



Province of the
EASTERN CAPE
EDUCATION

CHRIS HANI EAST

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

**GEOGRAPHY
PRE-TRIAL PAPER 1**

MARKS : 150

TIME: 3 HOURS

Stanmorephysics

This question paper consists of 14 pages.

INSTRUCTIONS AND INFORMATION

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1. This question paper consists of TWO SECTIONS:

SECTION A

QUESTION 1: Climate and Weather. (60)

QUESTION 2: Geomorphology. (60)

SECTION B

QUESTION 3: Geographical Skills and Techniques. (30)

2. Answer ALL THREE questions.
3. ALL diagrams are included in the QUESTION PAPER.
4. Leave a line between subsections of questions answered.
5. Start EACH question at the top of a NEW page.
6. Number the questions correctly according to the numbering system used in this question paper.
7. Do NOT write in the margins of your ANSWER BOOK.
8. Draw fully labelled diagrams when instructed to do so.
9. Answer in FULL SENTENCES, except when you have to state, name, identify or list. Write in full sentences when answering paragraph questions.
10. Units of measurement MUST be indicated in your final answer, e.g., 20 times, 10 m.
11. You may make use of a non-programmable calculator.
12. You may make use of a magnifying glass.
13. Write clearly and legibly.

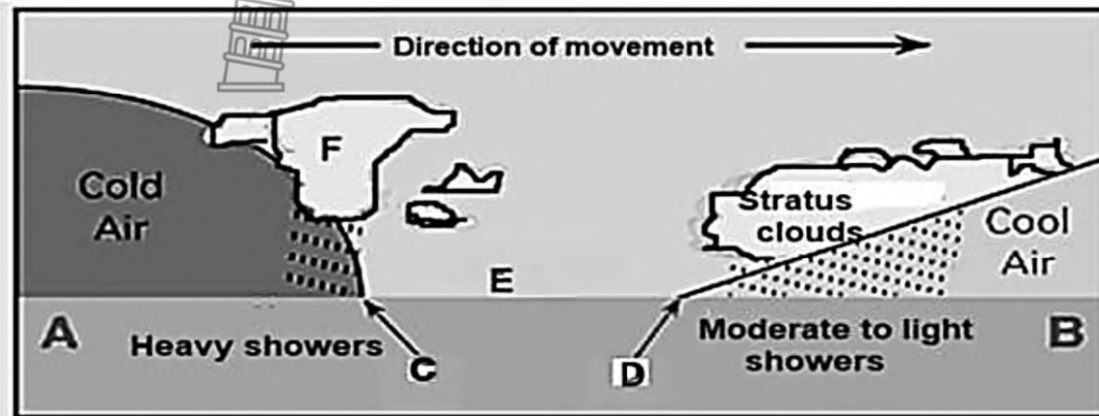
SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

1. A 1:50 000 topographic map 3025AD of PHILIPPOLIS and a 1:10 000 orthophoto map 3025AD 01 of PHILIPPOLIS are provided.
2. The area demarcated in RED on the topographic map represents the area covered by the orthophoto map.
3. Show ALL calculations and formulae where applicable. Marks will be allocated for this.
4. You must hand in the topographic map and the orthophoto map to the invigilator at the end of this examination session.

QUESTION 1: CLIMATE AND WEATHER

1.1 Refer to the figure below that shows a mid-latitude cyclone and answer the questions that follow.

MID-LATITUDE CYCLONE



- 1.1.1 In which general direction does this mid-latitude cyclone move?
- 1.1.2 Is the direction of movement of the mid-latitude cyclone influenced by the (easterly/westerly) winds?
- 1.1.3 In which season is the Western Cape affected by the mid-latitude cyclone?
- 1.1.4 The (cold/warm) front affects the Western Cape in general.
- 1.1.5 Name the clouds represented by the letter **F**.
- 1.1.6 The pressure will (drop/rise) when a cold front passes over an area.
- 1.1.7 The area indicated by the letter **E** is known as the ...
- 1.1.8 Does front **C** or **D** have a gentle gradient?

(8 x 1) (8)



1.2 Choose the term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter (A–H) next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK, e.g., 1.2.8 C.

COLUMN A		COLUMN B	
1.2.1	An area of warmer temperature than the surrounding rural areas	A	Front
1.2.2	Lines that join places with the same temperature	B	Thermal belt
1.2.3	A slope that does not receive the direct rays of the sun	C	Pollution dome
1.2.4	The climate of a small area such as a valley or city	D	Pollution plume
1.2.5	The zone where the warm air accumulates midway up the valley	E	Heat island
1.2.6	The zone between two air masses with a different moisture content	F	Microclimate
1.2.7	Consists of an accumulation of soot, dust, smoke and other pollutants that form over the city	G	Isotherms
		H	Shadow zone

(7 x 1) (7)

1.3 Refer to the map below, based on a tropical cyclone and answer the questions that follow.



Downloaded from Stanmorephysics.com 1.3.1 What is a tropical cyclone? (1 x 2) (2)

1.3.2 How many tropical cyclones have been experienced before tropical cyclone Eloise in this region? (1 x 1) (1)

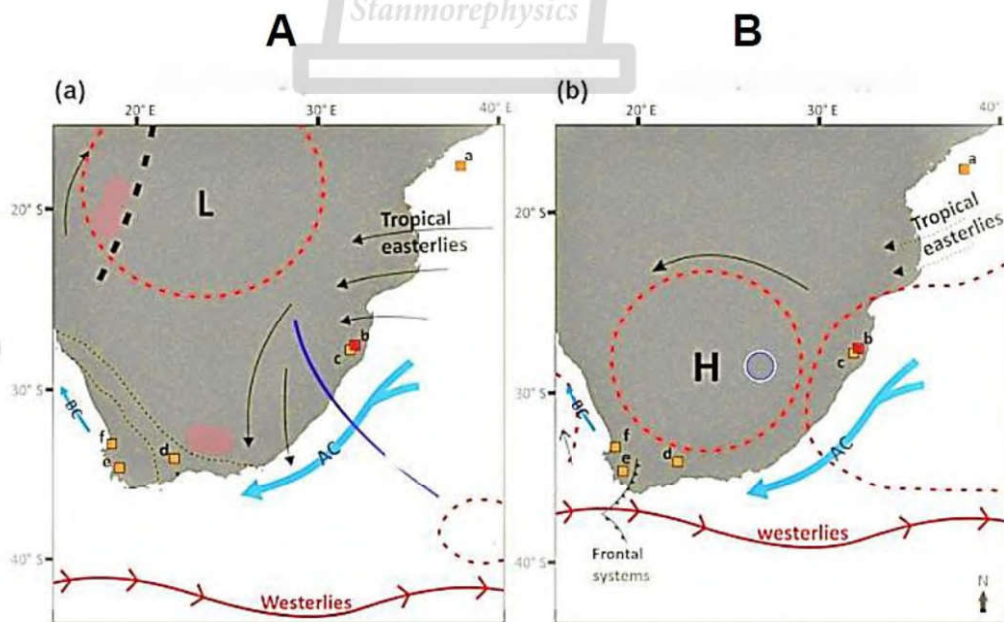
1.3.3 Give a reason for the general direction in which cyclone Eloise moves. (1 x 2) (2)

1.3.4 Describe any TWO factors that contributed to the formation of Eloise. (2 x 2) (4)

1.3.5 On Saturday at 9 a.m. Eloise turned into a category 3 storm. What does category 3 mean? (1 x 2) (2)

1.3.6 Refer to your answer in QUESTION 1.3.5 and briefly explain TWO strategies that can be used to manage the effects of the category 3 storm. (2 x 2) (4)

1.4 Refer to the maps below showing the influence of pressure cells on South Africa's weather and climate.



[Source: <https://www.google.com/search?q=pressure+cells+on+South+Africa%27>]

1.4.1 Name the pressure cell that dominates the land in this season represented by map B. (1 x 1) (1)

1.4.2 State TWO characteristics of this pressure cell (answer to QUESTION 1.4.1). (2 x 1) (2)

1.4.3 Does map A or B represent summer conditions? (1 x 1) (1)

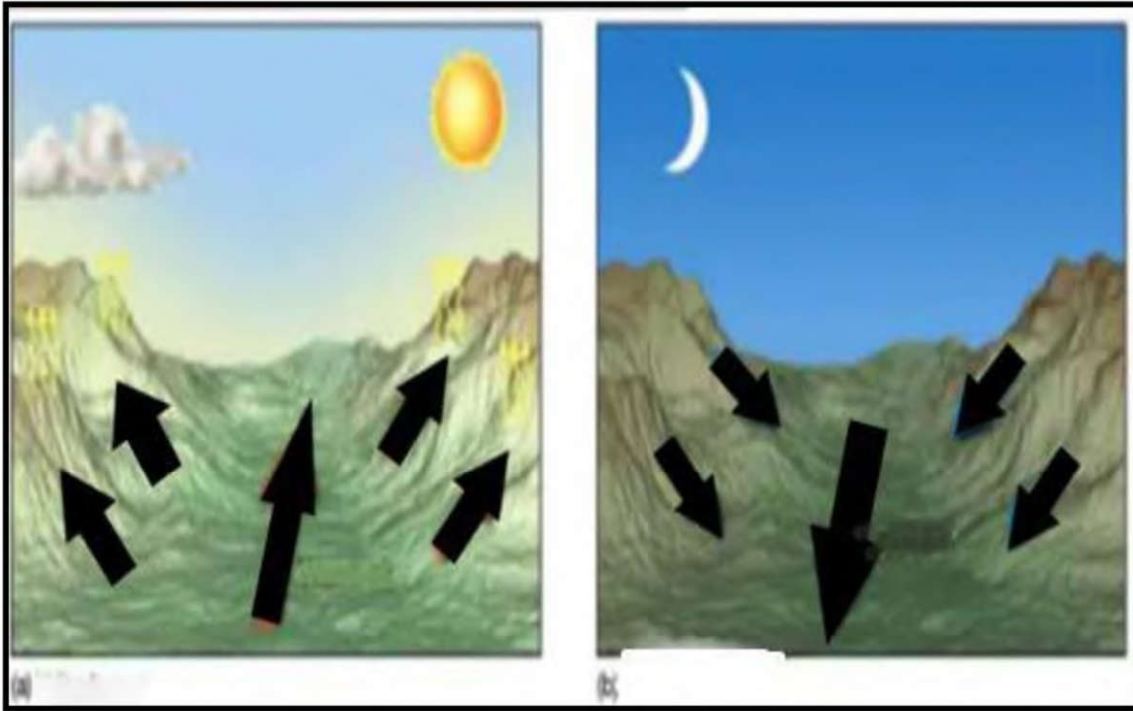
1.4.4 Give a reason to support your answer in QUESTION 1.4.3. (1 x 2) (2)

1.4.5 In a paragraph of approximately EIGHT lines, explain how the position of the inversion will affect the weather of South Africa during the summer and winter seasons. (4 x 2) (8)

1.5 Refer to the diagrams below, based on valley climates.



B



[Source: <https://www.google.com/search?q=katabatic+and+anabatic+winds&tbnm>]

1.5.1 Name the type of winds represented by diagrams **A** and **B**, respectively. (2 x 1) (2)

1.5.2 If the temperature drops below 0° overnight, what form of precipitation will form at the bottom of diagram **B**? (1 x 2) (2)

1.5.3 Suggest a reason for the difference in the direction of air movement in valleys **A** and **B**. (2 x 2) (4)

1.5.4 Account for the increase in temperature with an increase in height in valley **B**. (2 x 2) (4)

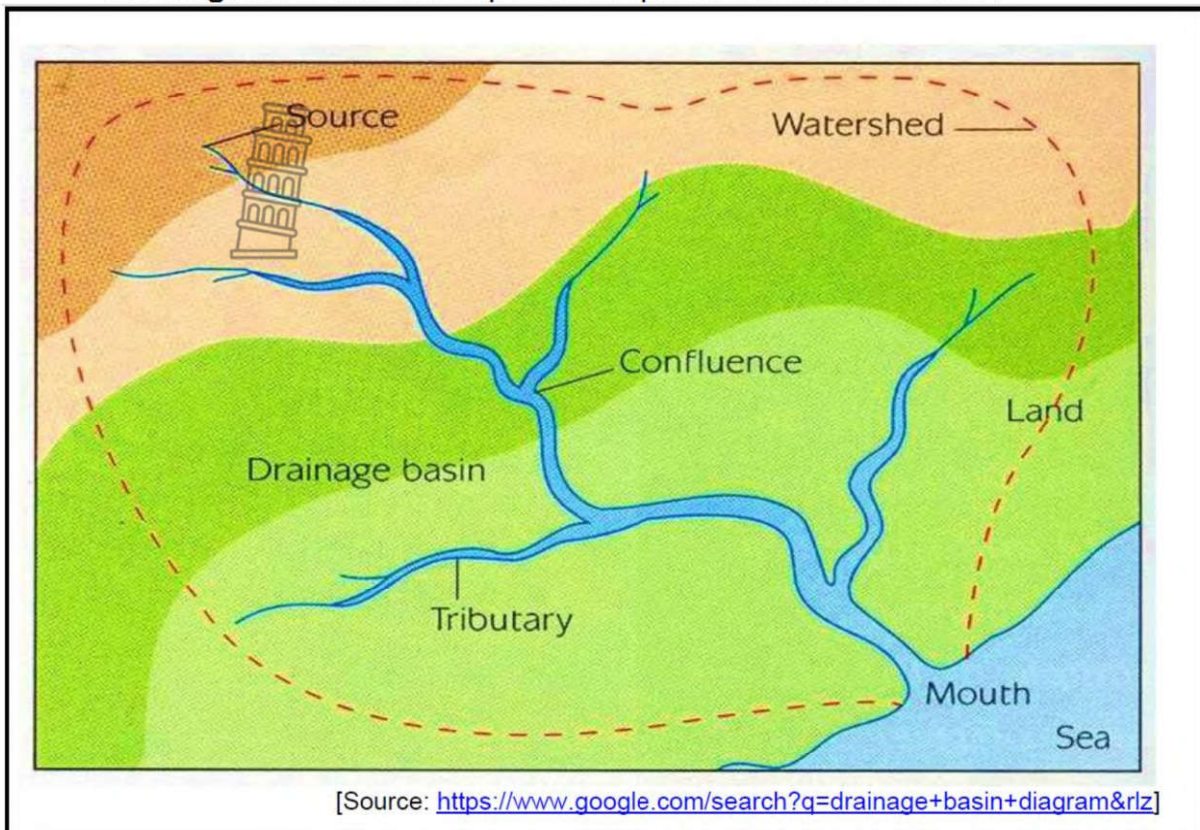
1.5.5 Briefly explain the conditions under which radiation fog forms in valley **B**. (2 x 2) (4)

[60]

QUESTION 2: GEOMORPHOLOGY

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2.1 Refer to the sketch based on a drainage basin below. Match the concepts on the diagram to the descriptions in questions 2.1.1 to 2.1.7.



- 2.1.1 A high-lying area found between two drainage basins
- 2.1.2 The area where the river flows into an ocean or sea
- 2.1.3 The point where two rivers meet
- 2.1.4 An area of land from which a river and its tributaries get their water
- 2.1.5 A small river that flows into the main river/stream
- 2.1.6 The point or area where the river begins/starts
- 2.1.7 The main river and its tributaries



(7 x 1) (7)

2.2 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (2.2.1 to 2.2.8) in the ANSWER BOOK, for example, 2.2.9 C.

2.2.1 A/an ... river is a river that originates in an area of high rainfall but flows through dry areas.

- A permanent
- B exotic
- C episodic
- D seasonal

2.2.2 River flowing in a bubbling, vertical and tumbling circulation movement is called ...

- A smooth flow.
- B turbulent flow.
- C laminar flow.
- D rough flow.

2.2.3 The ... is a curve or bend found along the course of the river.

- A meander
- B meander scar
- C braided stream
- D oxbow lake

2.2.4 ... describes a river that begins a new cycle of erosion because of renewed energy.

- A Misfit
- B Captor
- C Rejuvenation
- D Captured

2.2.5 The water table is always above the riverbed of the ... river.

- A periodic
- B episodic
- C exotic
- D permanent



2.2.6 The water table is closer to the surface of the earth under the following conditions:

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- A The land has a steep gradient and a lot of rainfall.
- B The gradient of the land is gentle, and the rock is impermeable.
- C The rock is permeable, and there is little rainfall.
- D There is very little rainfall, and the gradient is gentle.



2.2.7 A ... develops where a resistant layer of hard rock crosses the path of a river.

- A rapid
- B waterfall
- C plunge pool
- D river cliff

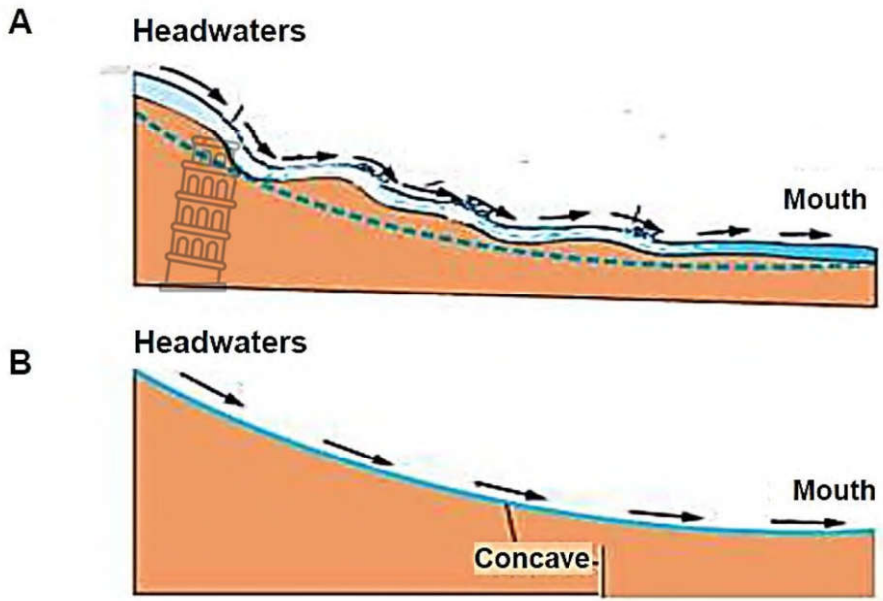
2.2.8 The river maintains its general course despite the land being uplifted.

- A Superimposed
- B Captured
- C Capture
- D Antecedent

(8 x 1) (8)

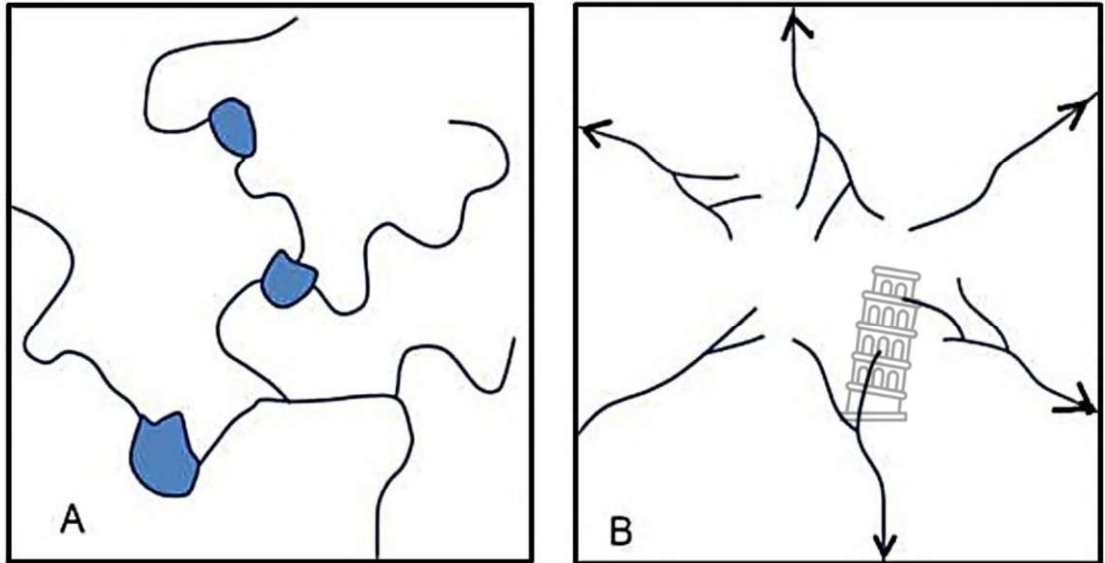


2.3 Refer to the sketches based on river grading.
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- 2.3.1 What is a longitudinal profile? (1 x 2) (2)
- 2.3.2 Which sketch represents the ungraded river? (1 x 1) (1)
- 2.3.3 Distinguish between graded and ungraded rivers/ streams. (2 x 2) (4)
- 2.3.4 Refer to the sketches above, and write a paragraph of approximately EIGHT lines, to explain how a river maintains its graded longitudinal profile. (4 x 2) (8)

2.4 Refer to the sketches based on stream patterns below.



- 2.4.1 Identify stream patterns **A** and **B**, respectively. (2 x 1) (2)
- 2.4.2 On what type of rock structure is **B** likely to form? (1 x 1) (1)
- 2.4.3 What are the characteristics of stream pattern **B**? (2 x 2) (4)
- 2.4.4 Explain the formation of stream pattern **A**. (2 x 2) (4)
- 2.4.5 Account for the low stream density in **B**. (2 x 2) (4)

2.5 The photograph below shows an environmental injustice.



[Source: [HTTPS://:www.google.com](https://www.google.com)]


- 2.5.1 Which department is responsible for the health and sustainable use of rivers in South Africa? (1 x 1) (1)
- 2.5.2 Name TWO environmental injustices shown in the photograph. (2 x 1) (2)
- 2.5.3 What is the cause of the injustices mentioned in QUESTION 2.5.2? (1 x 2) (2)
- 2.5.4 What impact does the injustice (answer to QUESTION 2.5.2) have on our rivers? (2 x 2) (4)
- 2.5.5 Discuss THREE possible ways of solving the negative effect of humans on drainage basins. (3 x 2) (6)

[60]

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES.

GENERAL INFORMATION ON PHILIPPOLIS



Philippolis is a small town situated in the **Motheo and Xhariep** region of the **Free State Province** in **South Africa**. In 1823 it served as a missionary outpost for the Bushman. It makes **Philippolis** the oldest settlement in the **Free State Province**. This town was named after John Philip of the London Missionary Society. In 1826 Adam Kok II, a Griqua leader settled here with his folks and was made the guardian of the mission, but he then, together with his followers, killed all the Bushmen at the Mission Station. Seventy-five of **Philippolis's** buildings have been declared national monuments. The library is amongst one of these buildings, and many places are built in Karoo-style, which means they have thick walls.

The following English terms and their Afrikaans translation are shown on the topographical map:

ENGLISH

- Diggings
- River
- Estate
- Nature Reserve

AFRIKAANS

- Delwerye/Uitgrawings
- Rivier
- Landgoed
- Natuurreservaat

The questions below are based on the 1:50 000 topographical map 3025AD PHILIPPOLIS, as well as the orthophoto map 3025AD PHILIPPOLIS.

3.1 MAP SKILLS AND CALCULATIONS

Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers in the ANSWER BOOK, e.g., 3.1.2 A.

3.1.1 Phillipolis is situated in the ...

- A Eastern Cape.
- B Western Cape.
- C Northern Cape.
- D Free State.

(1 x 1) (1)

3.1.2 The contour interval of the orthophoto map is ...

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

(1 x 1) (1)

3.1.3 Refer to the topographical map to calculate the area marked in RED in km². Marks will be awarded for calculations.

(5 x 1) (5)

3.1.4 Give ONE reason why it is important to calculate the area if you want to build a new house.

(1 x 2) (2)

3.1.5 Refer to the orthophoto map. What is the geographical or map bearing from the school (**1 in block B1**) to the library (**2 in block C2**)?

(1 x 1) (1)



3.2 MAP INTERPRETATION AND APPLICATION

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The following questions are based on the topographical map.

- 3.2.1 Suggest a reason from the topographic map for the choice of site for the town of Philippolis. (1 x 1) (1)
- 3.2.2 Identify the drainage pattern in blocks **F6** and **F7**, respectively. (1 x 1) (1)
- 3.2.3 What could be the reason for high soil erosion in the southern part of Philippolis? (1 x 2) (2)
- 3.2.4 Why does the farmer choose to grow crops in blocks **F10** and **G10**? (1 x 2) (2)
- 3.2.5 Philippolis receives seasonal rainfall. Provide TWO pieces of evidence to support the statement. (2 x 1) (2)

The following questions refer to the orthophoto map.

- 3.2.6 Identify the feature marked **3**. (1 x 1) (1)
- 3.2.7 When was the orthophoto map taken, between 10 a.m. and 11a.m. or 2 p.m. and 4 p.m.? (1 x 1) (1)
- 3.2.8 Support the answer from QUESTION 3.2.7 with evidence from the map. (1 x 2) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

- 3.3.1 Define the term *remote sensing*. (1 x 2) (2)
- 3.3.2 Name ONE advantage of remote sensing. (1 x 1) (1)
- 3.3.3 What is data standardisation? (1 x 2) (2)
- 3.3.4 What evidence is there to show that data standardisation was used on the topographical map of Philippolis? (1 x 1) (1)
- 3.3.5 Briefly explain why it is important to standardise the data. (1 x 2) (2)

[30]

 **GRAND TOTAL: 150**



CHRIS HANI EAST



PRE-TRIAL

GRADE 12

GEOGRAPHY P1

SEPTEMBER 2023

MARKS: 150

MARKING GUIDELINES

These marking guidelines consists of 8 pages.



SECTION A

QUESTION 1

- 1.1 1.1.1 West to east/eastwards (1)
1.1.2 Westerly (1)
1.1.3 Winter (1)
1.1.4 Cold (1)
1.1.5 Cumulonimbus (1)
1.1.6 Drop (1)
1.1.7 Warm sector (depression) (1)
1.1.8 D/warm (1)
(8 x 1) (8)
- 1.2 1.2.1 E (1)
1.2.2 G (1)
1.2.3 H (1)
1.2.4 F (1)
1.2.5 B (1)
1.2.6 A (1)
1.2.7 C (1)
(7 x 1) (7)
[15]
- 1.3 1.3.1 It is a small, intensely developed low-pressure system in tropical regions.
[CONCEPT] (1 x 2) (2)
- 1.3.2 4 (four) (1 x 1) (1)
- 1.3.3 Driven by the easterlies (1 x 2) (2)
- 1.3.4 A warm sea surface, with a temperature of 27° C and over (2)
Unstable atmospheric conditions (substantial uplift of moist air) (2)
Light wind (2)
Upper air divergence (2)
Latent heat forms when condensation takes place (2)
No friction on the sea surface (2)
[ANY TWO] (2 x 2) (4)
- 1.3.5 The system has developed into a deadly storm (2)
Pressure gradient is steep, resulting in winds of up to 300 km/h (2)
Tight band of tall cumulonimbus clouds occurs (2)
[ANY ONE] (1 x 2) (2)
- 1.3.6 Monitor the path of the cyclone using remote sensors (2)
Give warnings to the people through weather forecast (2)
Prepare evacuation plans for people in low-lying areas (2)
The rescue teams must be in place to rescue people from floods (2)
Build strong shelters for people before the storm (2)
Do not build on low lying areas (move to higher areas) (2)
[ANY TWO] (2 x 2) (4)
[15]

- 1.4 1.4.1 Kalahari High pressure cell (1)
- 1.4.2 Situated over the interior of the country
It dominates air movement over the land
It shrinks or weakens in summer
Southwards displacement during summer (2 x 1) (2)
[ANY TWO]
- 1.4.3 **A** (1 x 1) (1)
- 1.4.4 The inversion layer is above the escarpment
Low pressure
Heat low pressure/Westerlies shift more south of South Africa
[ANY ONE] (1 x 2) (2)
- 1.4.5 In summer the surface of the land is heated causing warm air to rise (2)
The inversion layer rises above the level of the escarpment (2)
Moist tropical air masses move in over the interior (2)
This results in summer rain over the interior (2)
The Kalahari high pressure cell is displaced higher (2)
In winter air is subsiding in the Kalahari pressure cell (2)
The sinks down the inversion layer below the escarpment (2)
This prevents moist air from rising above the escarpment and reaching the interior (2)
As a result, no or very little rain occurs over the interior in winter (2)
[ANY FOUR] The answer should cover both summer and winter
(4 x 2) (8)
[14]
- 1.5 1.5.1 A = anabatic
B = katabatic (2 x 1) (2)
- 1.5.2 Frost (1 x 2) (2)
- 1.5.3 A = the slopes are heated, and the warm air in contact with the slope also heats up and rises along the slope
- B = the valley slopes cool through earth radiation, and the air in contact with the slope also cools and sinks (2 x 2) (4)
- 1.5.4 Cold, dense air drains down the slopes to the valley bottom and forces warm light air to rise
The warm air is above the cold air on the valley floor
As a result, of an increase in altitude, the temperatures also increase
[ANY TWO] (2 x 2) (4)



- 1.5.5 It forms when the nights are cold, clear and cloudless (2)
Air in contact with the earth's surface cools rapidly (2)
Cold air sinks to the base of the valley on a clear winter night (2)
The dew point temperature is above freezing point (2)
The water vapour in this layer condenses to form water droplets (2)
These droplets of water are in suspended air in the air to form
Radiation fog (2)

[ANY TWO]

(2 x 2) (4)

[16]

[60]



QUESTION 2

- 2.1 2.1.1 Watershed (1)
 - 2.1.2 Mouth (1)
 - 2.1.3 Confluence (1)
 - 2.1.4 Drainage Basin (1)
 - 2.1.5 Tributary (1)
 - 2.1.6 Source (1)
 - 2.1.7 River system (1)
- (7 x 1) (7)



- 2.2. 2.2.1 B (1)
- 2.2.2 B (1)
- 2.2.3 A (1)
- 2.2.4 C (1)
- 2.2.5 D (1)
- 2.2.6 B (1)
- 2.2.7 B (1)
- 2.2.8 D (1)

(8 x 1) (8)
[15]

- 2.3 2.3.1 A side view of the river from the source to the mouth (1 x 2) (2)
- 2.3.2 A (1 x 1) (1)

2.3.3 **A graded river:** a river that has achieved equilibrium between its gradient, volume, and channel shape (2)
Ungraded river: rivers that do not have enough energy to flow and transport their load (2)
[CONCEPT(s)] (2 x 2) (4)

2.3.4 The river has enough energy to carry its load with no erosion nor deposition (2)
The rate of erosion and deposition is balanced (2)
In the upper course because of steep gradient, the water is turbulent (2)
The river has enough energy to carry large particles (2)
Headwards and downwards erosion creates a steep gradient (2)
In the middle course with more tributaries joined, is sufficient water to carry the medium sized particles (2)
In the lower course the gradient is gentle more deposition (2)
[ANY FOUR] (4 x 2) (8)



[15]

- 2.4 2.4.1 A = deranged
B = radial (2 x 1) (2)
- 2.4.2 On domes or massive igneous rock (1 x 1) (1)
- 2.4.3 Streams flow away from a central point
It resembles the spokes of a wheel
Common in hilly or mountain peak
This pattern is characteristic of Karoo buttes
[ANY TWO] (2 x 2) (4)
- 2.4.4 It develops on very flat surface that was covered by an ice sheet or glacier (2)
There are many lakes, swamps and marshy areas (2)
Develops from pre-existing drainage pattern (2)
Has haphazard pattern (2)
[ANY TWO] (2 x 2) (4)
- 2.4.5 Resistance of underlying rock (dome or igneous rock) (2)
Resistant rock not easily eroded by flowing water (2)
Fewer river valleys are formed (2)
[ANY TWO] (2 x 2) (4)
- [15]**
- 2.5 2.5.1 The Department of Water Affairs and Forestry (1 x 1) (1)
- 2.5.2 Air and water pollution (2 x 1) (2)
- 2.5.3 Industries (1 x 2) (2)
- 2.5.4 Waste into the rivers reduces the amount of oxygen available for plants and animals living in the water and thus destroys them (2)
Eutrophication which increases nutrients in the water and results in the growth of algae (2)
Algae uses up oxygen and decreases the amount of light entering the water (2)
[ANY TWO] (2 x 2) (4)
- 2.5.5 Encourage better farming practices with better use of fertilisers (2)
Conduct public awareness programmes (2)
Fix all sewages linkages (2)
Fines to be imposed for dumping into the rivers (2)
Create buffer zone close to rivers (2)
Conserve the wetland (2)
Frequent testing of water quality to prevent disruption of the ecosystem (2)
[ANY THREE] (3 x 2) (6)
- [15]**
[60]



QUESTION 3: MAPWORK

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 D (1 x 1) (1)

3.1.2 D (1 x 1) (1)

3.1.3 Area = L x B
 L = 4 cm (3,8 – 4,2)
 B = 3,6 cm (3,4 – 3,8)
 $(4 \times 0,5) \sqrt{}$ $(3,6 \times 0,5) \sqrt{}$
 $2 \sqrt{\text{km}} \times 1,8 \sqrt{\text{km}} = 3.6 \text{ km}^2 \sqrt{}$
 (Range: 3,23km² – 3,99km²) (5 x 1) (5)

3.1.4 To know the amount of building materials that will be required (2)
 To determine the total area that will be covered by the house (2)
 To know the space available for the house (2)
 To determine the costs (for budgeting) (2)
[ANY ONE] (2 x 1) (2)

3.1.5 130°– 132° (1 x 1) (1)

3.2 MAP APPLICATION AND INTEPRETATION

3.2.1 The main road or 717 main road/
 leads to Cape Town in the past
 The flat area between several hills prevents too much wind
 Near a natural water source/fountain
[ANY ONE] (1 x 1) (1)

3.2.2 Dendritic pattern (1 x 1) (1)

3.2.3 Lack of plant cover and wind
 Steep gradient
[ANY ONE] (1 x 2) (2)

3.2.4 Availability of water/flat gradient (1 x 2) (2)

3.2.5 Furrows
 Reservoirs
 Dams
 Non-perennial rivers
 Windpumps
[ANY TWO] (2 x 1) (2)

3.2.6 Recreational facility
 Showgrounds
[ANY ONE] (1 x 1) (1)



3.2.7 2 p.m. – 4 p.m. (1 x 1) (1)

3.2.8 Shadows are leaning towards South-east (1 x 2) (2)

3.3 **GEOGRAPHIC INFORMATION SYSTEMS (GIS)**

3.3.1 Obtaining data about the environment and the earth from a distance
[CONCEPT] (1 x 2) (2)

3.3.2 Offers employment opportunities for young graduates
Provides current data
Allows coverage of large area
Easy collection of data (1 x 1) (1)
[ALLOCATE MARK TO ANY OTHER RELEVANT ANSWERS]

3.3.3 The act of applying agreed standards in GIS
[CONCEPT] (1 x 2) (2)

3.3.4 The reference of the topographical map of Philippolis (1 x 1) (1)

3.3.5 Ensure that data is internally consistent
The data is accurate
Data set can be compared to other data
[ANY ONE] (1 x 2) (2)
[30]

GRAND TOTAL: 150

