BERGVLIET HIGH SCHOOL

GEOGRAPHY
PAPER 1

GRADE 11 FINAL EXAMINATION

17 NOVEMBER 2025

MARKS: 150	TIME: 3 HOURS
EXAMINER:	MR B. JOHNS
MODERATOR:	MRS J. KNOTT

This question paper consists of 16 pages.

INSTRUCTIONS AND INFORMATION

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 your answers correctly according to the numbering system used in this question paper.
7. Do NOT write in the margins of the answer book.
8. Draw fully labelled diagrams when instructed to do so.
9. Answer in FULL SENTENCES, except when asked to state, name, identify or list.
10. The unit of measurement MUST be given in the final answer, where applicable, for example 1020 hPa, 14 °C and 45 m.
11. You may use a non-programmable calculator.
12. You may use a magnifying glass.
13. Write neatly and legibly.

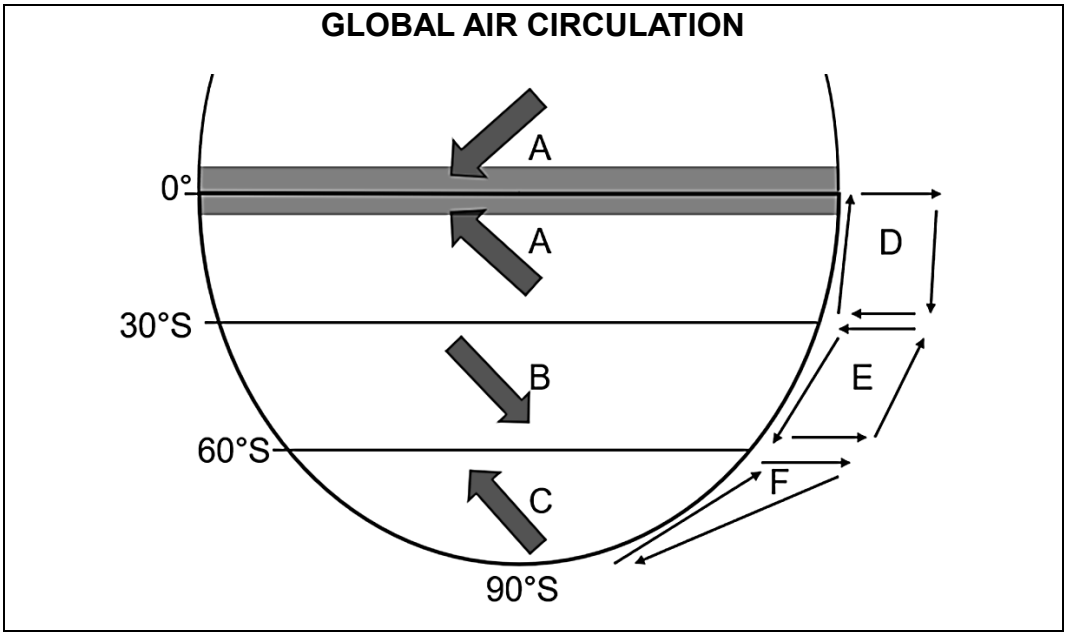
SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

14. A 1 : 50 000 TOPOGRAPHIC MAP 2331CC PHALABORWA and a 1 : 10 000 orthophoto map extract from 2331CC 18 PHALABORWA (NORTH) are provided.
15. The area demarcated in RED on the topographic map represents the area covered by the orthophoto map.
16. Show ALL calculations where applicable. Marks will be allocated for this.
17. You must hand in the topographic and orthophoto map to the invigilator at the end of this examination session.

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1 Study the diagram showing global air circulation.



State:

1.1.1 The latitude of the equatorial low-pressure belt.

1.1.2 The name of the air pressure belt at 60°S.

1.1.3 The letter (**B** or **C**) of the westerly winds.

1.1.4 The name of the global wind marked **A**.

1.1.5 The latitude at which the global winds diverge at the earth's surface.

1.1.6 The letter (**D** or **F**) of the polar cell.

1.1.7 The name of the circulation cell marked **E**.

1.1.8 The name of the shaded area at the equator where winds **A** converge.

(8 x 1) (8)

1.2 Various options are given as possible answers to each question. Choose the correct answer and write only the letter (A to D) next to the question number (1.2.1 to 1.2.7) for example: 1.2.8 D

1.2.1 The … describes the movement of air from a high to a low pressure.

A monsoon
B pressure gradient force
C Coriolis force
D brickfielder

1.2.2 Which statement accurate describes the relationship between temperature and air pressure?

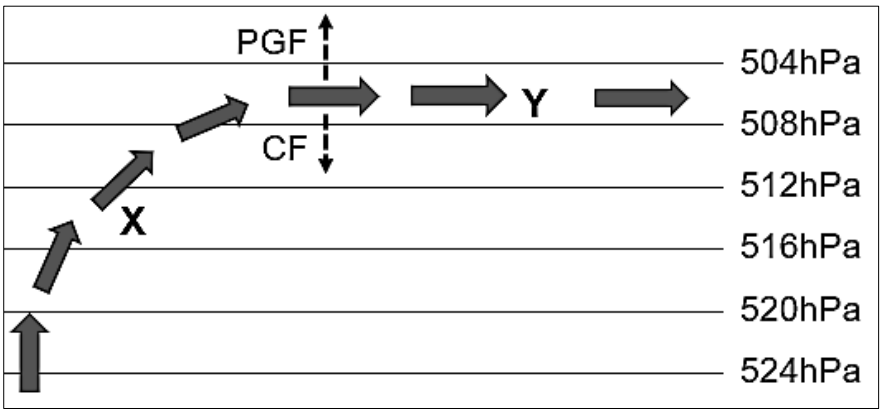
A Air pressure increases as temperature increases.
B Air pressure decreases when temperature decreases.
C Air pressure decreases as temperature increases.
D There is no relationship (correlation) between air pressure and temperature.

1.2.3 A low-pressure cell is characterised by … air that rises in a/an … direction in the southern hemisphere.

(i) converging
(ii) diverging
(iii) anticlockwise
(iv) clockwise

A (i) and (iii)
B (i) and (iv)
C (ii) and (iii)
D (ii) and (iv)

Refer to the diagram below to answer QUESTIONS 1.2.4 and 1.2.5.



1.2.4 The wind at **X** is deflected by the …

A the very low air pressure.
B revolution of the earth.
C rotation of the earth.
D speed of the wind.

1.2.5 … winds (**Y**) are high velocity winds that blow parallel to isobars.

A Berg
B Geostrophic
C Sirocco
D Föhn

1.2.6 Earth's … refers to the equilibrium between incoming solar radiation and outgoing radiation of the earth.

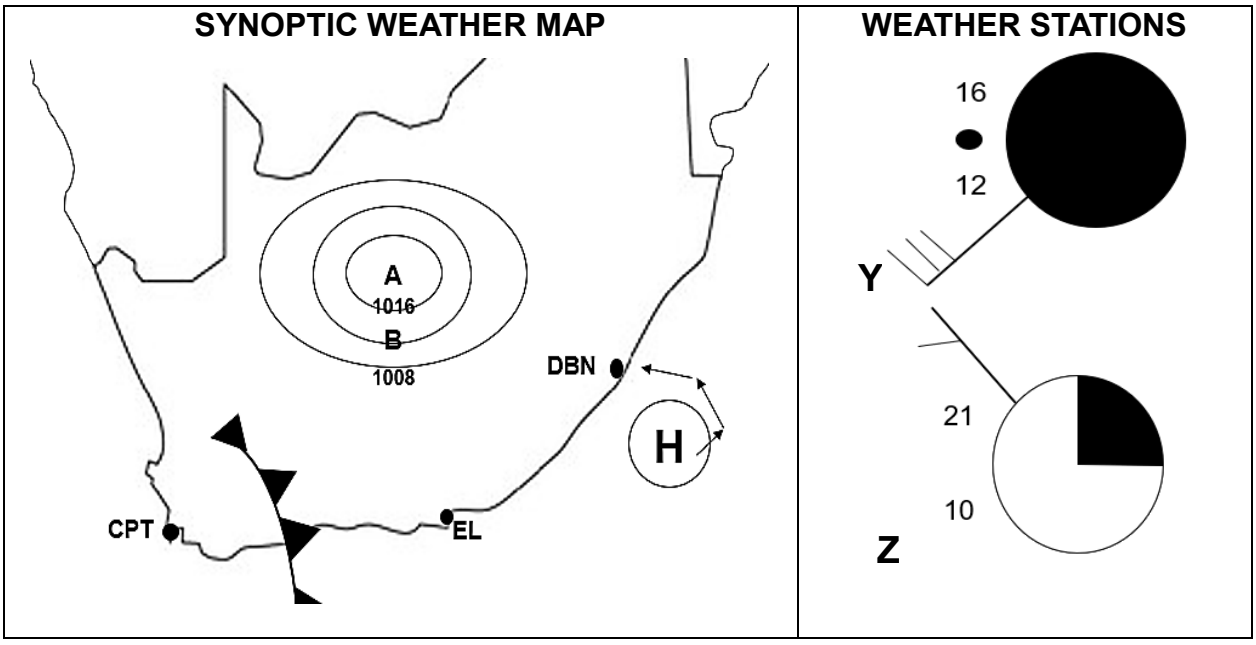
A energy balance
B equinox
C seasons
D insolation

1.2.7 The loss of energy by the earth's surface is called …

A a solstice.
B aspect.
C terrestrial radiation.
D freezing.

(7 x 1) (7)

1.3 Study the synoptic weather map and the accompanying weather station models.



1.3.1 Is the air pressure cell marked **A** an example of a high or low pressure? (1 x 1) (1)

1.3.2 Provide ONE reason for your answer to QUESTION 1.3.1. (1 x 2) (2)

1.3.3 Write down the value (in hPa) of the isobar at **B**. (1 x 1) (1)

1.3.4 Name the high-pressure cell off South Africa's east coast. (1 x 1) (1)

1.3.5 Comment on the relative temperature (cold or warm) and moisture content (dry or moist) of the air that reaches Durban (DBN) from the high-pressure off the east coast. (2 x 1) (2)

1.3.6 Match weather station **Y** and weather station **Z** with Cape Town (CPT) and East London (EL). (2 x 1) (2)

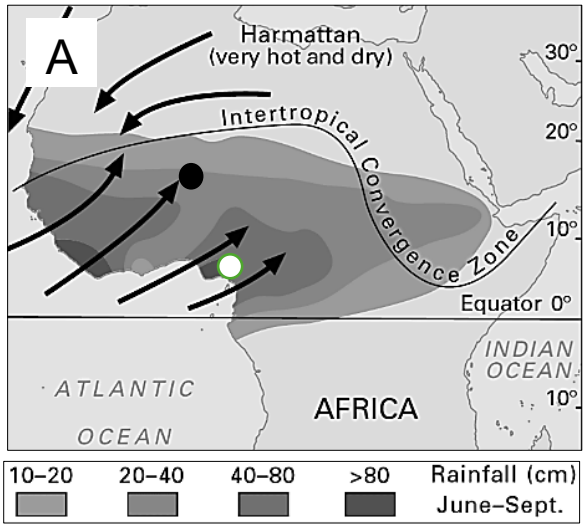
1.3.7 Provide reasons to support the weather station match for Cape Town in QUESTION 1.3.6. (2 x 2) (4)

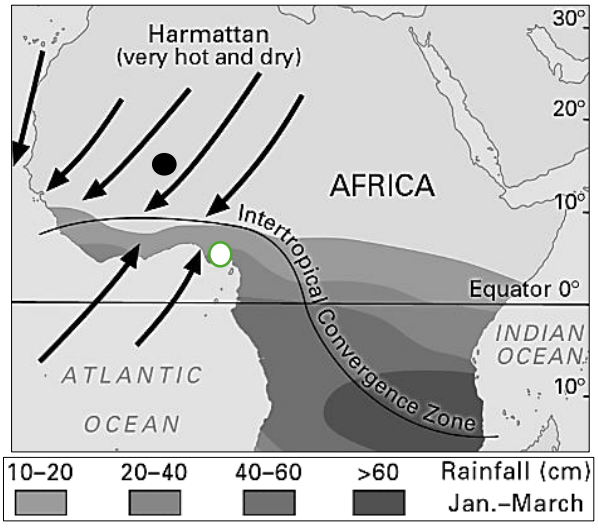
1.3.8 Determine the difference in wind speed between the weather stations. (2 x 1) (2)

1.4 Refer to the information on the West African monsoon below.

WEST AFRICAN MONSOON

Monsoon winds that affect West African regions between latitudes 9° and 20° N are characterized by winds that blow south-westerly during warmer months and north-easterly (Harmattan) during cooler months of the year. Although areas just outside of this region also experience wind reversals, the influence declines with distance.





○ Port Harcourt ● Timbuktu

Port Harcourt: Rainfall (in mm)												
J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**Total**
58	88	180	237	291	347	330	285	328	320	189	66	2 719

1.4.1 Define the concept of a *monsoon wind*. (2 x 1) (2)

1.4.2 Apart from the date, provide ONE reason why map **A** represents summer in the northern hemisphere. (1 x 2) (2)

1.4.3 Calculate the monthly average rainfall (in mm) for Port Harcourt. Write answer to TWO decimal places. (2 x 1) (2)

1.4.4 Identify ONE month with rainfall below the average. (1 x 1) (1)

1.4.5 Account for the high amounts of rainfall that Port Harcourt receives. (2 x 2) (4)

1.4.6 Suggest ONE negative consequence for the natural environment in Port Harcourt because of the high amount of rain. (1 x 2) (2)

1.4.7 Contrast the rainfall pattern of Timbuktu with that of Port Harcourt. (1 x 2) (2)

1.5 The photograph shows a negative impact of drought.

IMPACT OF DROUGHT



1.5.1 Define the term *drought*. (1 x 2) (2)

1.5.2 State the impact the drought is having on the crop in the photograph. (1 x 1) (1)

1.5.3 Discuss why poorer countries are more vulnerable (at risk) to the impacts of drought than wealthier (more developed) countries. (2 x 2) (4)

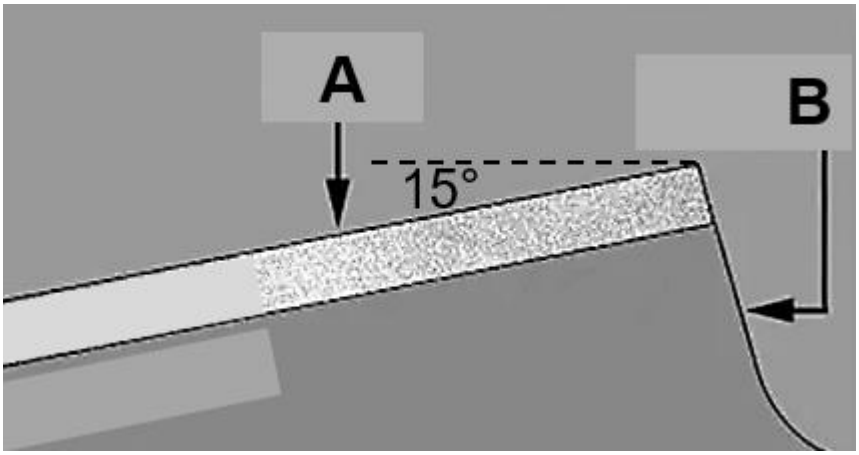
1.5.4 In a paragraph of approximately EIGHT lines, recommend sustainable measures that could be implemented to manage droughts effectively. (4 x 2) (8)

[60]

QUESTION 2: GEOMORPHOLOGY

2.1 Study the diagram showing a stratified landform.

STRATIFIED LANDFORM



2.1.1 Consider the terms: *dip slope* ; *hard layer* ; *scarp slope* ; *soft layer.*

Redraw and complete the following table by placing the terms under the correct column (either **A** or **B**).

A	B

(4 x 1) (4)

Choose the correct term from inside the bracket to complete each statement. Write only the correct term next to the question number (2.1.2 to 2.1.5), for example 2.1.6 Strata.

2.1.2 The rock strata in the diagram are (horizontal / inclined).

2.1.3 The landform shown was subjected to (faulting / volcanism).

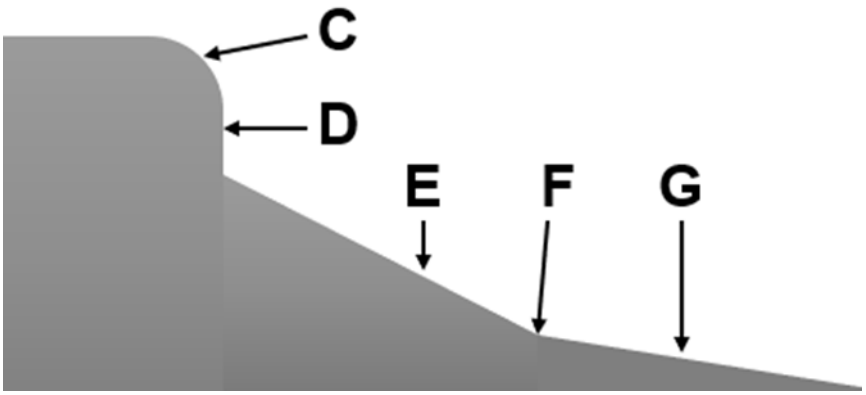
2.1.4 A (cuesta / hogsback) is illustrated in the diagram.

2.1.5 It is (true / untrue) that the type of landform shown has economic value.

(4 x 1) (4)

2.2 Refer to the diagram on slope elements.

SLOPE ELEMENTS



Match the following elements (parts) of a slope with a letter from the diagram. Write only the letter (**C** to **G,** which can be repeated) next to the question number (2.2.1 to 2.2.7), for example 2.2.8 G.

2.2.1 Cliff

2.2.2 Crest

2.2.3 Knickpoint

2.2.4 Pediment

2.2.5 Talus

2.2.6 Free face

2.2.7 Debris

(7 x 1) (7)

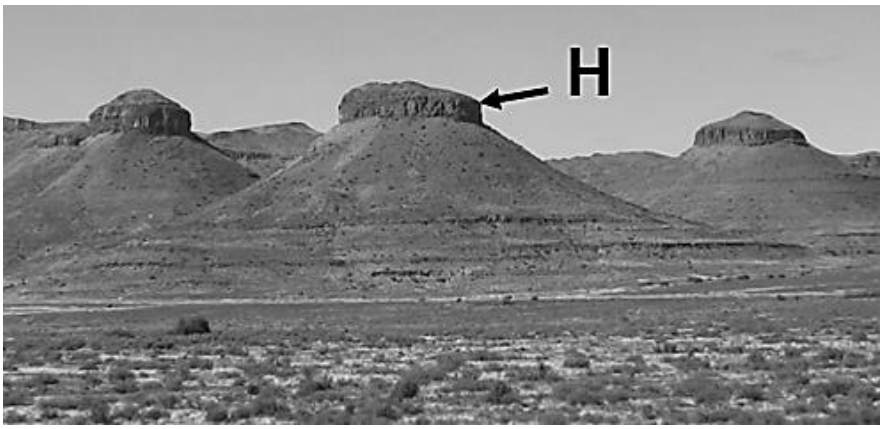
2.3 Read the extract below.

THE THREE SISTERS

The formation of *The Three Sisters* is rooted in the time when the Karoo was a swamp. These three koppies, which are almost identical in appearance, are classical examples of a geological formation called a butte - a French word meaning "small hill". Geologists explain that buttes are created by continual erosion of a mesa - an isolated tableland area which has eroded from a plateau. Over time, with continual erosion of the sides, a mesa is reduced to a butte, with steep, often vertical sides and a relatively flat top.

A resistant layer of dolerite overlays the softer Beaufort Group of sedimentary rocks that formed the Three Sisters. The Beaufort Group is a sequence of mudstones, shales and some sandstones that were deposited in the ancient Karoo Basin around 220-300 million years ago. Then, about 182 million years ago, a massive outpouring of lava formed the dolerite layer which formed the caps on the mesas and buttes.

Modern-day geologists explain that the "three sisters" will not last forever.



2.3.1 Name the geographical region in South Africa where *The Three Sisters* are located. (1 x 1) (1)

2.3.2 Identify the type of rock found at **H**. (1 x 1) (1)

2.3.3 Which geomorphological process was responsible for reducing the plateau to a mesa, and then the mesa to a butte? (1 x 1) (1)

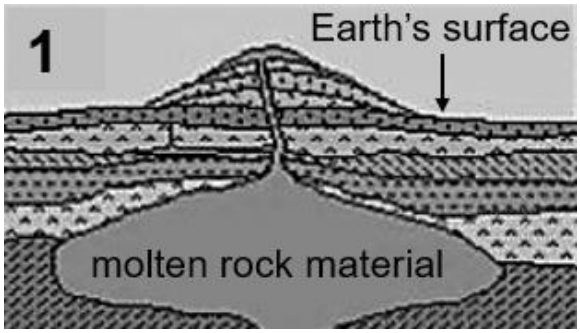
2.3.4 The process named in QUESTION 2.3.3 will further reduce the buttes to pointed buttes. How are buttes and pointed buttes similar, and different, to each other? (2 x 2) (4)

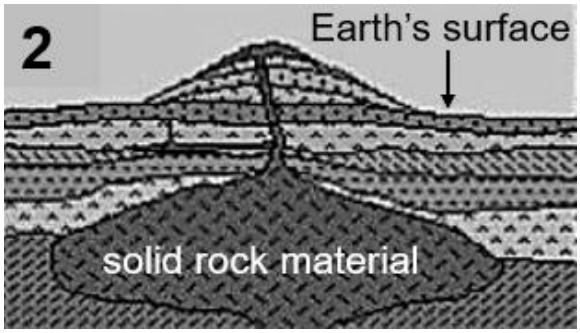
2.3.5 Explain the reason that modern day geologists think the *The Three Sisters* will not last forever. (2 x 2) (4)

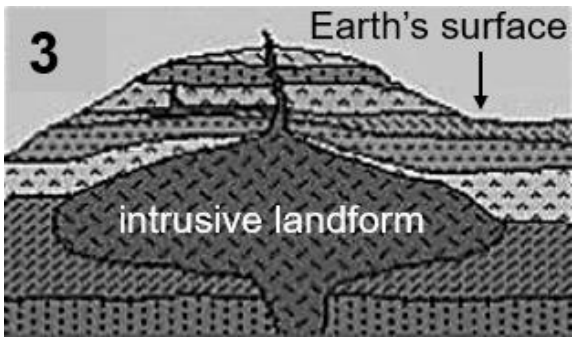
2.3.6 Assess the agricultural value of the landscape around *The Three Sisters*. (2 x 2) (4)

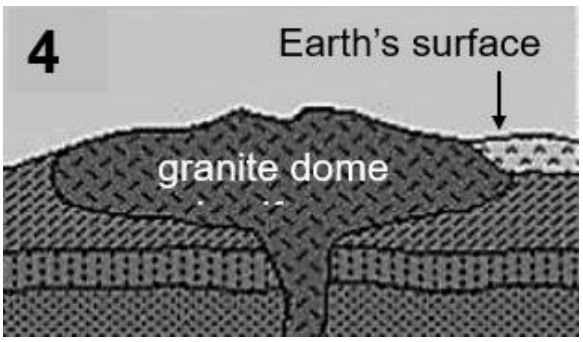
2.4 Frames 1 to 4 show the process in the formation of a granite dome.

FORMATION OF A GRANITE DOME









2.4.1 Granite domes are examples of (igneous / sedimentary) rock. (1 x 1) (1)

2.4.2 Provide a term for the phrase *molten rock material*. (1 x 1) (1)

2.4.3 Name the intrusive landform in Frame **3**. (1 x 1) (1)

2.4.4 Explain how the granite dome formed by describing the events in each of Frames **2** to **4**. (3 x 2) (6)

2.4.5 What is the name of the extrusive landform (consisting of core stones) that results from the weathering of intrusive forms, and the subsequent erosion of the extrusive rock? (1 x 1) (1)

2.4.6 (Paarl Mountain / Vredefort) is a granite dome in South Africa. (1 x 1) (1)

2.4.7 Discuss the economic benefits of the South African granite dome (named in QUESTION 2.4.6 above). (2 x 2) (4)

2.5 Read the news report below.

DARJEELING LANDSLIDES

The landslides, triggered by over 300 mm of rain in just 12 hours, have ravaged the Darjeeling hills. The death count in the devastating landslides in the Darjeeling district of West Bengal has risen to 24, as rescue operations continue Monday. Several people are still missing, and thousands of tourists are stranded in hill pockets cut off by the disaster, officials said. The situation remains extremely challenging. National Disaster Response Force (NDRF) teams are leading rescue efforts across multiple sites, using heavy earth-moving machinery to locate people feared trapped under debris. An official from the GTA said road connectivity to several hamlets remains cut off even 24 hours after the disaster. "Entire slopes have caved in, bridges washed away, and large portions of roads are buried under mud. Helicopters may be needed to reach some interior villages," the official said.

2.5.1 Define the concept of a *landslide*. (1 x 2) (2)

2.5.2 What caused the landslide in Darjeeling? (1 x 1) (1)

2.5.3 Consider the cause of the landslide (answer to QUESTION 2.5.2). Discuss why it increases the likelihood of a landslide happening. (1 x 2) (2)

2.5.4 Describe TWO challenges faced by rescue workers. (2 x 1) (2)

2.5.5 Landslides are examples of mass movement. Write a paragraph of approximately EIGHT lines in which you recommend measures that should be put in place by authorities to prevent future loss of life and damage to infrastructure caused by mass movement. (4 x 2) (8)

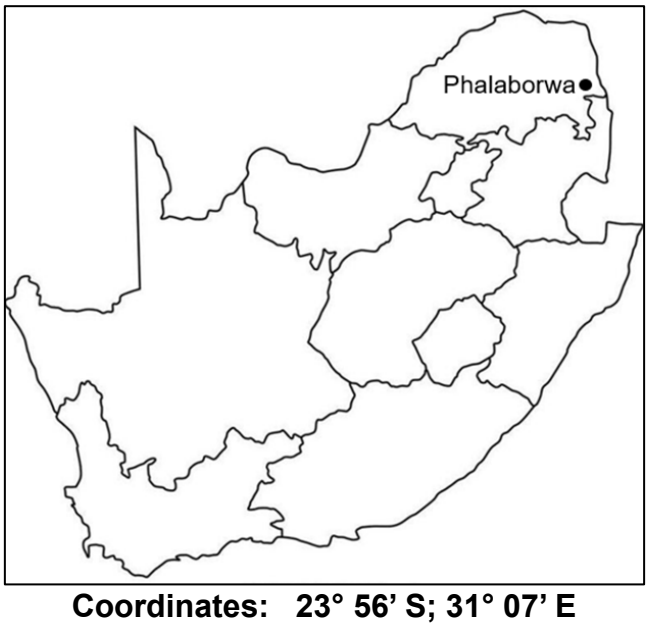
[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON PHALABORWA



Coordinates: 23° 56' S; 31° 07' E

Phalaborwa (translated as *better than the south*) is a town in the Mopani District Municipality. It is the only town in South Africa that borders Kruger National Park. The border with Mozambique is two hours away. Rainfall is low, with occasional showers in summer. Phalaborwa has the highest winter temperature in South Africa; with an average winter temperature range from 9 °C to 26 °C.

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 Phalaborwa is in the Mopani District in ... province.

A Gauteng
B Limpopo
C Mpumalanga
D North-West (1 x 1) (1)

3.1.2 The map index to the south-west of 2331CC is …

A 2331CD
B 2431AB
C 2430BB
D 2330DB

2330DB	2331CA	2331CB
2330DD	2331CC	2331CD
2430BB	2431AA	2431AB

(1 x 1) (1)

Refer to spot height 459 (in block **D1**) and spot height 443 (in **D4**) on the orthophoto map.

3.1.3 Determine the difference in altitude between the spot heights. (1 x 1) (1)

3.1.4 Given a map distance of 9.8 cm between the spot heights, calculate the real distance (in m). (1 x 1) (1)

3.1.5 Determine the average gradient between the spot heights.

Formula: $$\boldsymbol{Average\ Gradient} = \frac{\boldsymbol{Vertical\ Interval\ (VI)}}{\boldsymbol{Horizontal\ Equivalent\ (HE)}}$$

(2 x 1) (2)

Consider the topographical map.

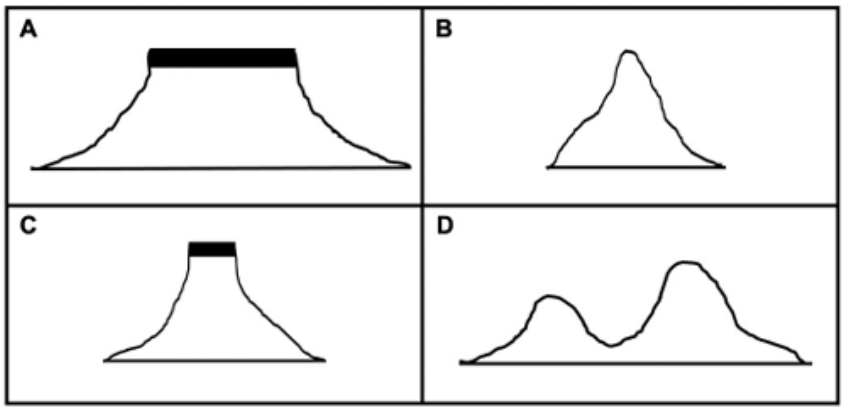
3.1.6 Calculate the area (in km²) of the entire topographical map using the following information:

Real length = 9.25 km

Formula: $\boldsymbol{Area = Length\ x\ Breadth}$ (4 x 1) (4)

3.2 MAP INTERPRETATION

3.2.1 Which rough cross-section below can be matched with landform **8** on the orthophoto map?



(1 x 1) (1)

3.2.2 Landform **8** on the orthophoto map is an example of a …

A cuesta.
B plateau.
C butte.
D conical hill. (1 x 1) (1)

3.2.3 Name ONE kind of mass movement that is likely to occur on the slopes of landform **8**. (1 x 1) (1)

3.2.4 Explain how the spacing of the contour lines indicate that feature **6** on the orthophoto map is in an ideal location? (1 x 2) (2)

Refer to the information below.

Rainfall in Phalaborwa is low.

Phalaborwa only receives 529 mm of rain per year

Winter Average Temp
Low: 9 °C
High: 26 °C

Number of days on which it rains in Phalaborwa by month											
J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
7	6	5	3	1	1	1	1	2	3	6	7

3.2.5 Calculate the winter temperature range for Phalaborwa. (2 x 1) (2)

3.2.6 Which season has the greatest number of rainy days? (1 x 1) (1)

3.2.7 Discuss evidence from the map that Phalaborwa receives low amounts of rainfall. (1 x 2) (2)

3.2.8 What has been done in Phalaborwa to manage the low amounts of rainfall? (1 x 2) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

Study the aerial photograph of Phalaborwa.

AERIAL PHOTOGRAPH OF PHALABORWA



Choose the correct term in COLUMN B that completes the statement in COLUMN A. Write only the letter (**Y** or **Z**) next to the question number (3.3.1 to 3.3.3).

COLUMN A		**COLUMN B**	
3.3.1	The photograph is an example of …, one of the components of a GIS.	**Y**	data
		Z	software
3.3.2	The photograph can best be described as a/an … aerial photograph.	**Y**	oblique
		Z	vertical
3.3.3	The aerial photograph is providing data in … form.	**Y**	raster
		Z	vector

(3 x 1) (3)

Refer to both the aerial photograph and the topographical map to answer the

following questions.

3.3.4 Identify the infrastructure that makes Phalaborwa more accessible for tourists. (1 x 1) (1)

3.3.5 Name the type of map (vector) symbol used to represent feature **6**. (1 x 1) (1)

3.3.6 Identify the healthcare facility inside the white rectangle on the aerial photograph. (1 x 1) (1)

3.3.7 A data layer is a layer of information on a specific theme.

Discuss ONE data layer that assisted in determining the ideal location of the facility identified in QUESTION 3.3.6. (1 x 2) (2)

[30]

TOTAL SECTION B: 30

GRAND TOTAL: 150