LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

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GEOGRAPHY

MAY-JUNE 2025

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MARKS: 150

DURATION: 3hrs

This question paper consists of 16 pages.

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NSC

This question paper consists of 16 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections.

   SECTION A

   QUESTION 1: THE ATMOSPHERE (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 the subsections 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 state, name, identify or list.
10. Units of measurement MUST be indicated in your final answer, e.g. 900 hPa, 9˚C and 21 m.
11. You may use a non-programmable calculator.
12. You may use a magnifying glass.
13. Write neatly and legibly.

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SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

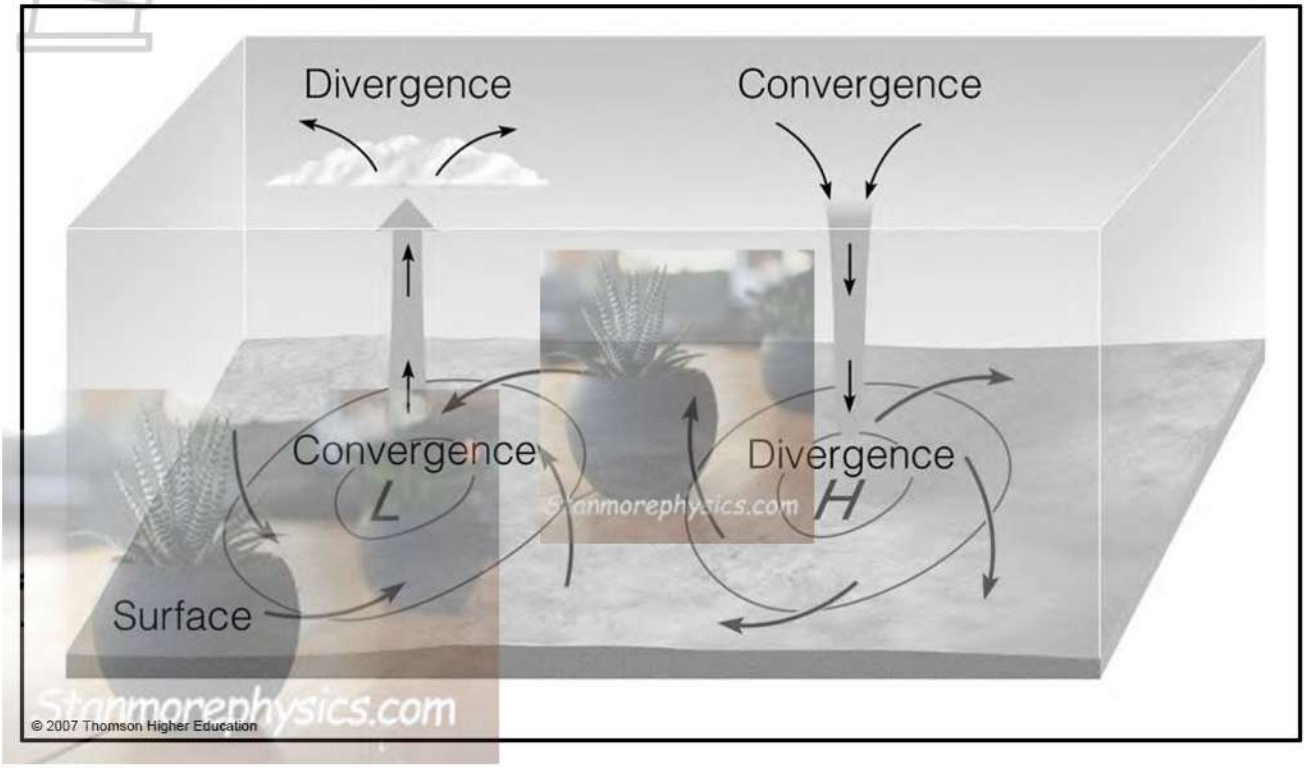
14. A 1:50 000 topographical map 3126 DD QUEENSTOWN and a 1:10 000 orthophoto map 3126 DD 1 NOOITGEDACHT are provided.
15. The area demarcated in RED on the topographical map represents the area covered by the orthophoto map.
16. Show ALL calculations. Marks will be allocated for steps in calculations.
17. You must hand in the topographical and orthophoto map to the invigilator at the end of the examination.

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SECTION A: THE ATMOSPHERE AND GEOMORPHOLOGY

QUESTION 1: THE ATMOSPHERE

1.1. Refer to the sketches below showing two air pressure cells. Match descriptions below with either Low or High. Write only the question numbers (1.1.1. to 1.1.7) in the ANSWER BOOK, e.g. 1.1.8. High.

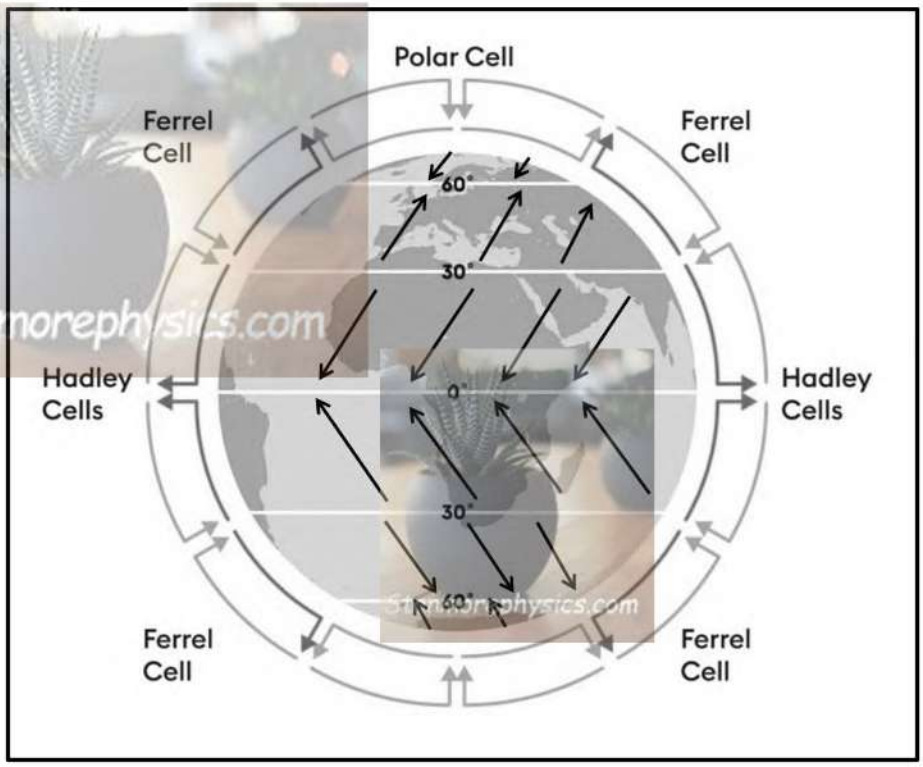


[source: Thomson higher education:2007]

1.1.1. The 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. Pressure cell that is associated with development of clouds.
1.1.4. This pressure cell is associated with anticlockwise rotation of air in the southern hemisphere.
1.1.5. Air circulation is in a clockwise direction.
1.1.6. This pressure cell is associated with the Dry Adiabatic Lapse Rate (DARL).
1.1.7. This pressure cell is located closer to the Inter-tropical convergence zone (ITCZ).

(7x1) (7)

1.2. Various options are provided as possible answers to the following questions based on the global air circulation. Choose the correct answer and write only the letter (A-D) next to the question numbers (1.2.1. to 1.2.8) in the ANSWER BOOK, for example 1.2.9. B.



[source: Examiner's own diagram]

1.2.1. Trade winds are winds that blow from 30^0 north and south of the equator towards……pressure system at 0^0.

A. sub-tropical high
B. sub-polar low
C. equatorial low
D. polar high

1.2.2. A polar high-pressure system result from cool descending air that forms a series of high pressures at the…….

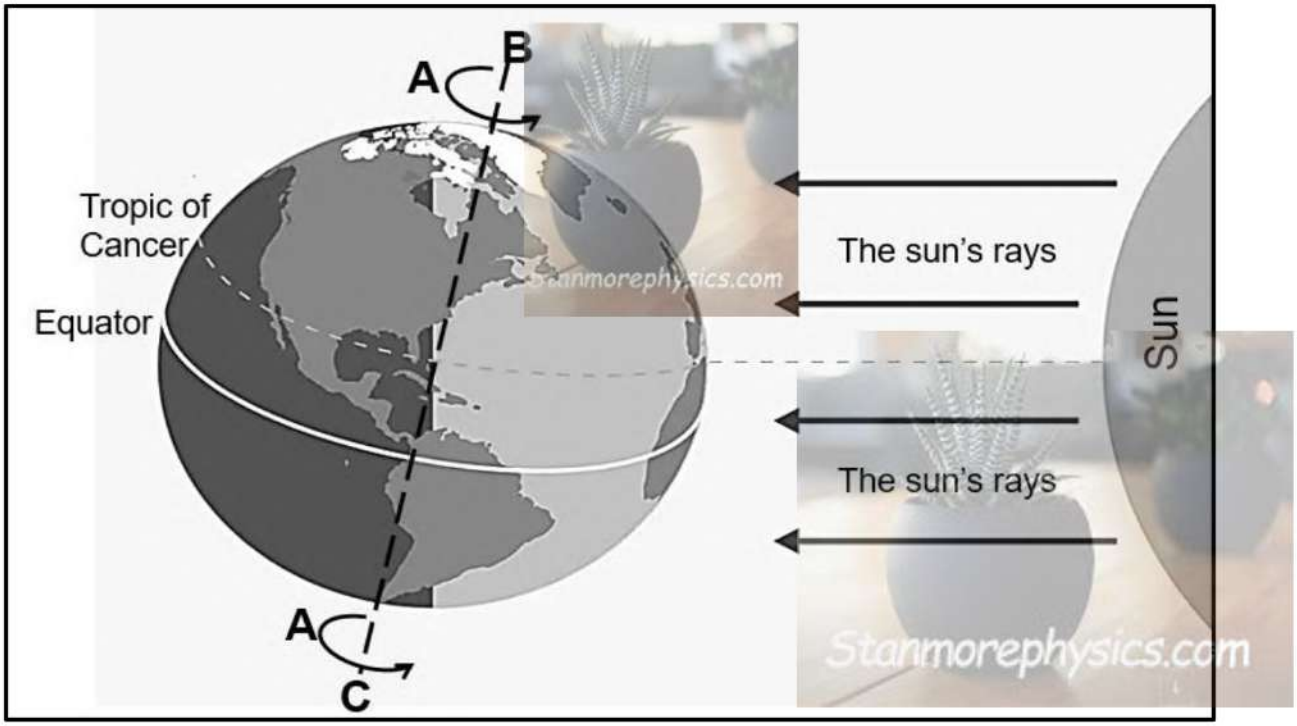
A. equator
B. poles
C. polar front
D. tropics

1.2.3. The planetary wind model refers to the circulation that results from air movements from the…….

(i) Equator
(ii) Poles
(iii) Tropics
(iv) Polar front

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

Refer to the sketch below of the earth's axis to answer QUESTIONS 1.2.4. to 1.2.8.



[source: https://www.spacecentre.nz/resources/faq/solar-system/earth/rotation-speed.html]

1.2.4. The season, the southern hemisphere experiences is…….

A. Autumn.
B. Winter.
C. Spring.
D. Summer.

1.2.5. The arrows at A shows the……of the earth.

A. Circulation of illumination.
B. Revolution.
C. Rotation.
D. Circle of parallelism

1.2.6. The sketch illustrates a/an……..situation, with the days being…..than/to the night at the equator.

(i) Solstice
(ii) Equinox
(iii) Longer
(iv) Equal

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

1.2.7. Earth's once rotation with respect to the sun is……hours

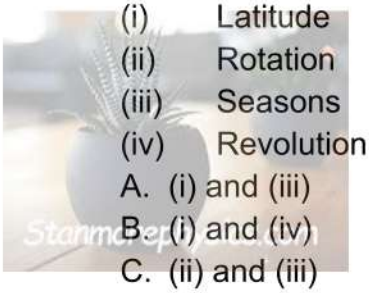
A. 2
B. 6
C. 12
D. 24



1.2.8. The amount of insolation that the earth receives depends on …….and ……

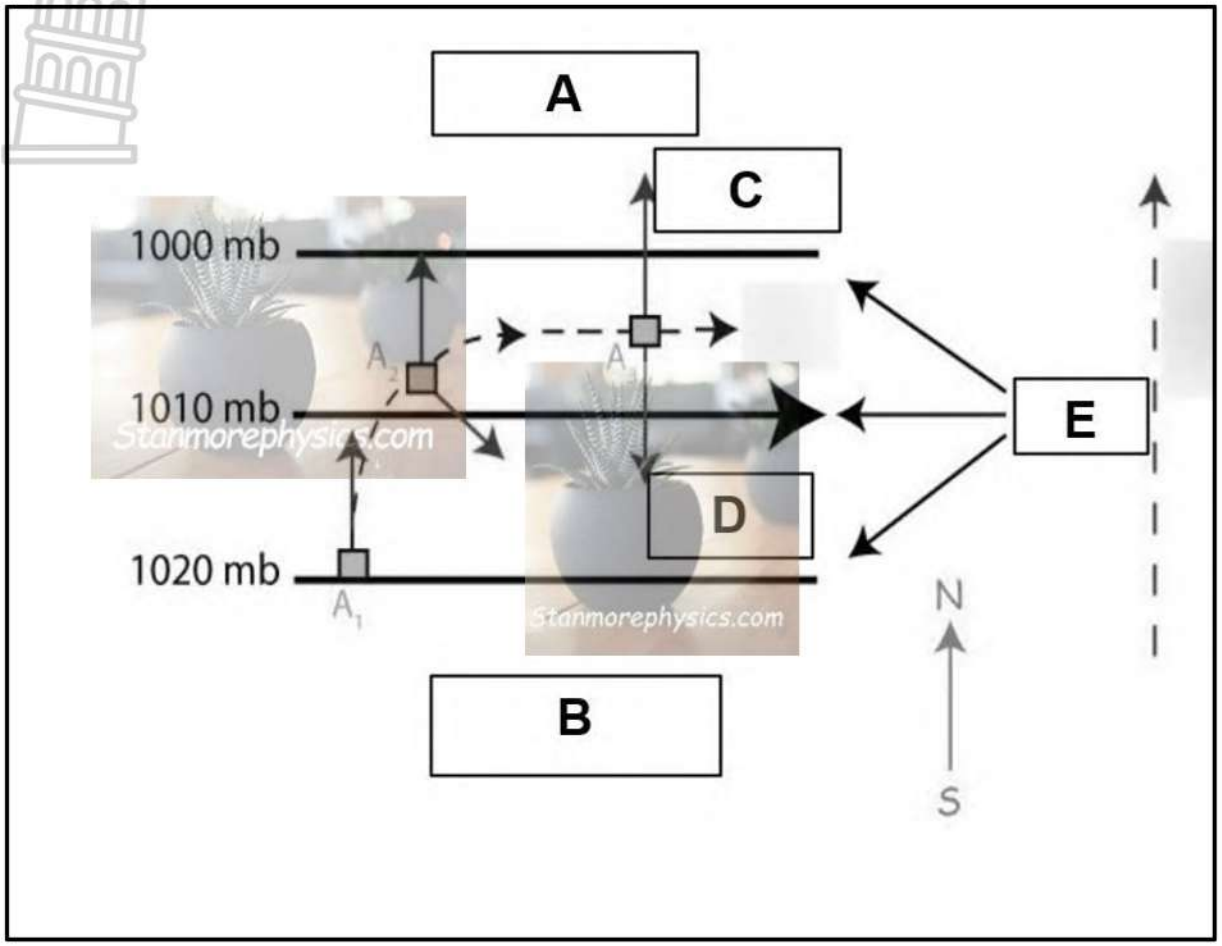
(i) Latitude
(ii) Rotation
(iii) Seasons
(iv) Revolution

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



(8 x 1) (8)

1.3. Refer to the sketch below on geostrophic wind to answer QUESTIONS 1.3.1 to 1.3.7.

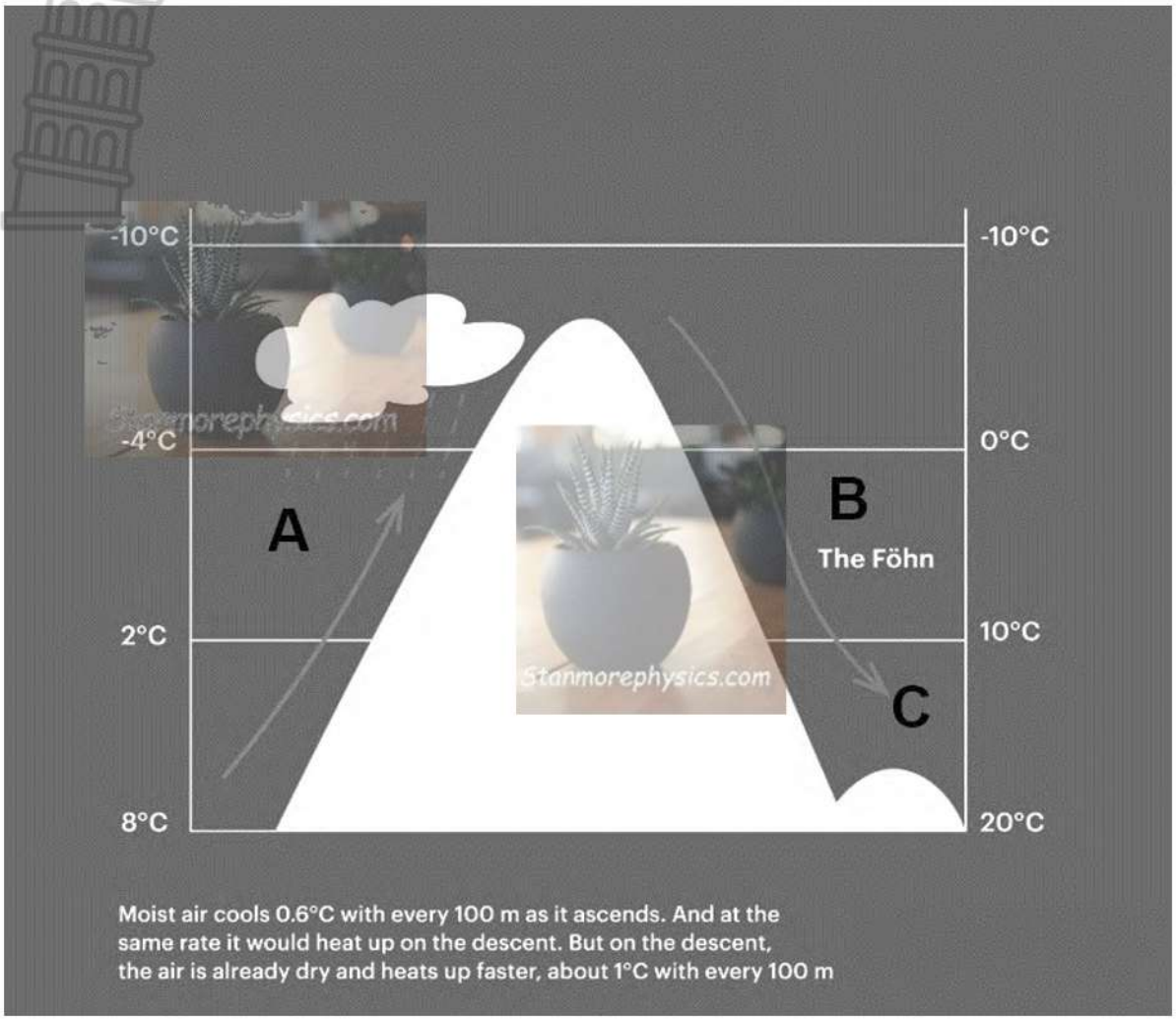


[source: Examiners own diagram]

1.3.1. Define the term *geostrophic flow*. (1x2) (2)
1.3.2. Wind is blowing from (**A-B**/**B-A**). (1x1) (1)
1.3.3. Identify forces labelled **C** and **D** that aid/help in the formation of Geostrophic wind. (2x1) (2)
1.3.4. State the lines joining places of equal pressure labelled **E**. (1x1) (1)
1.3.5. In which hemisphere is this geostrophic wind developing? (1x1) (1)
1.3.6. Give reason for your answer in QUESTION **1.3.5** above. (1x2) (2)
1.3.7. Discuss how geostrophic wind in the figure above developed. (3x2) (6)

[15]

1.4. Refer to the sketch below showing F*ő*hn wind to answer QUESTIONS 1.4.1 to 1.4.5.



[source: windy app]

1.4.1. Define the concept *f*ő*hn wind*. (1x2) (2)

1.4.2. Identify A and B as either the leeward slope or the windward slope of the mountain. (2x1) (2)

1.4.3. What happens to the temperature of air as it rises at A? (1x1) (1)

1.4.4. Explain why precipitation occurs at slope A only and not slope B. (2x2) (4)

1.4.5. Discuss the weather conditions that can be expected on side B of the mountain due to the influence of wind C. (3x2) (6)

[15]

1.5. Below is an extract on the effects of desertification in the Sahel region.

THE EFFECTS OF DESERTIFICATION IN AFRICA

Desertification is a process that destroys fertile land. This can be caused by drought, overpopulation, over-farming, deforestation and climate change. The most vulnerable region is a 3 000-mile stretch of land that includes ten countries in the Sahel region of Africa. The Sahel is the area between the Sahara Desert and the Sudanian Savannah. This region is under constant stress due to frequent droughts and soil erosion. A dense forest can become a field of dust in a matter of years, making mass migrations inevitable. Africans frequently migrate south in search of fertile land.

Agriculture in Africa tends to result in low productivity, as most of the land is characterised as a semi-desert. Clearing the land of trees also reduces the structure of the soil. Coupled with wind erosion, the topsoil blows away and leaves a desert-like land.

The country that is arguably the most damaged by desertification is Senegal. Migrations in Senegal are common, as wind erosion, deforestation and climate change wreaks havoc on farms and livestock. Those most affected by desertification in Senegal move to Gabon, a country in West Africa, or even to Europe or South America. More than half of Senegalese work in agriculture, and desertification forces those with meagre profits to move elsewhere to escape poverty.

[source: borgenprojects.org/desertification-in-Africa]

1.5.1. Define the term *desertification*. (1x2) (2)
1.5.2. According to the extract, state ONE human cause of desertification. (1x1) (1)
1.5.3. Name the region most vulnerable to desertification in Africa. (1x1) (1)
1.5.4. Why is fertile soil so important to the people of Africa? (1x1) (1)
1.5.5. How does desertification in Senegal have a negative economic impact on other countries in Africa? (1x2) (2)
1.5.6. In a paragraph of approximately EIGHT lines, suggest management strategies that could be implemented to reduce the spread of desertification in the Sahel region. (4x2) (8)
[15]

[60]

QUESTION 2: GEOMORPHOLOGY

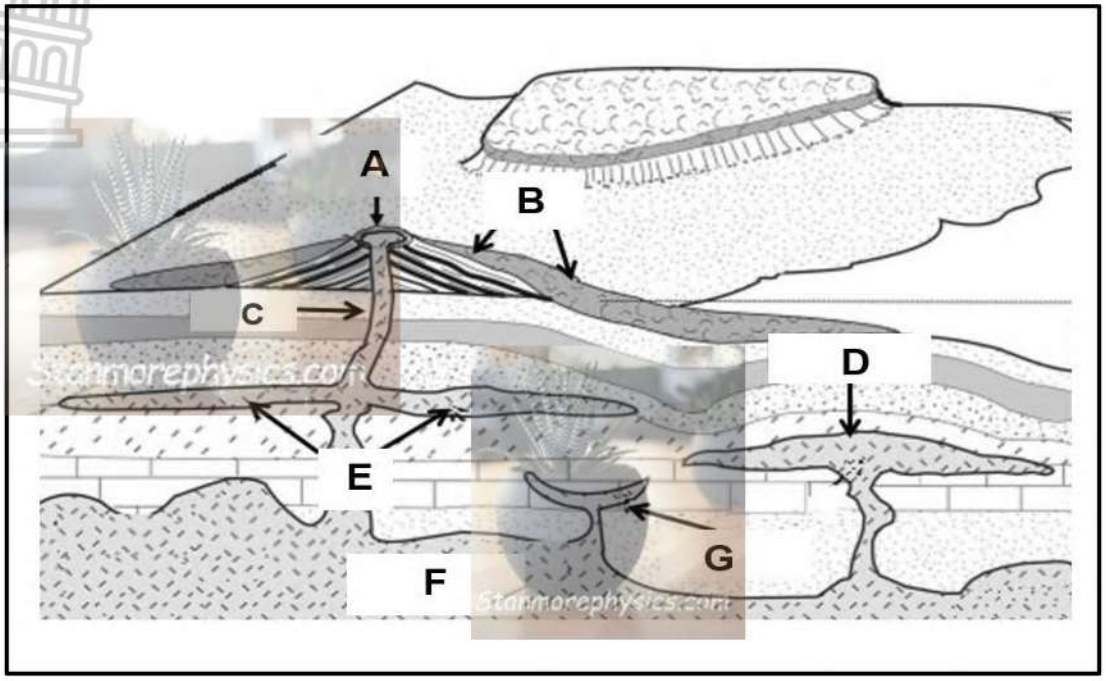
2.

2.1. Match the statements in Column A with the options in Column B. Write only **X** or **Y** next to question numbers (2.1.1. to 2.1.8) in the ANSWER BOOK, for example 2.1.9. X.

Column A	Column B
2.1.1. Rapid movement of material down a slope will be increased by…..	X: steep slopes Y: thick vegetation
2.1.2. Type of weathering causing exposed igneous rocks to peel off.	X: sheetwash Y:exfoliation
2.1.3. Top soil becomes saturated and slides on the frozen ground.	X: earthflow Y: solifluction
2.1.4. Erosion of a slope backwards causing no loss of height of landform is…..	X: vertical Y: scarp retreat.
2.1.5. A long, narrow, elongated hill.	X: ridge Y: sill
2.1.6. A saucer shaped intrusion, which is found deeper in the Earth crust.	X: laccolith Y:lopolith
2.1.7. Landform resulting from erosion of overlying strata to expose a batholith.	X: granite dome Y: poort
2.1.8. The breaking down of rocks due to extremes in temperatures is…..	X: chemical weathering. Y: mechanical weathering

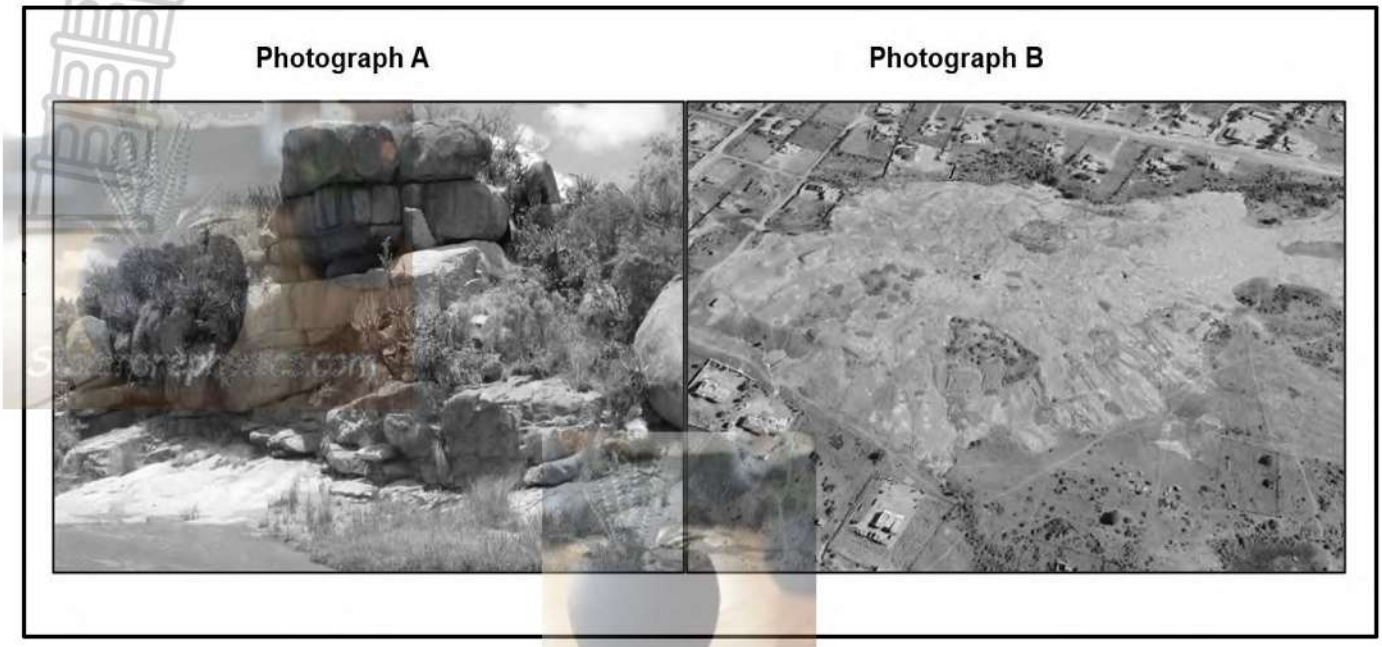
(8x1) (8)

2.2. Refer to the sketch on intrusive landforms. Choose the correct landform from the sketch that match the descriptions below. Write only the Letter next to the question numbers (2.2.1. to 2.2.7) which match the descriptions below in the ANSWER BOOK.



2.2.1. The largest of all intrusive forms.
2.2.2. A vertical intrusion of igneous rock that forms a wall.
2.2.3. When magma is exposed on the earth's surface.
2.2.4. Igneous intrusion that forms when strata is forced upwards.
2.2.5. A horizontal intrusion of igneous rock that forms a sheet.
2.2.6. Igneous intrusion that forms when sedimentary strata create a basin.
2.2.7. A triangle-shaped hill formed from material of eruptions. (7x1) (7)

2.3. Refer to the photographs on topography associated with massive igneous rocks.



[Source: Examiners own photographs]

2.3.1. Identify the landforms associated with massive igneous rocks in Photographs A and B. (2x1) (2)

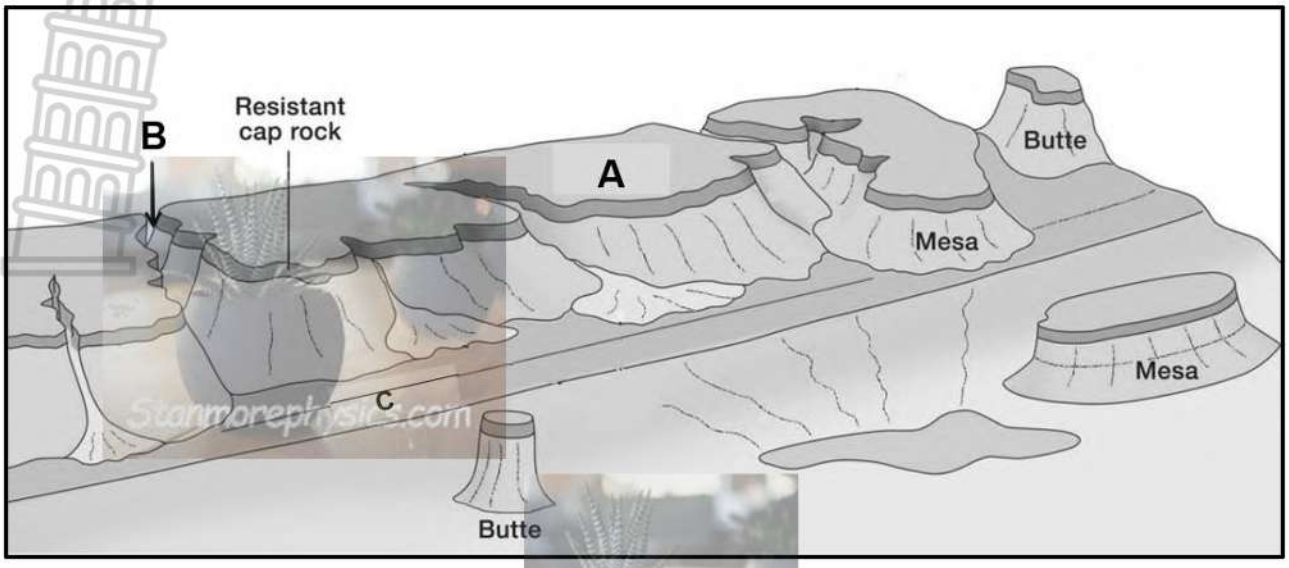
2.3.2. State ONE characteristics of massive igneous rocks that is evident in the photographs. (1x1) (1)

2.3.3. From what igneous intrusions do the landforms in photographs A and B originate? (2x1) (2)

2.3.4. How did weathering in the vertical and horizontal joints of igneous rocks determine the shape of rocks at Photograph A? (1x2) (2)

2.3.5. In a paragraph of approximately EIGHT lines, explain how landform in photograph A develops. (4x2) (8)

2.4. Refer to the sketch on topography associated with horizontally layered rocks.



2.4.1. Identify landscapes A and B. (2x1) (2)

2.4.2. The topography above is (uniformly/not uniformly) resistant to erosion. (1x1) (1)

2.4.3. Discuss how landscape labelled B forms. (2x2) (4)

2.4.4. Explain how the elements of the karoo landscape evident in the sketch will form from landscape labelled B. (2x2) (4)

2.4.5. How can the topography in the sketch associated with horizontally layered rocks be utilised economically by people? (2x2) (4)

[15]

2.5. Refer to the extract below on mass movement.





In eThekwini, combination of sloping ground, water and clay left trails of devastation in residence wake during recent floods.

Some newspapers articles have suggested the catastrophes in Durban and the greater eThekwini region of south Africa following recent floods are due to climate change and maladministration. While these factors play a role, the fact that landslides occurred comes as no surprise, considering the geology of the area.

eThekwini is a coastal metropolis characterised by hilly terrain dissected by several major rivers such as Umgeni, Mlazi and Mbokodweni. The region is subtropical, but recent rains were abnormal relative to recent records and resulted in multiple landslides. The negative social, economic and physical impact on the region has been disastrous.

[adapted from an article by Charles Macrobert]

2.5.1. State TWO types of mass movement. (2x1) (2)

2.5.2. What climatic evidence in the article suggests that the eThekwini region receives high rainfall? (1x1) (1)

2.5.3. What role did heavy rainfall play in the development of type of mass movement depicted in the extract? (2x2) (4)

2.5.4. Account for the negative social impact of landslides in the eThekwini region. (2x2) (4)

2.5.5. Suggest strategies that the municipality of eThekwini could adopt to minimise the effects of the mass movement shown in the extract. (2x2) (4)

[60]

TOTAL SECTION A: 120

SECTION B
QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

General information of Queenstown



Coordinates: 31°54'S; 26°53'E

Queenstown (officially known as Komani) is a town in the Eastern Cape in South Africa. The town lies on the banks of the Komani River which forms part of the Great Kei river system and has a refreshing climate and an abundant water supply from the surrounding rugged mountains.

The area's annual average temperature is 18,29 °C which is 2,93% lower than the average for South Africa. Queenstown generally receives approximately 90,83 millimetres of precipitation and has 134 rainy days annually.

Winters are short, cold, dry and windy; it is mostly clear year-round.

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 The length (L) of area of orthophoto map on the topographic map in kilometres is_____

A. 4.2
B. 2100
C. 0.42
D. 2.1 (1x1) (1)

3.1.2 The breadth (B) of area of orthophoto map on the topographic map in metres is_____

A. 3.8
B. 1900
C. 380
D. 1.9 (1x1) (1)

3.1.3 Calculate the average gradient between spot height 1558 in block **E1** and 1409 in block **D4** on orthophoto map. The distance between spot height 1558 and 1409 on the orthophoto map is 12 cm. (4x1) (4)

3.1.4 Calculate the magnetic declination of 3126DD Queenstown topographic map for 2025. Use the information and steps given below:

Difference in years:_____ (1x1) (1)

Mean annual change: 10'westwards

Total change:_____ (1x1) (1)

Magnetic declination for 2025:_____

_____ (2x1) (2)

3.2 MAP INTERPRETATION

3.2.1 Refer to I in block **A2** on the topographic map.

(a) Identify the environmental problem indicated by Letter I. (1x1) (1)
(b) Explain ONE cause of the environmental problem mention in QUESTION 3.2.1 (a).
(1x2) (2)

3.2.2 Refer to block **D4** on the topographic map.
(a) Is the area receiving seasonal rainfall or rainfall throughout the year?
(1x1) (1)
(b) Give TWO evidence to support your answer in QUESTION 3.2.2 (a)
(2x1) (2)
(c) State the direction in which the river is flowing in block **D4.** (1x1) (1)
(d) Give ONE reason to support your answer to QUESTION 3.2.2 (c).
(1x2) (2)

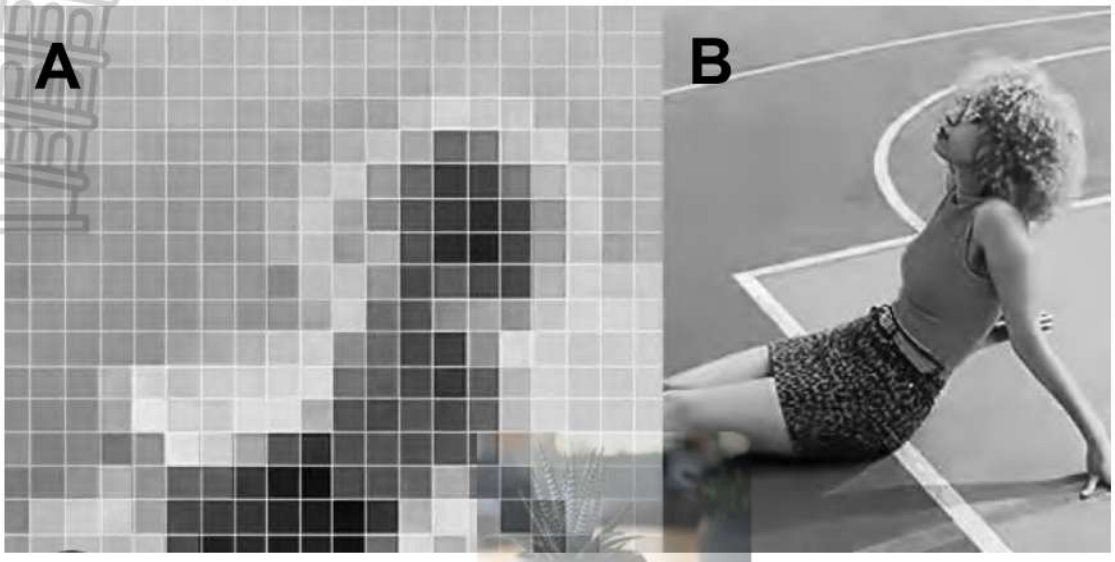
3.2.3 Refer to block **C2** on the topographic map.
(a) The type of slope indicated is (steep/ gentle). (1x1) (1)
(b) Give ONE reason for your answer in QUESTION 3.2.3 (a) (1x2) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.3.1 The topographic map is an example of_____ data.
A. raster
B. spatial
C. vector
D. attribute (1x1) (1)

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Refer to images A and B below on resolution and answer the questions that follows.



[source: Google images]

3.3.2 Define the term spatial resolution. (1x2) (2)

3.3.3 Image **B** was taken by a camera with a (13/64) megapixel. (1x1) (1)

3.3.4 University Researcher wants to collect environmental data in block C2 on the topographic map.

(a) State TWO remote sensing devices that researchers can use to collect data without physically visiting the area. (2x1) (2)

(b) Explain ONE advantage of using remote sensing devices mentioned in QUESTION 3.3.4. (a) by the researchers. (1x2) (2)

TOTAL SECTION B: 30

GRAND TOTAL: 150

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