GAUTENG PROVINCE

EDUCATION

REPUBLIC OF SOUTH AFRICA

TYPE OF TASK: MID-YEAR EXAMINATION

SUBJECT	:	GEOGRAPHY
GRADE	:	11
TERM	:	2
TIME	:	3 HOURS
TOTAL	:	150 MARKS
DATE OF IMPLEMENTATION	:	06 JUNE 2023
TERM WEIGHTING	:	60%
SBA WEIGHTING	:	20%

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This JUNE EXAMINATION consists of 17 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 open between sub-sections of questions answered.
5. Start EACH question at the top of a NEW page.
6. Number the 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 you have to state, name, identify or list.
10. Units of measurement MUST be indicated in your final answer, e.g. 1 020 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 2331 CC Phalaborwa and a 1: 10 000 orthophoto map 2331 CC 18 Phalaborwa (North) are provided.
15. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.
16. Show ALL calculations. Marks will be allocated for this.
17. You must hand in the topographic and the orthophoto map to the invigilator at the end of this examination session.

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SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1 Refer to the FIGURE below showing two air pressure cells. Match the descriptions below with either Diagram **A** or Diagram **B**. Write only the question numbers (1.1.1 to 1.1.7) in the ANSWER BOOK, e.g. 1.1.8 B

DIAGRAM A

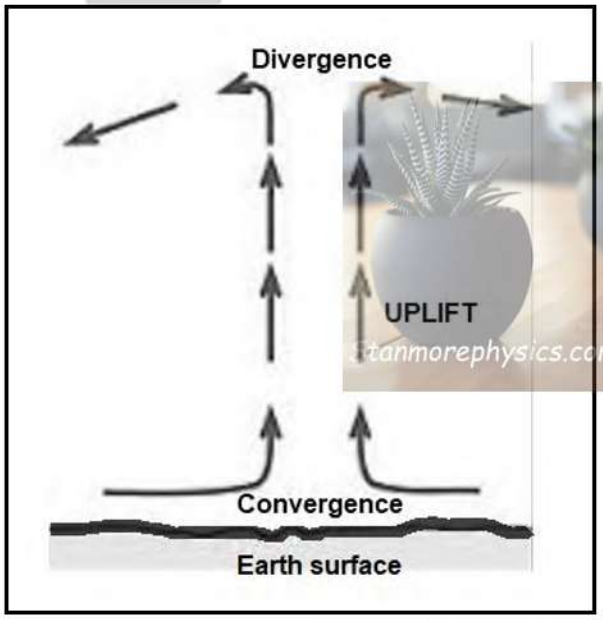
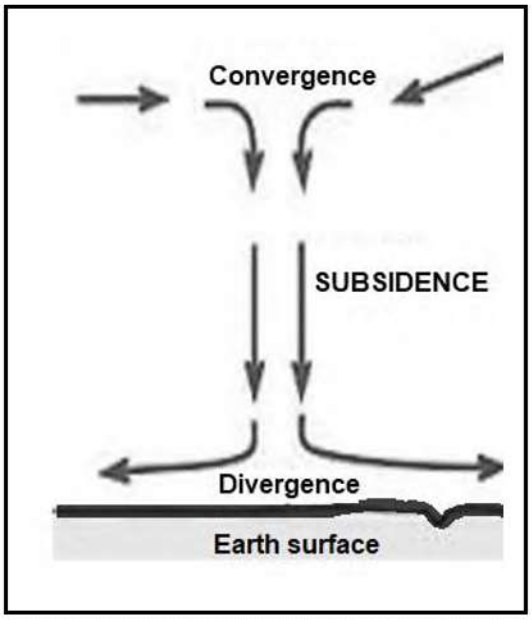


DIAGRAM B



[Source:https://www.shsu.edu/~dl_www/bkonline/131online/f04pressure/04index.htm]

1.1.1 This pressure cell is dominant over the interior of South Africa during winter.

1.1.2 The pressure cell is associated with stable conditions.

1.1.3 The pressure cell that is associated with clouds.

1.1.4 This pressure cell is associated with anticlockwise rotation of air in the Northern Hemisphere.

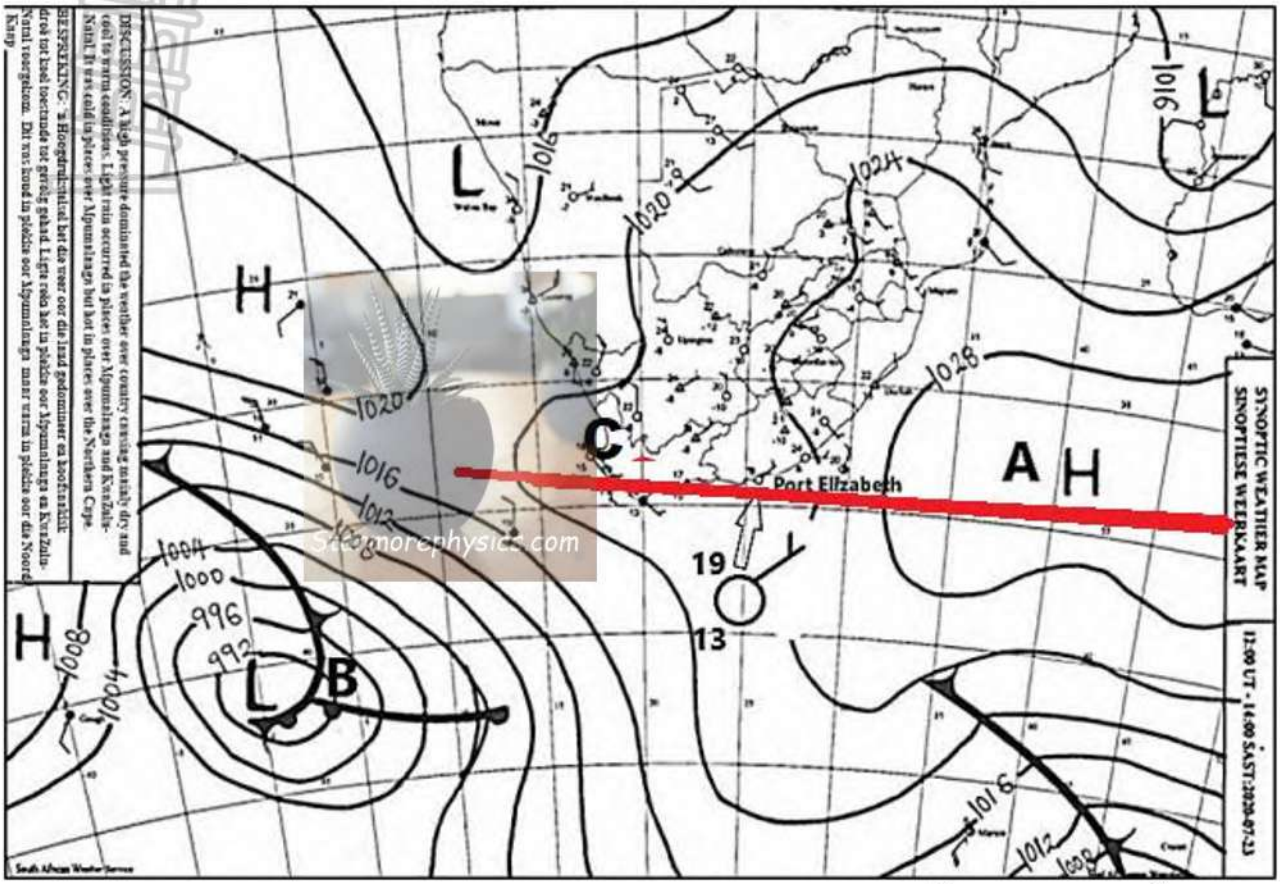
1.1.5 This pressure cell is associated with the Dry Adiabatic Lapse Rate (DALR.)

1.1.6 This pressure cell is associated with ridging.

1.1.7 This pressure cell is located closer to the Inter- Tropical Convergence Zone (ITCZ).

(7 x 1) (7)

1.2 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 number (1.2.1–1.2.7) in the ANSWER BOOK, e.g. 1.2.8 A.



[Source: www.weathersa.co.za]

1.1.1 The term isobar is best described as …

A The line that joins places with the same rainfall
B The line that joins places with the equal temperature
C The line that joins places with the same air pressure above sea level
D A line drawn on a topographic map to indicate ground elevation or depression

1.1.2 The isobaric interval on the synoptic weather map is …

A 2 hPa
B 4 hPa
C 6 hPa
D 8 hPa

1.1.3 The name of the high-pressure cell at **A** is the…

A South Atlantic Anticyclone
B Kalahari Anticyclone
C South Indian Anticyclone
D Mid-Latitude Cyclone

1.1.4 Line **C** represents a…

A ridge
B saddle
C trough
D isobaric interval

1.1.5 Weather phenomenon **B** is known as a …

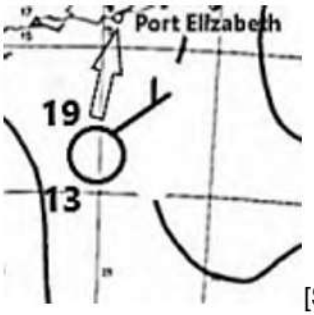
A Coastal Low
B Tropical Cyclone
C Heat Low
D Mid-Latitude Cyclone

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1.1.6 The movement of air around weather phenomenon B is …

A Subsidence, convergence, clockwise rotation
B Uplift, divergence, anticlockwise rotation
C Uplift, convergence, clockwise rotation
D Subsidence, divergence, anticlockwise rotation

1.1.7 The weather conditions at Port Elizabeth are …



[Source: www.weathersa.co.za]

(i) Temperature 13°C, Dew point temperature 19°C
(ii) Wind direction – NW, Wind direction – 5 knots
(iii) Low humidity, Clear sky, no precipitation
(iv) Temperature 19°C, Dew point temperature 13°C

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

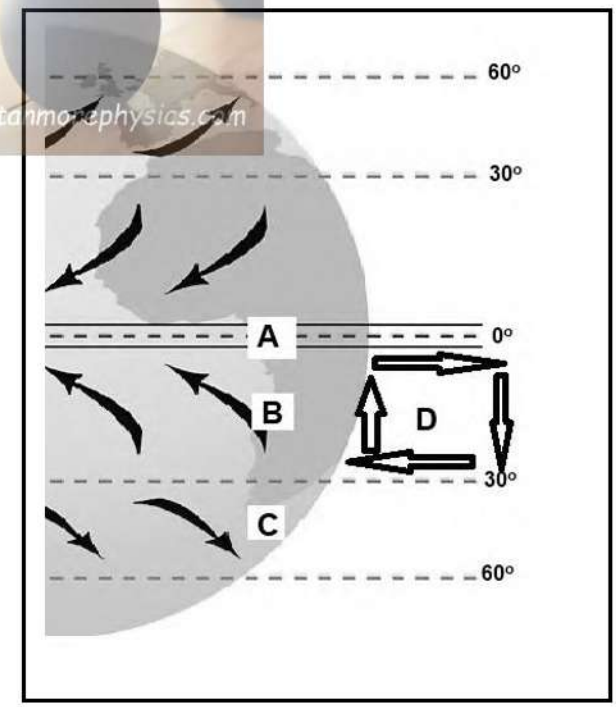
1.1.8 Study the isobars at **B** and describe the pressure gradient and wind speed

(i) Steep pressure gradient
(ii) Gentle pressure gradient
(iii) High wind speed
(iv) Low wind speed

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

(8 x 1) (8)

1.3 Refer to the sketch on the tri-cellular circulation



[Source:https://www.tutor2u.net/geography/reference/aqa-gcse-geography-weather-hazards-global-pressure-and-surface-winds]

1.3.1 The pressure belt at **A** is (high pressure / low pressure)? (1 x 1) (1)

1.3.2 Give TWO reasons for your answer to QUESTION 1.3.1. (2 x 2) (4)

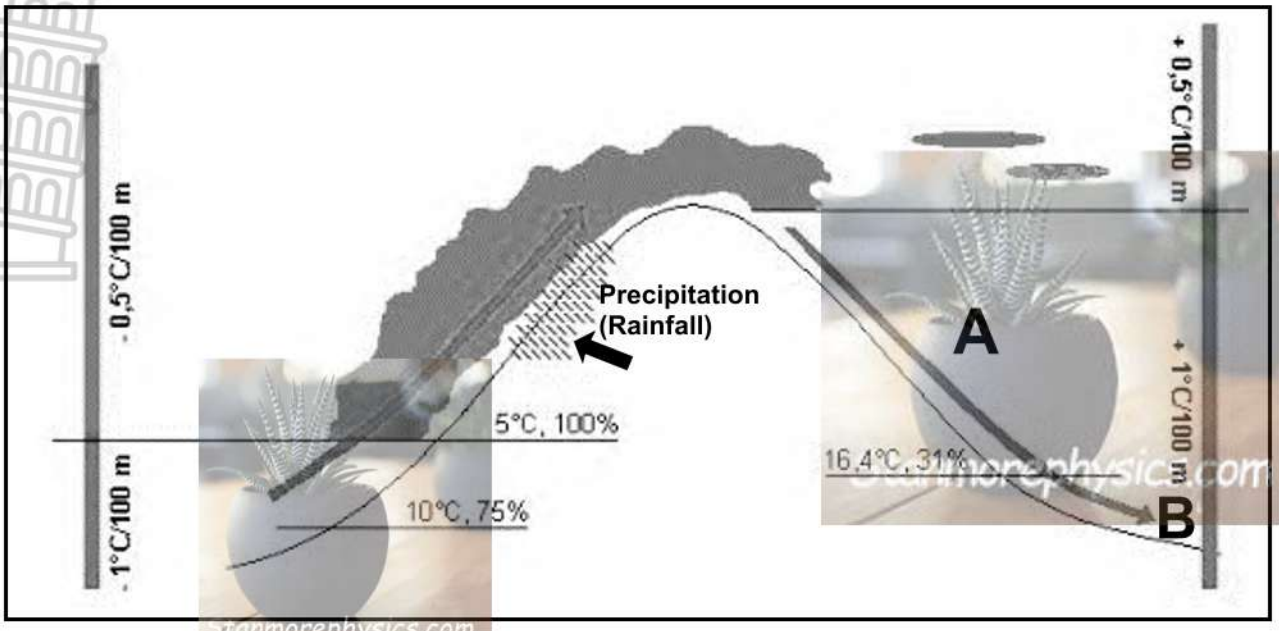
1.3.3 Name the winds marked **B** and **C** (2 x 1) (2)

1.3.4 Describe the movement of air in cell **D**. (1 x 2) (2)

1.3.5 Explain the influence of the wind at **C** on the weather conditions in the Western Cape. (3 x 2) (6)

[15]

1.4 Refer to the FIGURE below illustrating Föhn wind and answer the questions that follow.



[Source: https://sageography.co.za/wiki/grade-11-caps/grade-11-caps-climate-and-weather/2-global-air-circulation/6-winds-related-to-regional-and-local-air-movements-monsoons-and-fohn/]

1.4.1 Define the concept *Föhn wind*. (1 x 2) (2)

1.4.2 Provide the name for a similar wind found in South Africa. (1 x 1) (1)

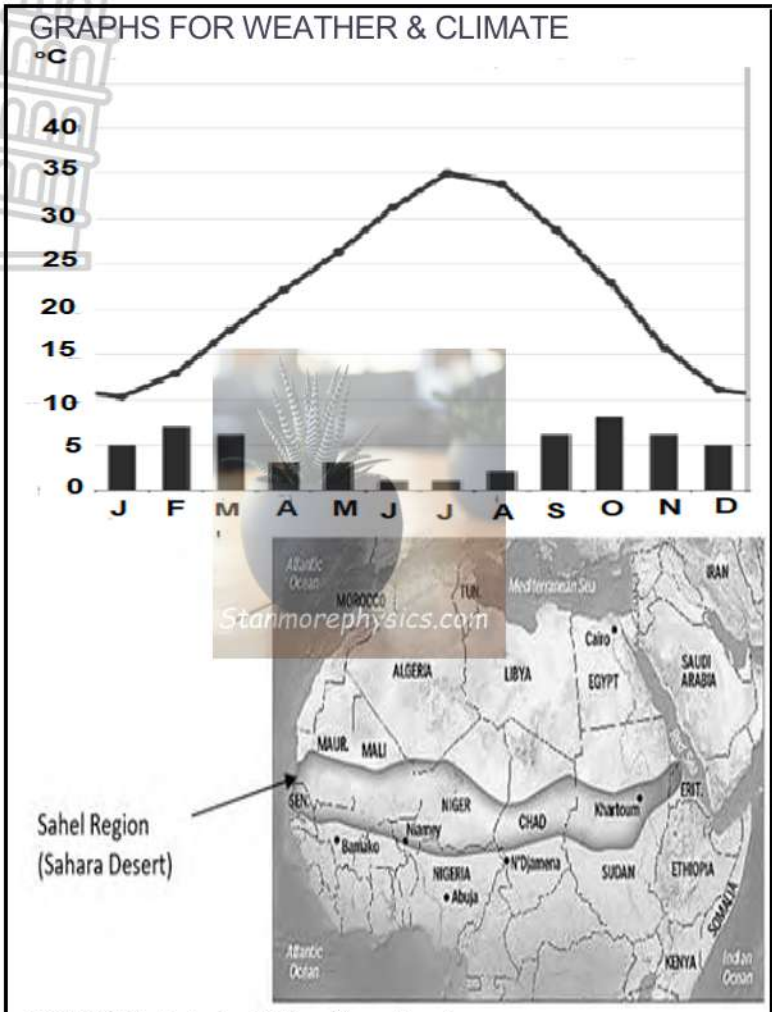
1.4.3 Account for the formation of precipitation (rainfall) on the windward side of the mountain. (2 x 2) (4)

1.4.4 Explain the characteristics of wind **B** that is descending on side **A** of the mountain. (2 x 2) (4)

1.4.5 Discuss the weather conditions that can be expected on side **A** of the mountain due to the influence of wind **B.** (2 x 2) (4)

[15]

1.5 Refer to the infographic on desertification.



[SOURCE: Adapted https://en.climate-data.org/africa/morocco/]

AFRICA'S AMBITIOUS GREEN BELT PROJECT

The 15 kilometre (9,3 mile) wide Great Green Wall project stretches over 7 775 km from Senegal on the Atlantic to Eritrea on the Red Sea. The aim was to curb the Sahara Desert's spread. But major challenges remain. The change in climate and weather patterns is triggering a rapid spread of the Sahara Desert, invading into lands and surrounding huge lakes, according to climate scientists. Seven countries of the Sahel region, an area located just south of the Sahara, therefore initiated a project that will see billions of trees planted across 11 countries by 2030, which will serve as buffer zones to stop the desertification

[SOURCE: from uit www.dw.com]

1.5.1 Define the term *desertification*? (1 x 2) (2)

1.5.2 According to the infographic, what is the main aim of the Great Green Wall project? (1 x 1) (1)

1.5.3 According to the infographic, what is the main cause of the rapid spreading of the Sahara Desert. (1 x 1) (1)

1.5.4 Calculate the temperature range (°C) between January and July. (1 x 1) (1)

1.5.5 Name TWO human activities that contribute to desertification. (2 x 1) (2)

1.5.6 In a paragraph of approximately EIGHT lines, discuss the positive impact that the Great Green Wall project will have on people living in this region. (4 x 2) (8)

[15]

TOTAL QUESTION 1: 60

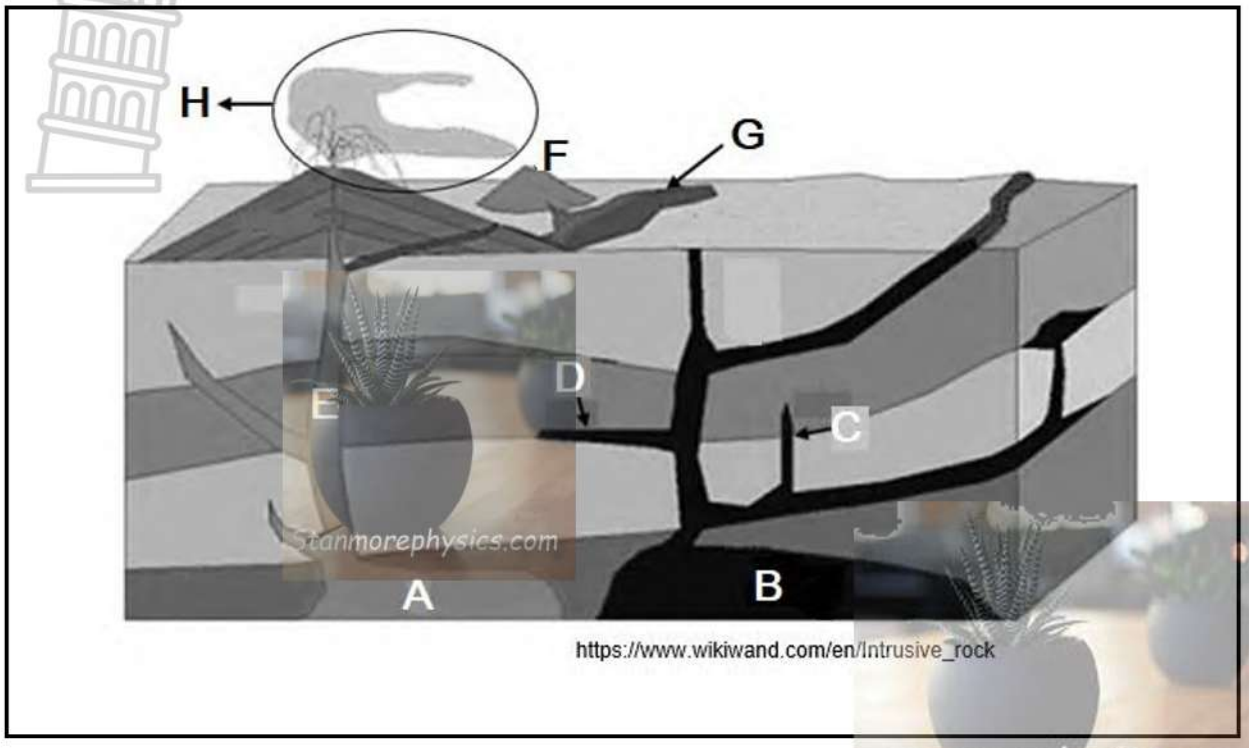
QUESTION 2: GEOMORPHOLOGY

2.1 Choose a term in COLUMN B that matches the description of topography associated with inclined strata in COLUMN A. Write only the letters (A-H) next to the question numbers (2.1.1 to 2.1.7) in the ANSWER BOOK, for example 2.1.8 I.

COLUMN A	COLUMN B
2.1.1 Shows the direction in which the rock layers dip.	A. Hogsback
2.1.2 Where the layers dip very gradually at 10º to 25º.	B. Cuesta basin
2.1.3 The scarp slopes faces downward, and the dip slopes is directed inward.	C. Scarp slope
2.1.4 It is very steep and forms a cliff face.	D. Cuesta dome
2.1.5 Dipping strata is from 25º to 45º.	E. Homoclinal ridge
2.1.6 The scarp slopes face inward and the dip slopes face outward.	F. Resistant strata
2.1.7 Dipping strata is greater than 45º.	G. Dip slope
	H. Cuesta

(7 x 1) (7)

2.2 Refer the FIGURE showing igneous intrusions. Match the letters **A** to **H** to each description below. Write down the LETTERS next to the question numbers (2.2.1 – 2.2.8) in your ANSWER BOOK, e.g. 2.2.9 I



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2.2.1 Forms when an enormous mass of magma pushes upwards and solidifies under the earth's surface.

2.2.2 Circular, or oval feature made up of small fragments of lava from a single vent

2.2.3 Consists of fragments of rocks, minerals, and volcanic glass ranging in size.

2.2.4 A horizontal rock layer formed as magma spread between layers.

2.2.5 A large pool of liquid rock beneath the surface of the Earth.

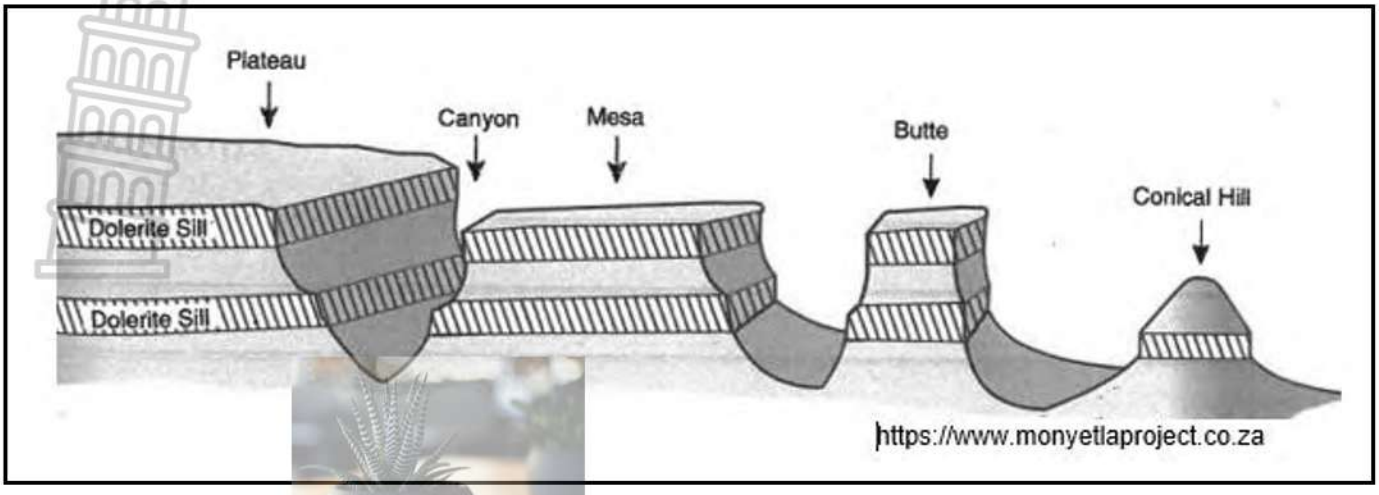
2.2.6 Magma can move through a pipe often to the surface.

2.2.7 The molten rock flowing out of fissures or vents

2.2.8 A wall-like intrusion that cuts almost vertically across existing strata.

(8 x 1) (8)

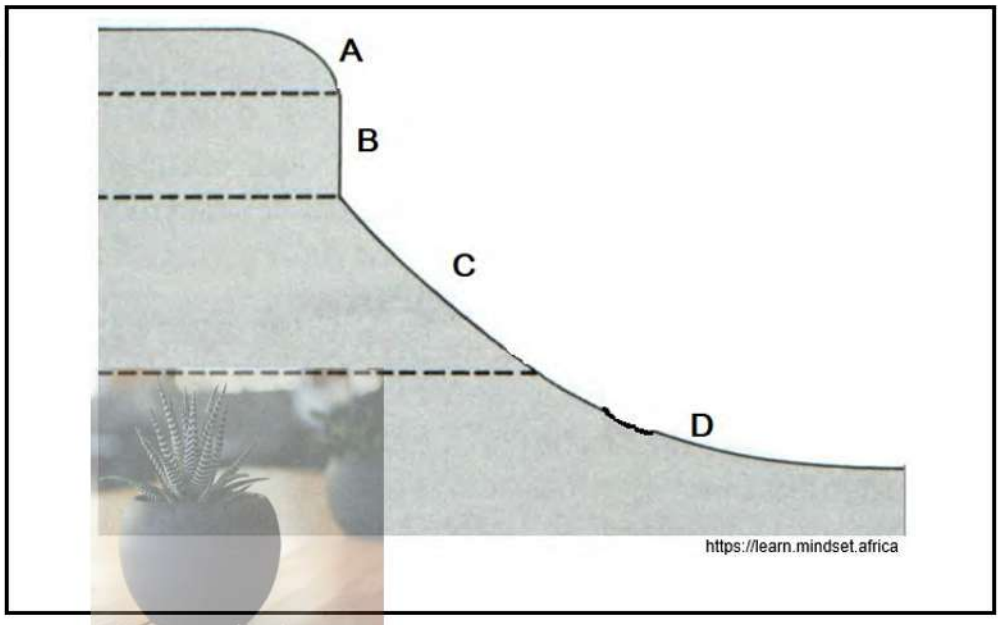
2.3 Refer to the FIGURE showing horizontal landforms.



2.3.1	Define the concept *canyon*.	(1 x 2)	(2)
2.3.2	Identify the rock type in the FIGURE that the cap rock is made off.	(1 x 1)	(1)
2.3.3	Describe the characteristics of the plateau.	(1 x 2)	(2)
2.3.4	Discuss how the plateau could be utilised by people.	(1 x 2)	(2)
2.3.5	Distinguish between a mesa and a butte?	(2 x 2)	(4)
2.3.6	Describe the process in the formation of a butte.	(2 x 2)	(4)

[15]

2.4 Refer to the FIGURE showing slope elements.

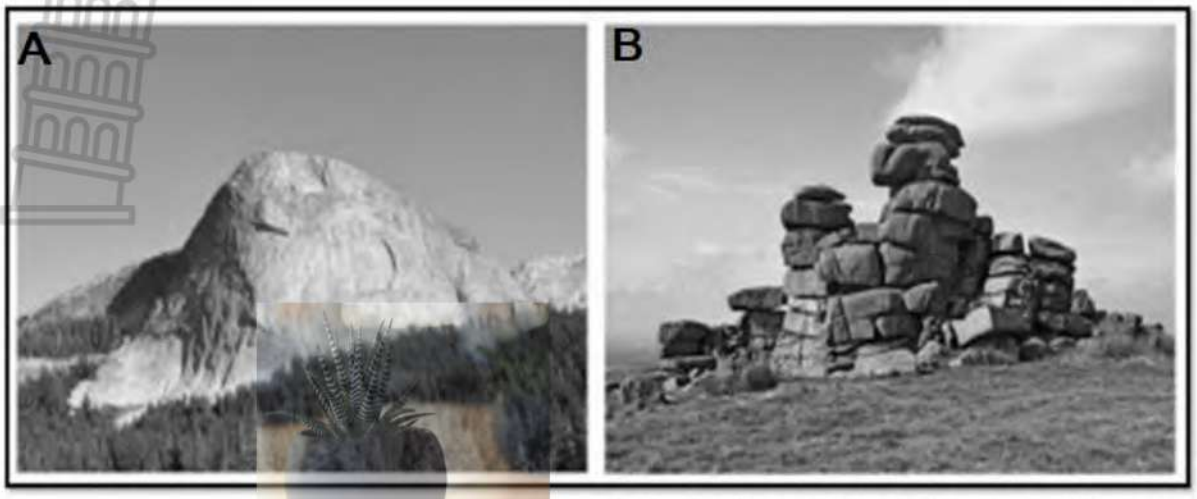


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2.4.1	Label slopes **A** and **B**.	(2 x 1)	(2)
2.4.2	Explain why slope **A** has a thin covering of soil.	(1 x 2)	(2)
2.4.3	Why is slope **B** steep?	(1 x 2)	(2)
2.4.4	(a) Name the slope at **C**.	(1 x 1)	(1)
	(b) Explain how slope **C** formed.	(1 x 2)	(2)
2.4.5	What impact would slope retreat have on slope element **D**?	(1 x 2)	(2)
2.4.6	Suggest why slope element **D** is suitable for the growth of vegetation.	(2 x 2)	(4)

[15]

2.5 Refer to the FIGURE below.



Source: https://wcedonline.westerncape.gov.za/documents

2.5.1 Identify the rock type responsible for the formation of the landforms in the FIGURE. (1 x 1) (1)

2.5.2 Name the volcanic feature at **A**. (1 x 1) (1)

2.5.3 (a) Is the feature at **A** intrusive or extrusive? (1 x 1) (1)

(b) Give a reason for your answer for QUESTION 2.5.3 (a). (1 x 2) (2)

2.5.4 Describe the characteristics of feature **B.** (1 x 2) (2)

2.5.5 In a paragraph of approximately EIGHT lines explain the formation of feature **B**. (4 x 2) (8)

[15]

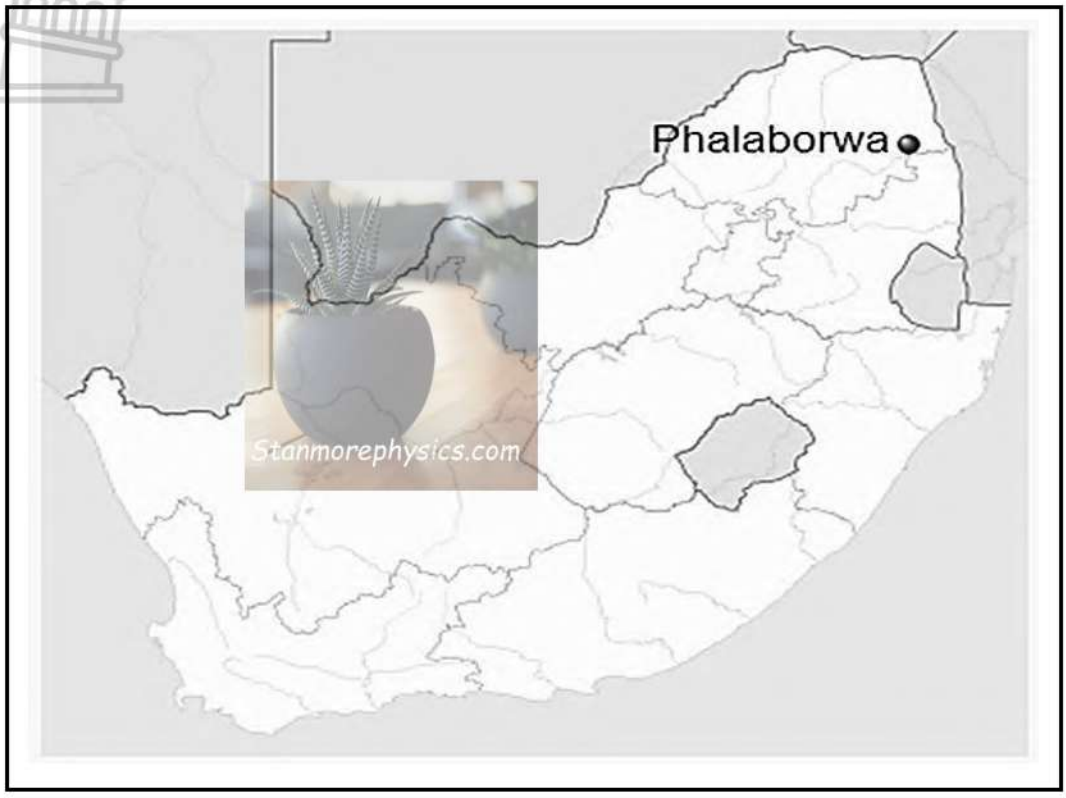
TOTAL QUESTION 2: 60

TOTAL SECTION A: [120]

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

BACKGROUND INFORMATION ON



N

Coordinates: 23°52' S; 31°04' E

Phalaborwa is a town in Limpopo, South Africa. It is located near the confluence of the Ga-Selati River and the Olifants River, along the western border of the Kruger National Park in the Lowveld. Tourism and wildlife play dominant roles in the life of this town. Attractions, such as the Blyde River Canyon, the Three Rondavels, God's Window, Bourke's Luck Potholes and river cruises on the Olifants River, make Phalaborwa an important tourist destination in this province.

[Adapted from https://en.wikipedia.org/wiki/Phalaborwa]

The following English terms and their Afrikaans translations are shown on the topographic map:

ENGLISH	AFRIKAANS
Diggings	Uitgrawings
Golf course	Gholfbaan
River	Rivier
Sewerage works	Rioolwerke
Estate	Landgoed
Salt pan	Soutpan
Nature reserve	Natuurreservaat

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 Phalaborwa is located in the … province.

A Mpumalanga
B Northwest
C Gauteng
D Limpopo (1 x 1) (1)

3.1.2 23 on the index 2331 CC refers to…

A longitude.
B latitude.
C meridian.
D map code. (1 x 1) (1)

3.1.3 Refer to the trigonometrical station in **Block E3** on the topographic map. Give the height of the trigonometrical station (1 x 1) (1)

3.1.4 Refer to the two spot heights at **7** in **Block B1** on the orthophoto map. Calculate the difference in height between the two spot heights. (2 x 1) (2)

3.1.5 Calculate the horizontal distance between the TWO spot heights mentioned in QUESTION 3.1.4. (2 x 1) (2)

3.1.6 Using the answers from QUESTIONS 3.1.4 and 3.1.5, calculate the average gradient between the two spot heights

Formula: Gradient = Difference in height / VI
Horizontal Distance HE (2 x 1) (2)

3.1.7 Compare your answer to QUESTION 3.1.6 to a gradient of 1:22 and determine which on is steeper. (1 x 1) (1)

(10)

3.2 MAP INTERPRETATION

Refer to natural and constructed features in block **D2** on the topographic map.

3.2.1 (a) Constructed features are (created by nature / created by humans). (1 x 1) (1)

(b) Identify ONE constructed feature found in block **D2** on the topographic map. (1 x 1) (1)

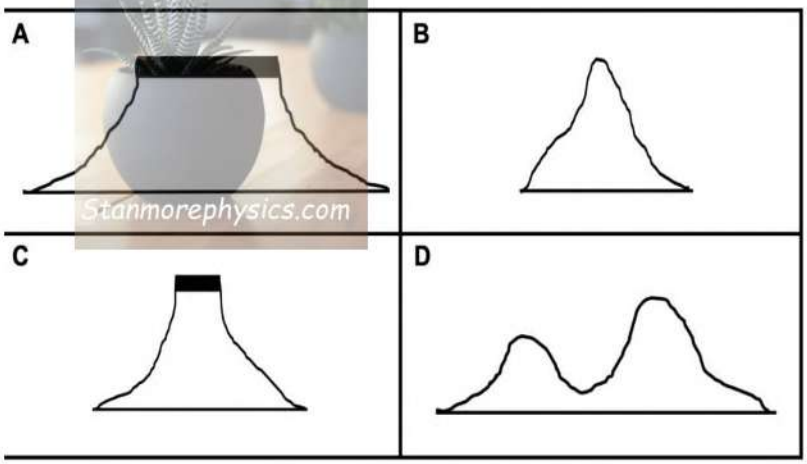
(c) Explain the use/importance of the constructed feature identified in QUESTION 3.2.1 (b). (1 x 2) (2)

Refer to block **E4** on the topographic map

3.2.2 (a) Is there intervisibility between spot heights **499** and **491** in block **E4.** (1 x 1) (1)

(b) Give a reason for the answer to QUESTION 3.2.2 (a). (1 x 2) (2)

3.2.3 Match landform **8** in block **C1** on the orthophoto map with the correct freehand cross-section. below (1 x 1) (1)



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3.2.4 The landform at QUESTION 3.2.3 is formed from …

A	inclined
B	vertical
C	horizontal
D	tilted

(1 x 1) (1)

3.2.5 (a) Give the name of landform **8** in **Block C1** on the orthophoto map. (1 x 1) (1)

(b) Give ONE use of the landform mentioned in QUESTION 3.2.5 (a). (1 x 1) (1)

3.2.6 Give ONE tourist attractions located in the Phalaborwa region. (1 x 1) (1)

3.3 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

3.3.1 ***"Orthophoto images have become one of the most preferred remote sensing methods"***

(a) Define the term *remote sensing*. (1 x 2) (1)

(b) Identify TWO types of technologies that can be used by GIS specialists to capture images during remote sensing. (2 x 1) (2)

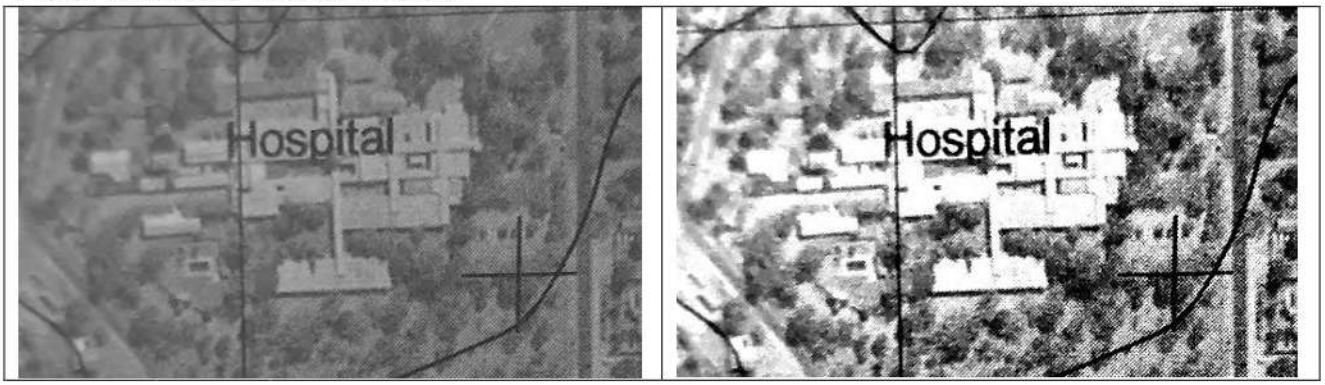
Refer to **Block C3** on the orthophoto map and choose the correct answer for QUESTIONS 3.3.2 (a) and QUESTION 3.3.2 (b).

3.3.2 (a) The hospital is an example of a (point, line or polygon) feature. (1 x 1) (1)

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(b) The location of the hospital is representing (spatial/attribute) data. (1 x1) (1)

Refer to feature **A** and **B** below



(c) Between feature **A** and **B** which one represents a high resolution? (1 x 1) (1)

(d) Give a reason for your answer for QUESTION 3.3.2.(c) (1 x 2) (2)
[8]

TOTAL SECTION B: [30]