Province of the
EASTERN CAPE
EDUCATION

NATIONAL
SENIOR CERTIFICATE

SUBJECT	:	GEOGRAPHY
GRADE	:	10
TERM	:	2
TIME	:	3 HOURS
TOTAL	:	150 MARKS
DATE OF IMPLEMENTATION	:	JUNE 2026
TERM WEIGHTING	:	60%
SBA WEIGHTING	:	20%

THIS QUESTION PAPER CONSISTS OF 16 PAGES INCLUDING COVER

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 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 to state, name, identify or list.
10. Units of measurement MUST be indicated in your final answer, e.g. 1010 hPa, 9 °C and 25 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 topographical map (2329DB LADYSMITH) and a 2829DB orthophoto map of a part of the mapped area 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 the examination.

SECTION A

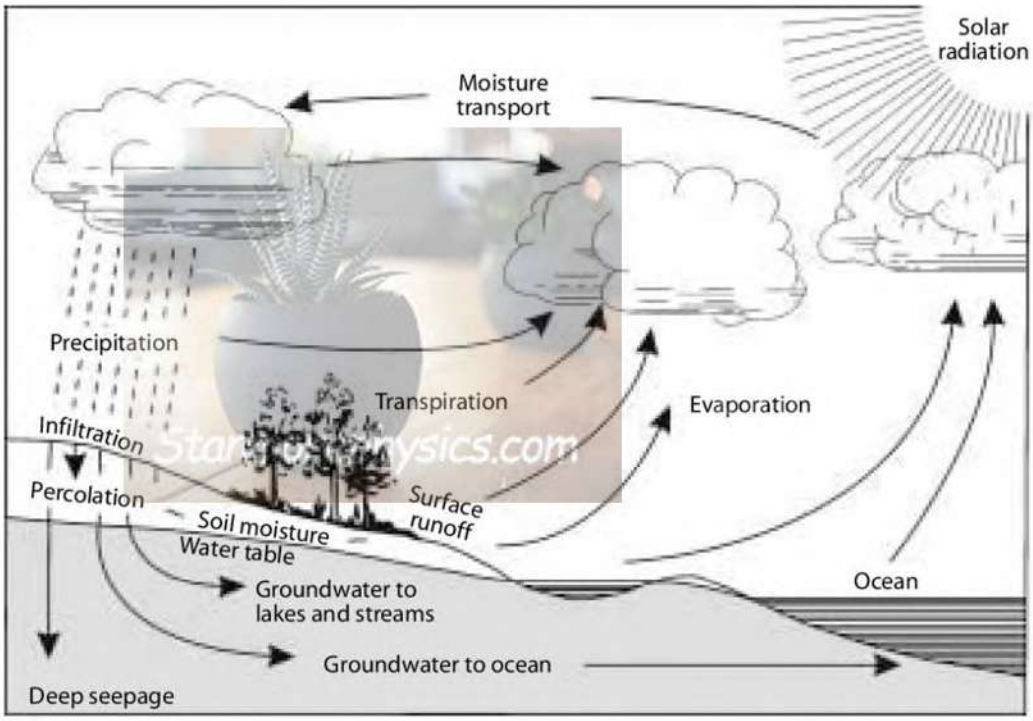
QUESTION 1: THE ATMOSPHERE

1.1 Complete the statements in COLUMN A with the options in COLUMN B. Write only **Y** or **Z** next to the question numbers (1.1.1 to 1.1.8) in the ANSWER BOOK, example 1.1.9 Z.

	COLUMN A		COLUMN B
1.1.1	The layer of gases that surrounds the earth.	**Y** **Z**	Atmosphere Hydrosphere
1.1.2	The layer in the atmosphere where ozone is found in high quantities.	**Y** **Z**	Stratosphere Mesosphere
1.1.3	… is an example of a greenhouse gas.	**Y** **Z**	Oxygen Water vapour
1.1.4	The gas that makes up 78 percent of the atmosphere.	**Y** **Z**	Argon Nitrogen
1.1.5	The process whereby radiation bounces off dust particles is known as…	**Y** **Z**	absorption scattering
1.1.6	… consists of short-wave and occurs during the day.	**Y** **Z**	Insolation Terrestrial radiation
1.1.7	When water changes from a liquid to a gas … heat is released.	**Y** **Z**	latent sensible (7x1) (7)

1.2 Various options are provided as possible answers to the following questions using the sketch. Choose the answer and write only the letters (A–D) next to the question numbers (1.2.1 to 1.2.8) in the ANSWER BOOK, for example 1.2.9 C.

Refer to the sketch below on moisture in the atmosphere and answer question 1.2.1 - 1.2.5



[Source: https://www.researchgate.net/profile/Rob- Fitzpatrick/publication/227365036/figure/fig1/AS:669462080544774@1536623606173/The-hydrological-cycle.png]

1.2.1 Water seeping into the ground after heavy rainfall is called …

A. run-off.
B. infiltration.
C. transportation.
D. evaporation.

1.2.2 … is the process whereby water changes to water vapour.

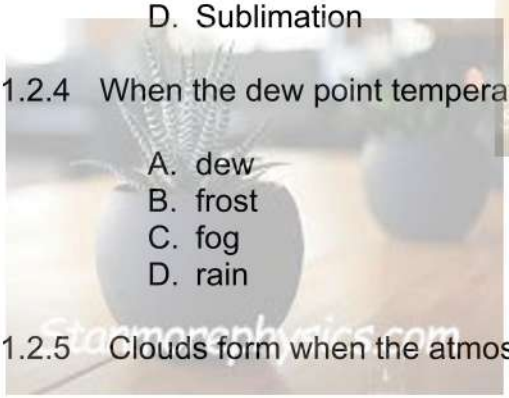
A. Evaporation
B. Condensation
C. Sublimation
D. Crystallisation

1.2.3 … occurs when water in a liquid or solid-state falls from the atmosphere to the ground.

A. Transportation
B. Percolation
C. Precipitation
D. Sublimation

1.2.4 When the dew point temperature is below freezing point … forms.

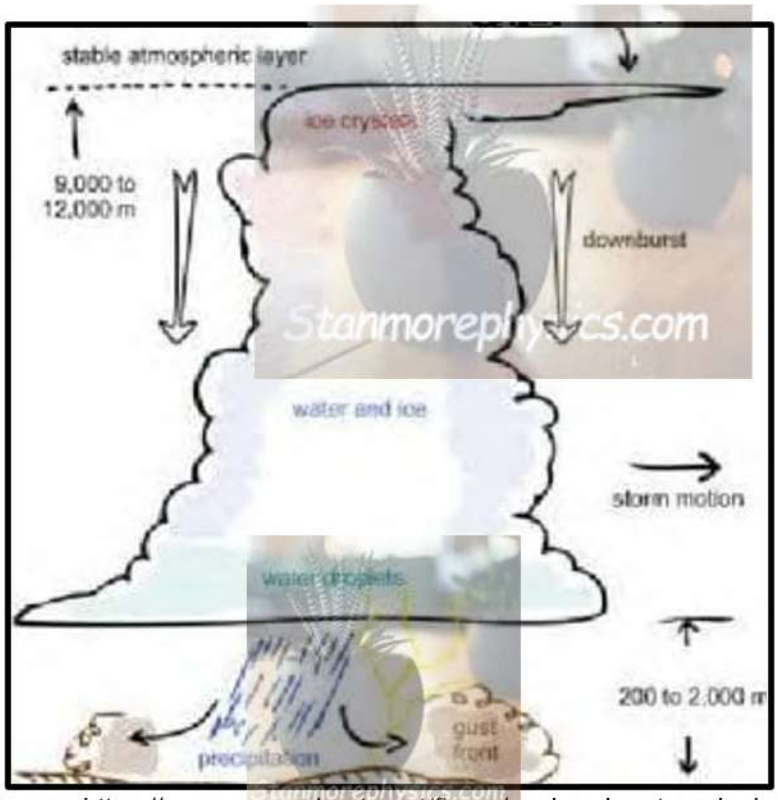
A. dew
B. frost
C. fog
D. rain



1.2.5 Clouds form when the atmosphere cools to dew point for … to take place.

A. evaporation
B. sublimation
C. condensation
D. actual humidity

Refer to the sketch on types of clouds and answer question 1.2.6 - 1.2.8.



[Source: https://www.researchgate.net/figure/sual-and-meteorological-characteristics-of-a-Cumulonimbus-cloud_fig1_329209159]

1.2.6 The type of cloud represented by the sketch is a … cloud.

A. cirrus
B. cumulus
C. cumulonimbus
D. stratocumulus

1.2.7. The cloud in the sketch can be identified by …

A. layered appearance.
B. looks like cotton wool.
C. wispy appearance.
D. great vertical height.

1.2.8 The weather associated with this type of cloud …

A. sunny conditions.
B. thunderstorm.
C. drizzle.
D. Snow.

(8x1) (8)

1.3 Refer to the case study on the Greenhouse effect and Global warming

Atmospheric Concentrations of Greenhouse Gases

Since the Industrial Revolution began in the 1700s, people have added a substantial amount of greenhouse gases into the atmosphere by burning fossil fuels, cutting down forests, and conducting other activities (see the U.S. and Global Greenhouse Gas Emissions indicators). When greenhouse gases are emitted into the atmosphere, many remain there for long time periods ranging from a decade to many millennia. Over time, these gases are removed from the atmosphere by chemical reactions or by emissions sinks, such as the oceans and vegetation, which absorb greenhouse gases from the atmosphere. As a result of human activities, however, these gases are entering the atmosphere more quickly than they are being removed, and thus their concentrations are increasing.

[Source : https://www.epa.gov/sites/default/files/2016-08/documents/print_ghg-concentrations-2016.pdf]

1.3.1 What is the greenhouse effect? (1x2) (2)

1.3.2 Name **ONE** example of a greenhouse gas found in the atmosphere. (1x1) (1)

1.3.3 Refer to the article and state **TWO** human activities responsible for the increase in greenhouse concentrations in the atmosphere. (2x1) (2)

1.3.4 Explain the negative environmental impact for earth because of increased greenhouse emissions into the atmosphere. (2x2) (4)

1.3.5 In a paragraph of approximately SIX lines, suggest strategies the governments can implement to reduce greenhouse emissions caused by human activity. (3x2) (6)

1.4 Refer to the table of the temperature of various cities.

Temperature (°C)	Bloemfontein	Cape Town	Durban	George
Summer (Max)	31	26	28	25
Winter (Max)	17	18	21	19

1.4.1 The average temperature for Bloemfontein during summer is higher than Durban. What factor is responsible for the difference in temperature between Bloemfontein and Durban. (1x1) (1)

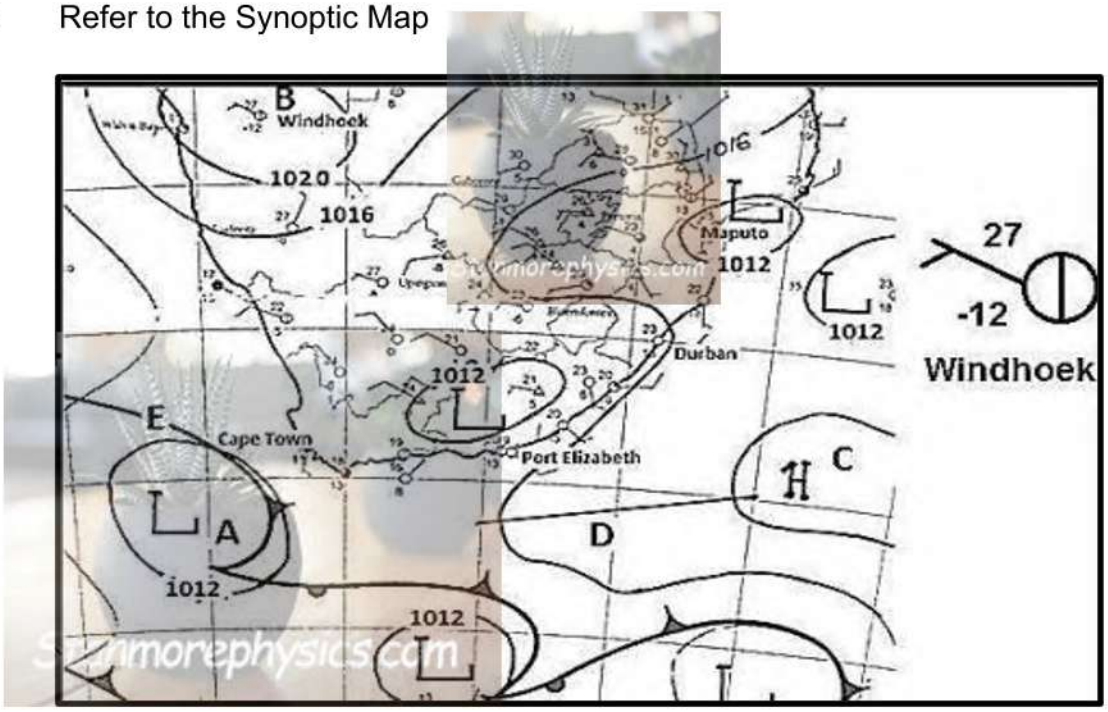
1.4.2 Calculate the annual temperature range of Durban and George respectively. (1+1) (2)

1.4.3 Explain how the cold Benguela ocean current influences the temperature of Cape Town. (2x1) (2)

1.4.4 Bloemfontein experiences a continental climate. Refer to the table to substantiate this statement. (2x2) (4)

1.4.5 Explain how Durban's maritime climate benefits the city's tourism industry. (3x2) (6)

1.5 Refer to the Synoptic Map



1.5.1 What is an Isobar? (1x2) (2)

1.5.2 What is the Isobaric interval on the synoptic map? (1x1) (1)

1.5.3 Refer to the weather station of Windhoek on the synoptic map and state the following weather conditions:
(a) Wind direction
(b) Wind Speed
(c) Dew point temperature (3x1) (3)

1.5.4 Explain why there is a low chance of rainfall in Windhoek. (1x1) (1)

1.5.5 Identify the pressure cell at **C**. (1x1) (1)

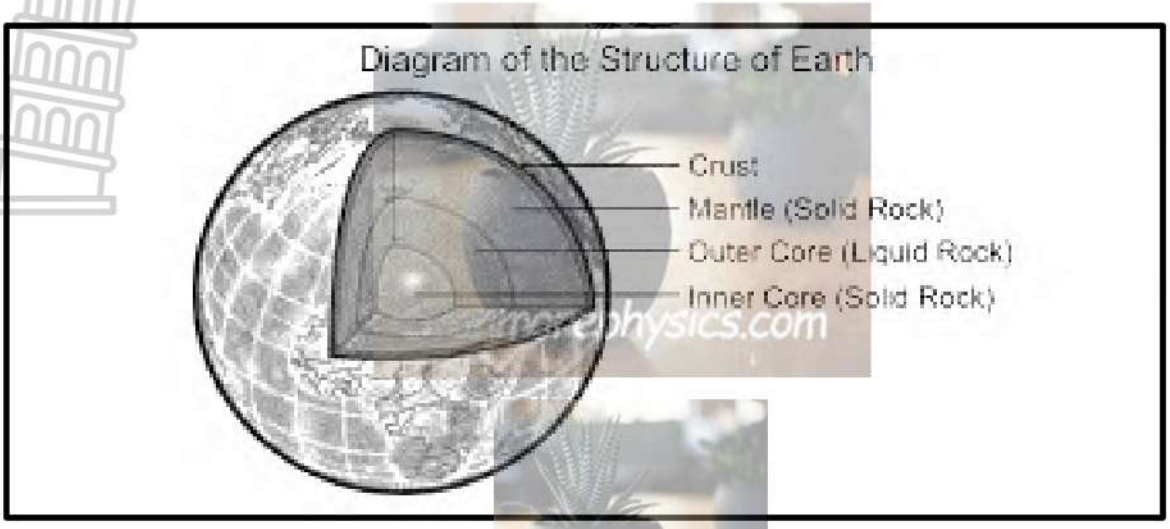
1.5.6 Identify the front at **A**. (1x1) (2)

1.5.7 What type of rainfall will Cape Town experience within the next 24 hours. (1x2) (2)

1.5.8 Briefly explain how this rainfall (Answer to Question 1.5.7).is formed, (3x1) (3)

QUESTION 2: GEOMORPHOLOGY

2.1. Refer to sketch on the structure of the earth. Complete the statements in COLUMN A with the options in COLUMN B. Write only X or Z next to the question numbers (2.1.1 to 2.1.7) in the ANSWER BOOK, e.g. 2.1.8 X.



	Column A		Column B
2.1.1	Thin outer layer formed of solid rock.	**X** **Z**	crust mantle
2.1.2	The layer of the earth in a semi-molten state.	**X** **Z**	mantle outer core
2.1.3	Nickel and iron are found in this layer.	**X** **Z**	outer core inner core
2.1.4	The seismic layer found between the mantle and crust is known as the …	**X** **Z**	Moho discontinuity Biosphere
2.1.5	Magma has a plastic consistency in this layer.	**X** **Z**	outer core mantle
2.1.6	The layer where all life exists	**X** **Z**	crust Inner core
2.1.7	This layer is about 1200 km thick and very hot.	**X** **Z**	outer core inner core
			(7x1) (7)

2.2 Various options are provided as possible answers to the 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, e.g. 2.2.9 D.

2.2.1 The force responsible for folding of rocks to occur is …

A. tectonic.
B. compressional.
C. divergence.
D. gravity.

2.2.2 A slight bend in a rock is referred to as …

A. folding.
B. shifting.
C. faulting.
D. warping.

2.2.3 Fold mountains are composed of … rock

A. sedimentary
B. Igneous
C. metamorphic
D. granite

2.2.4 The process whereby a rock breaks because of continuous tension and compression is known as …

A. folding.
B. faulting.
C. plate tectonics.
D. continental drift.

2.2.5 When a block of land slips down between parallel faults a … is formed.

A. block mountain
B. fault scarp
C. rift valley
D. fault line

2.2.6 A … is a steep slope which forms along a fault line when rocks slide up or down?

A. block mountain
B. rift valley
C. fault scarp
D. tear

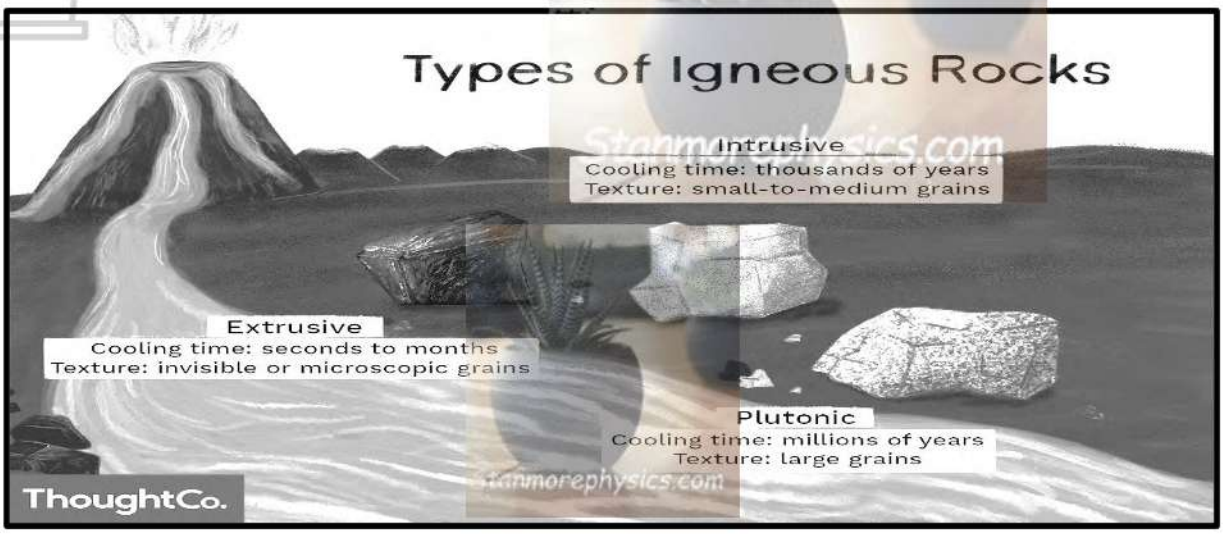
2.2.7 When one side of a fault moves downward with respect to the other side a … fault is formed

A. normal
B. transform
C. reverse
D. tear

2.2.8 A type of fault where tectonic plates slide horizontally past one another.

A. Normal fault.
B. Reverse fault.
C. Transform fault.
D. Synclinal fault. (8x1) (8)

2.3 Refer to the sketch on igneous rocks



2.3.1 What is meant by the concept extrusive igneous rock? (1x2) (2)

2.3.2 Name ONE example of an Igneous rock. (1x1) (1)

2.3.3 Why can igneous rocks be described as massive? (1x2) (2)

2.3.4 Explain how igneous rocks are formed. (1x2) (2)

2.3.5 All igneous rocks contain crystals. What is the relationship between the size of the crystal and the rate of cooling. (2x2) (4)

2.3.6 Explain the importance of igneous rocks for humans. (2x2) (4)

2.4 Refer to the infographic on the Myanmar earthquake of 2025.

MAYANMAR EARTHQUAKE

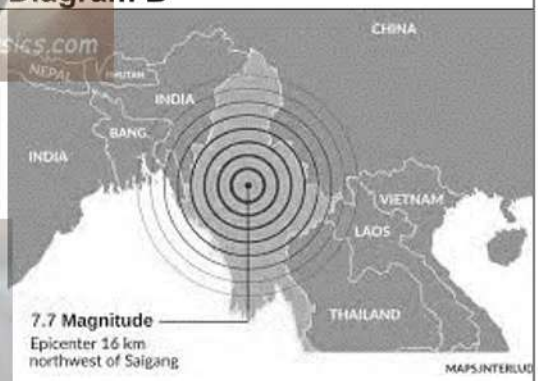
On 28 March 2025, a powerful 7.7-magnitude earthquake struck central Myanmar, causing widespread devastation across Mandalay, Sagaing and Naypyidaw. Thousands were killed, thousands more injured and vital infrastructure was reduced to rubble. The physical collapse following the earthquake was swift and widespread. A 12-storey apartment block pancaked in Mandalay. Entire villages were flattened in Sagaing. A major bridge connecting Mandalay and Sagaing collapsed into the Irrawaddy River, severing critical supply routes and delaying rescue.

Many people in the country live in informal settlements, built quickly and cheaply, often without proper inspections. With little access to mortgage finance, loans or government support to make their homes safer, these communities were left highly exposed. One of the saddest effects of the earthquake was also one of the least visible. Many families lost their main breadwinners, leaving loved ones without income.

Adapted from https://en.wikipedia.org/wiki/2025_Myanmar_earthquake

Diagram A

Diagram B



EPICENTRE: 16 Km northwest of Saigang.

[Source: Google image]

2.4.1 What is an Earthquake? (1x2) (2)

2.4.2 Refer to **Diagram B** and state why widespread damage was caused in Saigang. (1x1) (1)

2.4.3 According to the case study why were people living in informal settlements the most affected by the earthquake. (2x1) (2)

2.4.4. Explain TWO negative consequences of the earthquake on the economy of Myanmar. (2x2) (4)

2.4.5 In a paragraph of approximately SIX lines, suggest strategies the government of Myanmar can implement to reduce the impact of future earthquakes. (3x2) (6)

2.5 Study the diagrams on volcanoes.

Sketch A

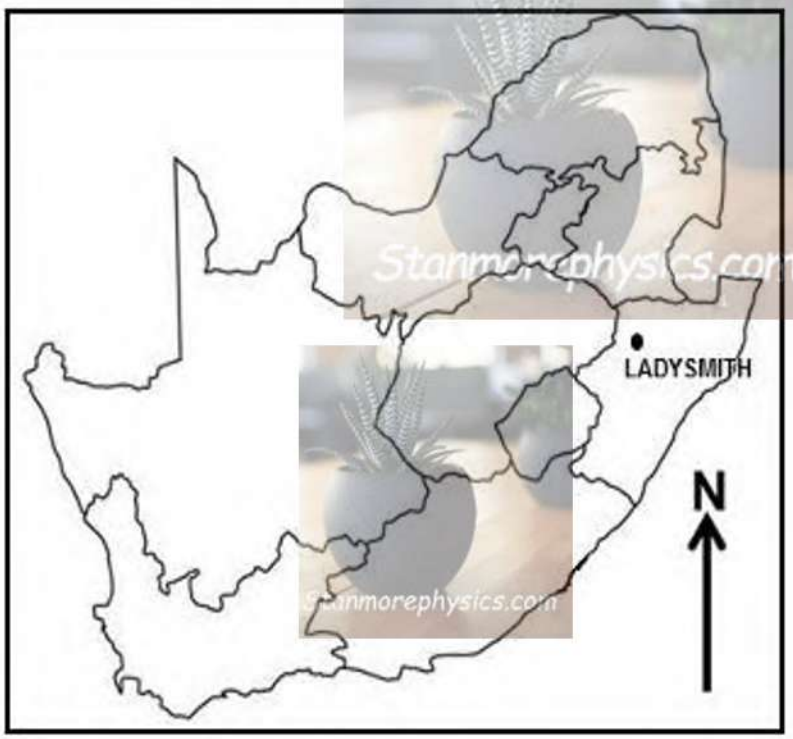
Sketch B

2..5.1	What is an active volcano?	(1x2)	(2)
2.5.2	Differentiate between magma and Lava.	(2x1)	(2)
2.5.3	What type of volcano is illustrated in sketch **A**?	(1x1)	(1)
2.5.4	State evidence from sketch **A** to substantiate your answer to question 2.5.3.	(2x1)	(2)
2.5.5	Give ONE negative physical (natural) impact of volcanoes as illustrated in sketch **B**.	(1x2)	(2)
2.5.6	High population density around active volcanoes is common. Explain why many people prefer to live close to active volcanoes.	(3x2)	(6)
			60
	TOTAL SECTION A:		**120**

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON LADYSMITH



Coordinates: 28°33'S; 29°46'E

Ladysmith is a city in the Uthukela District of KwaZulu-Natal. It is situated along the Klip River. The climate is warm and temperate with the highest rainfall recorded in summer. The average annual temperature is 17,3 °C. The average annual precipitation is approximately 1 057 mm. This climate provides ideal conditions for agricultural raw materials.

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 The town closest to Ladysmith is …

A. Glencoe.
B. Harrismith
C. Newcastle
D. Colenso (1x1) (1)

3.1.2. The type of scale used on the topographic map is …

A. word and line
B. fraction and line
C. ratio and line
D. word and ratio (1x1) (1)

3.1.3 The topographic map scale is … times smaller than the orthophoto map scale.

A. 10
B. 20
C. 5
D. 15 (1x1) (1)

Refer to block **E2** and block **E3** on the topographic map

3.1.4 Calculate the straight-line distance from trigonometrical station 324 in block **E2** to spot height 1126 in block **E3** in metres. (2x1) (2)

3.1.5 Calculate the true bearing of trigonometrical station 324 in block **E2** to spot height 1126 in block **E3.** (2x1) (2)

3.1.6 What is magnetic declination? (1x1) (1)

3.1.7 Why is it important for hikers to rectify the magnetic declination for the current year. (1x2) (2)

3.2 **MAP INTERPRETATION**

Refer to the Klip river in block **D4**

3.2.1 (a) State if the Klip river is an example of a *human-made feature* **or** *a natural feature.* (1x1) (1)

(b) How does the location of the farm at **G** benefit from the Klip river? (1x1) (1)

Refer to block **E2** on the orthophoto map.

3.2.2 What is the highest height in block **E2?** (1x1) (1)

Refer to block **E1** and **C4** on the topographic map

3.2.3 The area in block **E1** will experience slightly lower temperatures than the area in block **C4**. What role does altitude play in this difference in temperature between the two areas. (1x2) (2)

Refer to block **A5** on the topographic map.

3.2.4 (a) State TWO pieces of evidence in block **A5** showing that this area receives seasonal rainfall. (2x1) (2)

(b) Explain the advantage of a gentle gradient for the farmers in block **A5**. (1x2) (2)

Refer to block **E1** on the topographic map.

3.2.5 The pattern of the settlement Devona in block **E1** is (*nucleated / dispersed*). (1x1) (1)

3.2.6 State TWO advantages of this settlement type for the people living in Devona. (2x1) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.3.1 Study the sketch on Geographical information systems

3.3.1 (a) Identify TWO components of GIS in the sketch (2x1) (2)

(b) Name one tool in the sketch you will use to collect data for GIS. (1x1) (1)

3.3.2 Refer to block **A1** and give **ONE** example of the following spatial features found on the topographic map.

(a) Point
(b) Line (2x1) (2)

3.3.3 What is remote sensing? (1x1) (1)

3.3.4 Explain TWO advantages of remote sensing in monitoring possible flooding of the Klip River. (2x1) (2)

TOTAL SECTION B: 30
GRAND TOTAL: 150

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GRADE 10
MEMORANDUM

THIS MEMORNDUM CONSISTS OF 7 PAGES INCLUDING COVER

1.1

1.1.1 Y (1)
1.1.2 Y (1)
1.1.3 Z (1)
1.1.4 Z (1)
1.1.5 Z (1)
1.1.6 Y (1)
1.1.7 Y (1) (7x1) (7)

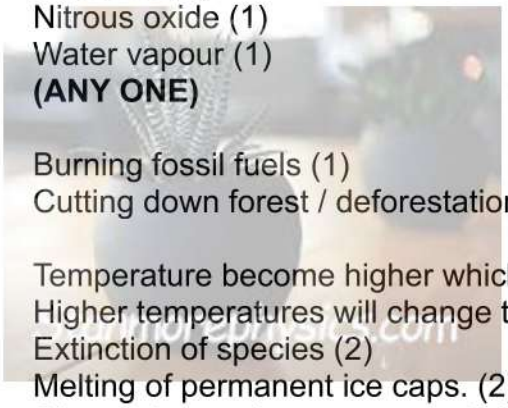
1.2

1.2.1 B (1)
1.2.2 A (1)
1.2.3 C (1)
1.2.4 B (1)
1.2.5 C (1)
1.2.6 C (1)
1.2.7 D (1)
1.2.8 B (1) (8x1) (8)

1.3 GLOBAL WARMING

1.3.1 The ability of the atmosphere to trap heat and remain warm enough to sustain life (2)
[**CONCEPT**] (1x2) (2)

1.3.2 Carbon dioxide (1)
Methane (1)
Nitrous oxide (1)
Water vapour (1)
(ANY ONE) (1x1) (1)



1.3.3 Burning fossil fuels (1)
Cutting down forest / deforestation (1) (2x1) (2)

1.3.4 Temperature become higher which leads to Global warming (2)
Higher temperatures will change the habitats of plants and animals (2)
Extinction of species (2)
Melting of permanent ice caps. (2)
Change in weather pattern and climate e.g. Droughts, fires and floods (2)
(ANY TWO) (2x2) (4)

1.3.5 Rewards and incentives for reducing carbon emissions (2)
Impose carbon tax on new cars (2)
Encourage the use of environmentally friendly sources of energy (accept examples – solar, wind …) (2)
Investment into renewable energy (2)
Planting trees to absorb carbon dioxide / afforestation (2)
Educating people and making them aware of how to conserve energy. (2)

Scientific research into ways to capture carbon emissions and store it in the earth's crust (2)
Enforce stricter industrial emission regulations (2)
(ANY THREE) (3x2) (6)

1.4 TEMPERATURE

1.4.1 Distance from the sea (1)
Altitude (1) (1x1) (1)

1.4.2 Durban 28° C -21 °C = 7° C (1)
Bloemfontein 31° C-17 ° C=14° C (1) (1+1) (2)

1.4.3 Benguela Current: It has a cooling effect on Cape Town's temperatures, keeping them lower than they would be otherwise (1)
Prevailing winds blows the cold air onto Cape Town therefore decreasing the temperature of Cape Town (1) (2x1) (2)

1.4.4 Large seasonal range in temperature of 14° C (2)
Hot summers cold winters (2)
Extreme temperatures summer temp of 31° C and winter temperature of 17° C (2)
Continental Climate Evidence: Bloemfontein has a high summer maximum 31° C and a low winter maximum 17° C, showing a large seasonal temperature variation
(ANY TWO) (2x2) (4)

1.4.5 The moderate climate throughout the year allow tourist to partake in outdoor activities such as hiking thus increasing revenue for the city (2)
The moderate climate allows for beach activities throughout the year (2)
The lush vegetation and scenic coastline encourage ecotourist. (2)
The comfortable winter climate allows international tourist to escape colder regions (2)
Hotels and other tourist establishments benefit from the influx of tourist throughout the year (2)
(ANY THREE)

1.5 SYNOPTIC MAP

1.5.1 Isobar is a line on a synoptic weather map joining places with the same atmospheric pressure (2)
[CONCEPT] (1x2) (2)

1.5.2 4 hPa e.g. from 1012 to 1016(1) (1x1) (1)

1.5.3 (a) North Westerly (1)
(b) 5 knots (1)
(c) -12 ° C (1) (3x1) (3)

1.5.4 The weather station shows a big difference between the air temperature and dew point temperature (1)
Located in a HP region (1)
Air is descending and heating up (High pressure/Anticyclone), which prevents condensation (1) (1x1) (1)

1.5.5 South Indian High pressure cell (1) (1x1) (1)

1.5.6 Cold Front (1) (1x1) (1)

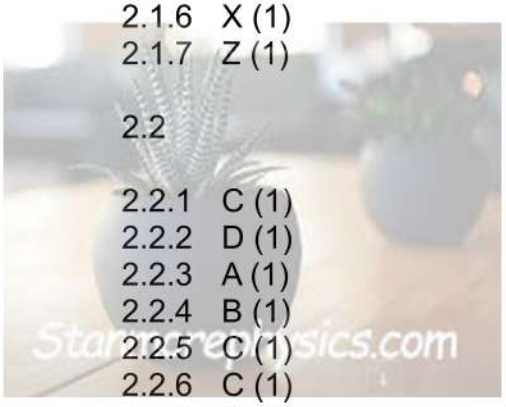
1.5.7 Frontal rain (2) (1x2) (2)

1.5.8 Warm air is forced to rise over cold dense air at a front (1)
The warm air cools as it rises and condensate to form cumulonimbus clouds (1)
Cumulonimbus clouds will cause heavy rain (1)
[Sentences] (3x1) (3)

Question 2: GEOMORPHOLOGY

2.1

2.1.1 X (1)
2.1.2 X (1)
2.1.3 Z (1)
2.1.4 X (1)
2.1.5 Z (1)
2.1.6 X (1)
2.1.7 Z (1) (7x1) (7)



2.2

2.2.1 C (1)
2.2.2 D (1)
2.2.3 A (1)
2.2.4 B (1)
2.2.5 C (1)
2.2.6 C (1)
2.2.7 A (1)
2.2.8 C (1) (8x1) (8)

2.3 IGNEOUS ROCK

2.3.1 Rock formed from magma that cools and solidifies on the Earth's surface (2)
[CONCEPT] (1x2) (2)

2.3.2 Granite (1)
Basalt (1)
Dolerite (1)
(ANY ONE) (3x1) (3)

2.3.3 They lack layers (strata) and are composed of a solid, uniform block of crystal (2)
(1x2) (2)

2.3.4 When magma cools down and solidifies (2) (1x2) (2)

2.3.5 When magma cools slowly it forms large crystals (2)
When the magma cools quickly the crystals will be small (2) (2x2) (4)

2.3.3 **Construction:** Hard rocks like Granite and Basalt are used for building material, road crushed stone, and kitchen countertops due to their durability (2)
Mineral Resources: Igneous provinces (like the Bushveld Complex in SA) contain valuable ores like Platinum, Gold, and Chrome (2)
Soil Fertility: Weathered volcanic rocks (like basalt) create very rich, fertile soil that is excellent for agriculture (2).
Aesthetics/Jewelry: Many gemstones (like diamonds) are found in igneous pipes (Kimberlite) (2)
(ANY TWO) (2x2) (4)

2.4 EARTHQUAKES

2.4.1 Vibrations in the earth crust caused by plate movements (2)
A sudden release of energy in the Earth's crust that creates seismic waves (2)
[CONCEPT] (1x2) (2)

2.4.2 Siagang is located only 16Km from the epicentre. (1) (1x1) (1)

2.4.3 Informal settlements are built quickly and cheaply (2)
Buildings were poorly constructed without inspections (2)
People living in informal settlements have little access to Mortgage finance, loans or government support (2) (2x1) (2)

2.4.4 People lose their livelihood this leads to widespread unemployment (2)
Infrastructure that was damage must be repaired at huge cost (2)
Business close down because of the damage (2)
Huge insurance claims (2)
Tourism industry is affected (2)
(ANY TWO) (2x2) (4)

2.4.5 Install warning systems which link government agencies, rescue services and the public (2)
Provide information through the media to create awareness (2)
Create evacuation routes (2)
Build safer buildings / enforce earthquake-resistant building codes (2)
Educate people on what to do in case of an earthquake (2)
Emergency services must be on standby (2)
(ANY THREE) (3x2) (6)

2.5 VOLCANOES

2.5.1 A volcano that has erupted recently and is likely to erupt again (2)
[CONCEPT] (1x2) (2)

2.5.2 Magma- intensely hot molten or semi molten rock found beneath the earth surface (1)
Lava- liquefied rock which erupts from volcanoes or fissures onto the earth surface (1) (2x1) (2)

2.5.3 Composite volcano (1)
Stratovolcano (1) (1x1) (1)

2.5.4 Composite volcano contains a magma chamber (2)
Layers of ash and lava is visible (2)
The vent is indicated (2)
Appears to be a large volcano (2)
The volcano has fissures from where lava flows (2)
Steep sides (1)
(ANY ONE) (2x1) (2)

2.5.5 Habitats and landscapes damaged by lava flows or ash (2) (1x2) (2)

2.5.6 Volcano ash creates fertile soil for farming (2)
Hot springs and geysers attract tourist (income) (2)
Underground water is hot enough to generate electricity (geothermal) (2)
[Justify answers] (3x2) (6)

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 MAPSKILLS AND CALCULATIONS

3.1.1 D (1) (1x1) (1)
3.1.2 C (1) (1x1) (1)
3.1.3 C (1) (1x1) (1)
3.1.4 3,4 cm (1) x 500 = 1700m (1)
Range (3,3cm-3,5cm) x 500 = (1650m -1750m) (2x1) (2)

3.1.5 108^0 (2)
Range (106^0 -110^0) (2x1) (2)

3.1.6 The difference (angle) between true north and magnetic north (1) (1x1) (1)

3.1.7 Help the hiker not to get lost (2)
For accurate navigation (2)
For safety a small error in navigation can lead to accidents (2)
Correcting map/compass discrepancy (2)
To orientate the map with the landscape (2)
(ANY ONE) (1x2) (2)

3.2 MAP INTERPRETATION

3.2.1 (a) natural feature (1) (1x1) (1)

(b) irrigation of crops (1)
Water for livestock (1)
(ANY ONE) (1x1) (1)

3.2.2 1092 metres (1) (1x1) (1)

3.2.3 Block **E1** is located higher than block **E4** therefore it will be colder (2)
With an increase in height there is an increase in temperature (2)
(ANY ONE) (1x2) (2)

3.2.4 (a) Non- perennial rivers (1)
Dams (1)
Windpump (1)
(ANY TWO) (2x1) (2)

(b) The farmer can use machines (2)
Better water management as the water flow slower over a gentle gradient (2)
Less erosion (2)
(ANY ONE) (1x2) (2)

3.2.5 Nucleated (1) (1x1) (1)

3.2.6 Safety advantage (1)
Social advantage (1)
Can share equipment and ideas (1)
(ANY TWO) (2x1) (2)

3.3 GEORAPHICAL INFORMATION SYSTEMS

3.3.1 (a) Data (1)
Software (1)
Hardware (1)
Methods (1)
People (1)
(ANY TWO) (2x1) (2)

(b) Satellite (1)
Maps (1)
(ANY ONE) (1x1) (1)

3.3.2 (a) Point - spot height (●1084, ●1103,●1159) (1) (1x1) (1)

(b) Line - railway line (1), power line (1), main road (1), other road (1), river (1) contour line (1), track/hiking trail (1)
(ANY ONE) (1x1) (1)

3.3.3 Is the acquisition of information about an object without physical contact with the ground (1) (1x1) (1)

3.3.4 A large area of the Klip river can be monitored for flooding risk (1)
It allows access to remote and dangerous areas of the river without physical presence (1)
It is cost effective (1)
Remote sensing can assist in disaster management during a flood (1)
(ANY TWO) (2x1) (2)

TOTAL 150