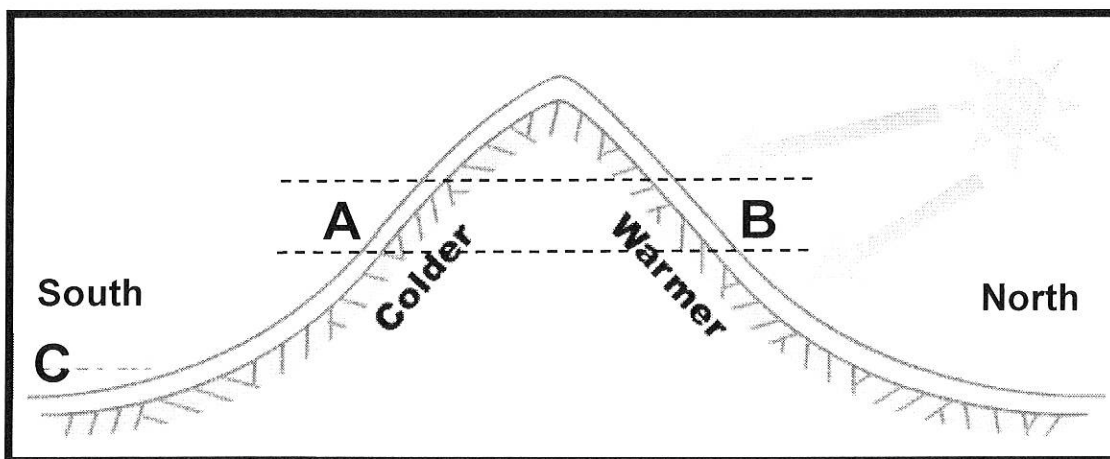
SOURCE: Adapted from Google

FIGURE 1.3: MID-LATITUDE CYCLONE



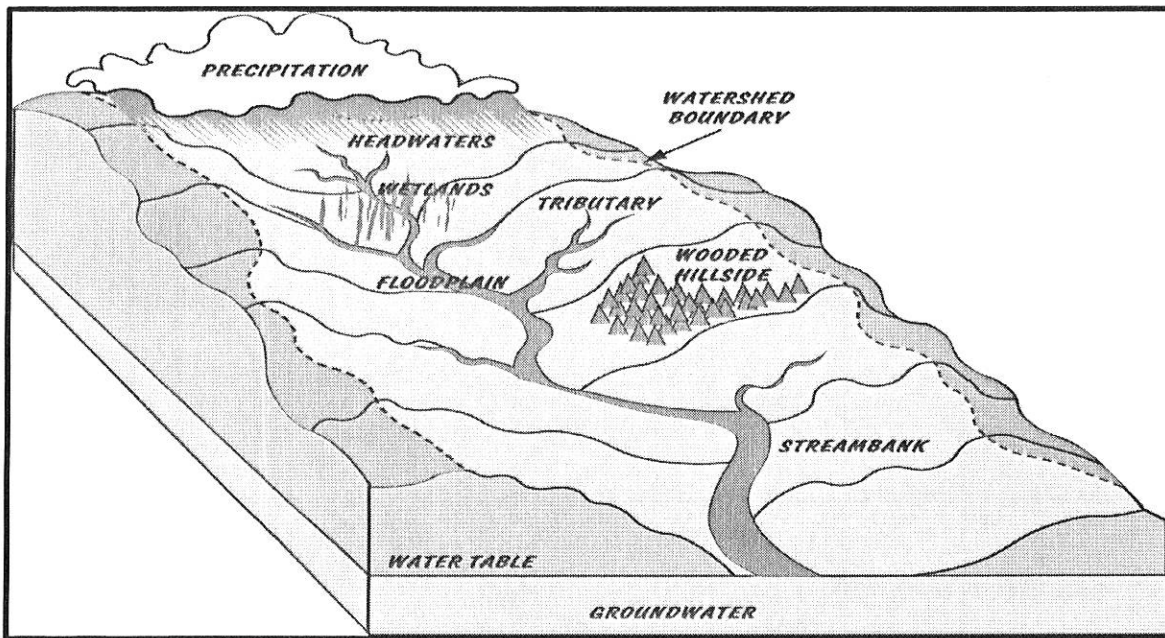
Source: South African Weather Patterns

FIGURE 1.4: ASPECT



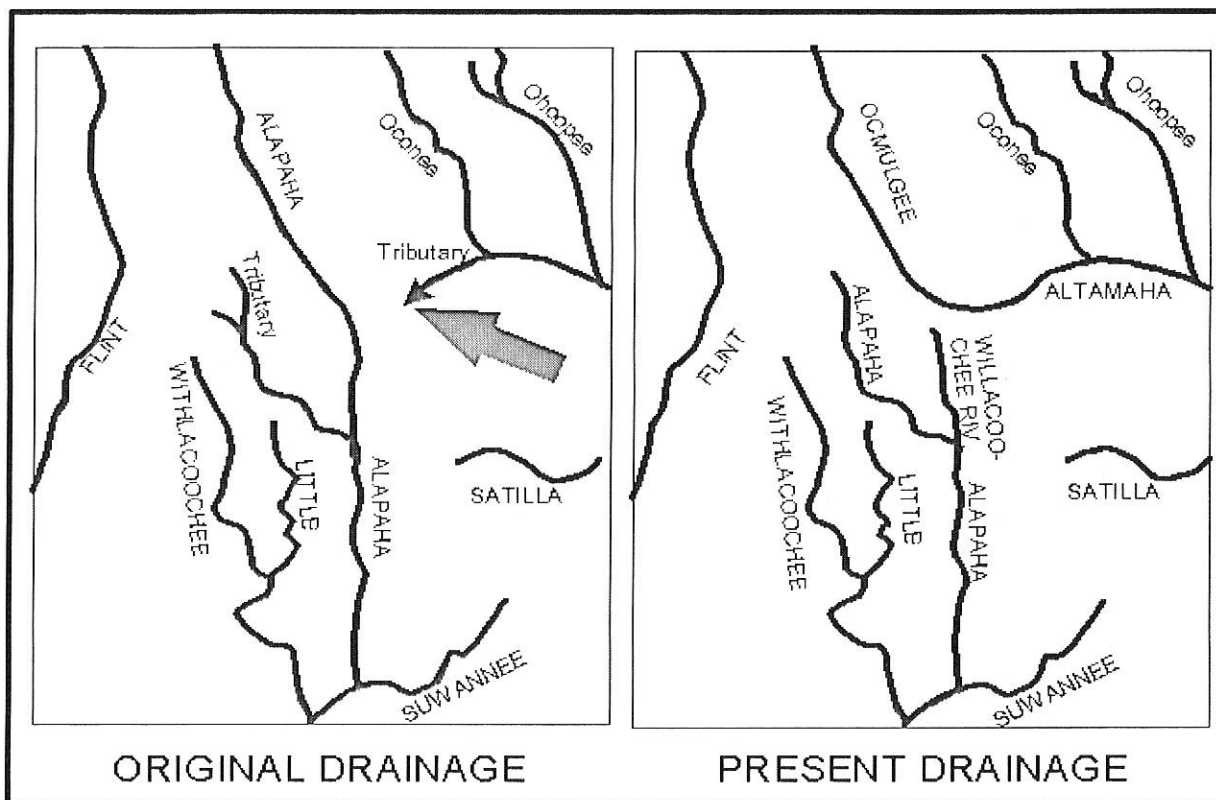
SOURCE: <http://www.fsavalanche.org/encyclopedia/aspect.htm>

FIGURE 1.5: DRAINAGE BASIN AND DRAINAGE DENSITY



Source: www.wolfriver.org

FIGURE 1.6: RIVER CAPTURE



Source: Google diagrams



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REPUBLIC OF SOUTH AFRICA

GEOGRAPHY P1 & P2 (SECTION A & B)

MEMORANDUM

COMMON TEST

MARCH 2018

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MARKS: 75

N.B. This question memorandum consists of 10 pages.

SECTION A

QUESTION 1

1.1

1.1.1 mature ✓

1.1.2 500 km ✓

1.1.3 cumulonimbus ✓

1.1.4 eye ✓

1.1.5 clockwise ✓

1.1.6 divergence ✓

1.1.7 westwards ✓

1.1.8 hurricane ✓

(8 x 1) (8)

1.2

1.2.1 Longitudinal Profile ✓

1.2.2 Delta ✓

1.2.3 Upper Course ✓

1.2.4 Lower course ✓ / C ✓

1.2.5 Undercut slope ✓

1.2.6 Turbulent flow ✓

1.2.7 Middle course ✓ / B ✓ / D ✓

(7 x 1) (7)

1.3

1.3.1 X - cold front ✓

(1 x 1) (1)

1.3.2 Clockwise ✓

(1 x 1) (1)

1.3.3 (a) Warm sector stage/Mature ✓

(1 x 1) (1)

(b) Presence of both cold and warm fronts ✓ ✓

Fronts are fully developed ✓ ✓

Warm sector protrudes into the cold sector in a V-shape ✓ ✓

Pressure in centre very low ✓

Concentric shape of isobars ✓ ✓

[Any ONE]

(1 x 2) (2)

1.3.4 Temperature drops as cold air follows the cold front ✓ ✓

Pressure rises because cold air following cold front is heavy

and dense ✓ ✓

Cloud cover increases as warm air is forced to rise and condense ✓ ✓

Rising warm air condenses forming rain ✓ ✓

Humidity decreases because cold air behind cold front has lower

water vapour carrying capacity ✓ ✓

Winds back as air rotates clockwise around the low pressure ✓ ✓

[Any One]

(1 x 2) (2)

1.3.5 Strong winds may destroy crops/orchards ✓ ✓

Very cold conditions and snow may destroy crops/orchard ✓ ✓

Heavy rains may destroy valuable farm land/soil erosion ✓ ✓

Loss of livestock due to cold weather ✓ ✓

Loss of profits ✓ ✓

[Any FOUR]

(4 x 2) (8)

1.4

1.4.1

The angle at which the sun's rays strike a slope ✓

[Concept]

(1 x 1) (1)

1.4.2 North facing slopes receives direct insolation/sunlight ✓

(1 x 1) (1)

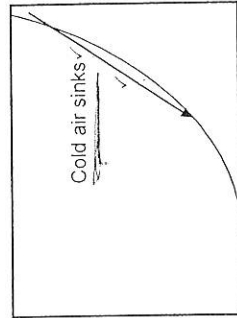
1.4.3 Thermal belt ✓

But Accept Inversion

Layer.

(1 x 1) (1)

1.4.4



One mark for label

One mark for wind direction

(2 x 1) (2)

1.4.5 Cold air collects at C ✓ ✓

Dew point temperature is reached below freezing point ✓ ✓

Extremely cold conditions experienced ✓ ✓

Frost/frost pocket develops ✓ ✓

[Any TWO]

(2 x 2) (4)

1.4.6 A - Will favour the growing of crops that require cooler conditions ✓ ✓

Plant's that need high soil moisture content ✓ ✓

(e.g. thick skinned citrus fruits such as oranges and lemons) ✓ ✓

B - Will favour the growing of crops that require warmer conditions ✓ ✓

Crops that will grow under drier conditions ✓ ✓

(e.g. thin skinned deciduous fruits such as apples and pears) ✓ ✓

C - Only frost resistant crops can be cultivated at C ✓ ✓

(e.g. tubers such as potatoes, yams) ✓ ✓

[Any THREE]

(3 x 2) (6)

1.5

1.5.1 ground water (spring, geyser or well) ✓

rainfall ✓

melting snow ✓

(1 x 1) (1)

1.5.2 Drainage basin: Total area drained by a river and its tributaries ✓

(Concept)

Drainage density: The ratio between the length of all the streams

in a river system and the area of the drainage basin that it drains ✓ (2 x 1) (2)

(Concept)

- 1.5.3 Permeable rocks absorb water, therefore less water on the surface for run-off/ low stream density. ✓✓
 Rocks with high degree of permeability will allow most of the water to infiltrate. ✓✓
 Non-permeable rocks do not allow the absorption of water, therefore more water on the surface – high stream density. ✓✓
 (Any ONE)

Steep gradient encourages run-off rather than infiltration – therefore drainage density is high. ✓✓
 Gentle slopes promote infiltration therefore low drainage density. ✓✓
 (Any ONE)

(2 x 2) (4)

- 1.5.4 Slows down flow of water. ✓✓
 Allows infiltration. ✓✓
 Maintains ground water flow. ✓✓
 Plants anchor soil. ✓✓
 Prevents soil erosion. ✓✓
 Prevents silting of rivers. ✓✓
 Controls flooding. ✓✓
 [Any TWO]

(2 x 2) (4)

- 1.5.5 Wetlands act as a natural sponge for the excess water. ✓✓
 Stores water during times of heavy rain/floods and supplies the river with water during times of drought. ✓✓
 Wetlands help to purify water. ✓✓
 Filters the water. ✓✓
 [Any TWO]

(2 x 2) (4)

- 1.6 1.6.1 A more energetic river erodes through the watershed and captures the headwaters of another river ✓
 [Concept] (1 x 1) (1)

- 1.6.2 Increased volume of water ✓
 Increase in energy ✓
 Rejuvenated ✓
 Greater erosive power. ✓
 (Any Two) (2 x 1) (2)

- 1.6.3 loss of headwaters. ✓✓
 Volume of water decreases ✓✓
 The stream order one will dry up. ✓✓
 Number of stream order 1 will decrease ✓✓
 [Any TWO] (2 x 2) (4)

1.6.4 People

Shortage of water for domestic purposes ✓✓
 Less water for farming activities ✓✓
 Infertile soils for farming ✓✓
 Abandoned farms because of poverty ✓✓
 Will trigger rural urban migration ✓✓
 Industries that depend on water will be adversely affected. ✓✓
 Industries may shut down and this will result in unemployment. ✓✓
 Unemployment could lead to poverty ✓✓
 Economic decline ✓✓
 Subsistence farmers will suffer great losses ✓✓
 Commercial farmers will have to engage in costly water transfer schemes ✓✓
 Increase in food prices ✓✓
 Food insecurity ✓✓
 Decrease in recreational activities ✓✓
 Decrease in fishing ✓✓

Environment

Decrease in the volume of water in the river ✓✓
 Aquatic organisms will perish ✓✓
 Infertile soil ✓✓
 Greater erosion ✓✓
 Migration of animals ✓✓
 Interruption of the food chain and food web ✓✓
 Upset the ecosystem ✓✓

(MUST MENTION BOTH PEOPLE AND ENVIRONMENT)

(4 x 2) (8)

TOTAL MARKS: 75

SECTION B

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1:50 000 topographical map (2627 CD PARYS), as well as the orthophoto map (2627CD 19 PARYS) as 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 Parys is located in the ... province.

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

C✓

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

- A 5
- B 10
- C 15
- D 20

A✓

1.3 The area West End (labelled W) on topographical is located in the ... part of the orthophoto map.

- A north-western
- B northern
- C southern
- D north-eastern

D✓

1.4 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.

B✓

1.5 The type of infrastructure labelled 3 on the orthophoto map is a/an ...

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

C✓

(5 x 1) [5]

add + Mark to Add 1 Mark to total.

Copyright Reserved

Please Turn Over

QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

2.1 Locate points 6 and 7 on the orthophoto map.

2.1.1 Calculate the average gradient between points 6 and point 7 on the orthophoto map. Show ALL calculations. Marks will be awarded for calculations.

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

$$VI = 1400 \text{ m} - 1380 \text{ m} = 20 \text{ m} \checkmark$$

$$VI = 1400 \text{ m} - 1220 \text{ m} = 20 \text{ m} \checkmark$$

$$HE = 14.8 \text{ cm} \times 100 = 1480 \text{ m} \checkmark$$

$$[Range 14.7 \text{ cm} - 14.9 \text{ cm}]$$

$$OR \quad HE = \frac{14.8 \text{ cm} \times 10\,000 \checkmark}{100} = 1480 \text{ m} \checkmark$$

$$[Range 210 \text{ m} - 230 \text{ m}]$$

$$G = \frac{20 \checkmark}{1480}$$

$$G = \frac{20 \checkmark}{1480}$$

[Mark allocated for substitution]

$$= \frac{1 \checkmark}{74}$$

$$G = \frac{1 \checkmark}{74}$$

$$= 1.74 / 1 \text{ in } 74 \checkmark$$

$$= 1.74 / 1 \text{ in } 74 \checkmark$$

$$Range [1 : 73 - 1 : 75]$$

$$(5 \times 1) (5)$$

2.4.3 Interpret your answer to QUESTION 2.1.1

For every 74 metres one walks, the land rises 1 metre ✓
[Concept]

(1 x 2) (2)

[7]

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Please Turn Over

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Name the wind that will influence the settlement, at (L) in block D2, at night.

Katabatic winds/mountain winds/downslope winds ✓ (1 x 1) (1)

3.2 3.2.1 Refer to block I1 and block I2.
Identify the drainage pattern in the area.

Dendritic ✓ (1 x 1) (1)

3.2.2 Explain why this drainage pattern mentioned in QUESTION 3.2.1 developed in this area.

Equal - correct

Underlying rock structure has uniform resistance to erosion. ✓✓ (1 x 2) (2)

3.3 Explain why the section of the Vaal River in the mapped region shows characteristics of the middle and lower course of a river.

Presence of meanders ✓✓
Presence of braided streams ✓✓
Presence of flood plains/flat land ✓✓
Contour lines are far apart ✓✓
Wide valleys ✓✓
Deposition/sand banks ✓✓
(Any TWO)

(2 x 2) (4)

[8]

QUESTION 4: MAP PROJECTION AND GEOGRAPHICAL INFORMATION SYSTEMS

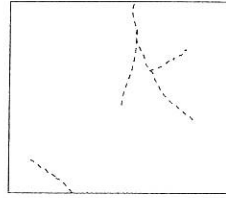
PAPER GIS

4.1 Refer to block I1 on the topographical map.

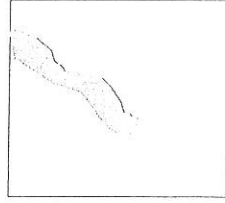
4.1.1 Draw the following layers found in block I1.

- (a) Drainage layer as a line feature in block A below.
- (b) A polygon feature in block B below.

BLOCK A
DRAINAGE LAYER



BLOCK B
POLYGON LAYER



(2 x 1) (2)

4.1.2 Draw and label the key below for each layer.

KEY:



river/non-perennial river ✓



woodlands ✓

(2 x 1) (2)

4.1.3 Name ONE attribute of the drainage feature you have drawn in QUESTION 4.1.1.

Non-perennial river ✓/Has a source ✓/upper course ✓/stage one ✓/

Eastward flow ✓/ has confluence ✓

(1 x 1) (1)

[5]

*Does not flow that out Year
Several...
Dendritic...)*

TOTAL MARKS 25

