LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 10

GEOGRAPHY P1

MAY/JUNE 2026

MARKS: 150

TIME: 3 hours

This question paper consists of 15 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections.

SECTION A

QUESTION 1: 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. Stanmorephysics.com
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.

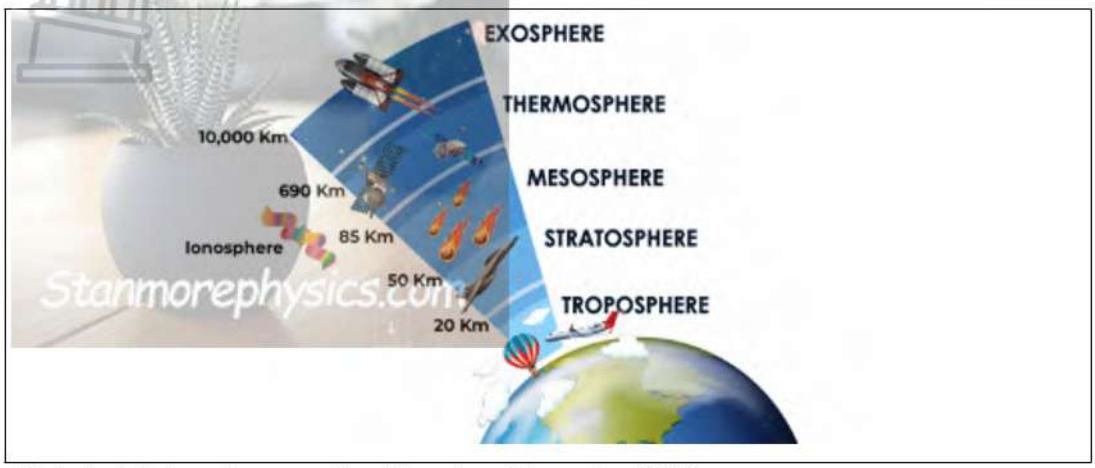
SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

14. A 1: 50 000 topographical map 2329 BB LOUIS TRICHARDT and a 1: 10 000 orthophoto map EXTRACT from 2329 BB 04 LOUIS TRICHARDT are provided.
15. The area demarcated in RED/BLACK 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 map and orthophoto map to the invigilator at the end of this examination.

SECTION A: ATMOSPHERE AND GEOMORPHOLOGY

QUESTION 1: ATMOSPHERE

1.1 Refer to the diagram below of the structure and composition of the atmosphere and answer the questions that follow. Write only the layer next to the question numbers (1.1.1 – 1.1.8) in the ANSWER BOOK, e.g 1.1.9 Mesosphere.



[Adapted: tutoroot personalised learning, November 2023

1.1.1 The layer closest to the earth's surface.

1.1.2 This layer prevent dust and rocks from space from entering the lower layers of the atmosphere.

1.1.3 Meteors burn up in this layer.

1.1.4 Aircraft fly in this layer as there is less turbulence.

1.1.5 This layer contains oxygen for human, animals and carbon dioxide for plants.

1.1.6 The air is very thin in this layer.

1.1.7 A layer of gas which absorbs and filters harmful ultraviolet (UV) rays from the sun.

1.1.8 All weather and climatic changes take place in this layer.

(8 x 1) (8)

1.2 Choose the term/concept from COLUMN B that matches the statement/description in COLUMN A. Write only **Y** or **Z** next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK e.g. 1.2.8 Y

COLUMN A	COLUMN B
1.2.1 Refers to a process by which energy is transferred in the form of waves.	**Y** radiation **Z** conduction
1.2.2 The transfer of heat energy by physical movement of air.	**Y** scattering **Z** convection
1.2.3 Lines joining places with equal atmospheric pressure. Stanmorephysics.com	**Y** isotherms **Z** isobars
1.2.4 The measurement of the distance north or south of the equator.	**Y** latitude **Z** altitude
1.2.5 Refers to a day to day change in the condition of the atmosphere.	**Y** weather **Z** climate
1.2.6 Radiation that is emitted by the earth's surface back into the atmosphere.	**Y** short-wave radiation **Z** terrestrial radiation
1.2.7 Refers to visible tiny droplets of water or ice crystals in the atmosphere.	**Y** Clouds **Z** precipitation

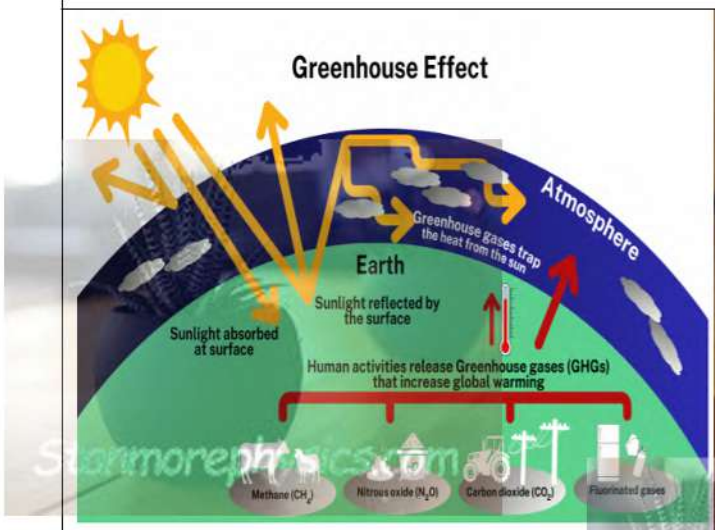
(7 x 1) (7)

1.3 Refer to the infographic below on greenhouse effect and global warming

GREENHOUSE EFFECT AND GLOBAL WARMING

The greenhouse effect happens when the sun's rays penetrate the atmosphere, and the Earth's surface reflects that heat. Some of the gasses in the atmosphere then trap heat over Earth. Gasses emitted by the burning of fossil fuels are very good at trapping heat and preventing it from leaving the atmosphere. These greenhouse gasses are carbon dioxide, methane, nitrous oxide, chlorofluorocarbons and water vapour. The excess heat in the atmosphere has caused the planet's average global temperature to rise over time, otherwise known as global warming. The higher temperatures associated with global warming are altering ecosystems, forcing animals to migrate to cooler places to survive.

(Kritof E,National Geographic Society, 2026)



[Adapted: NSW government website//National Geographic]

1.3.1 Define the concept *global warming*. (1 x 2) (2)

1.3.2 Describe TWO possible consequences associated with global warming from the infographic. (2 x 1) (2)

1.3.3 Refer to the extract and mention any TWO greenhouse gases responsible for trapping heat in the atmosphere. (2 x 1) (2)

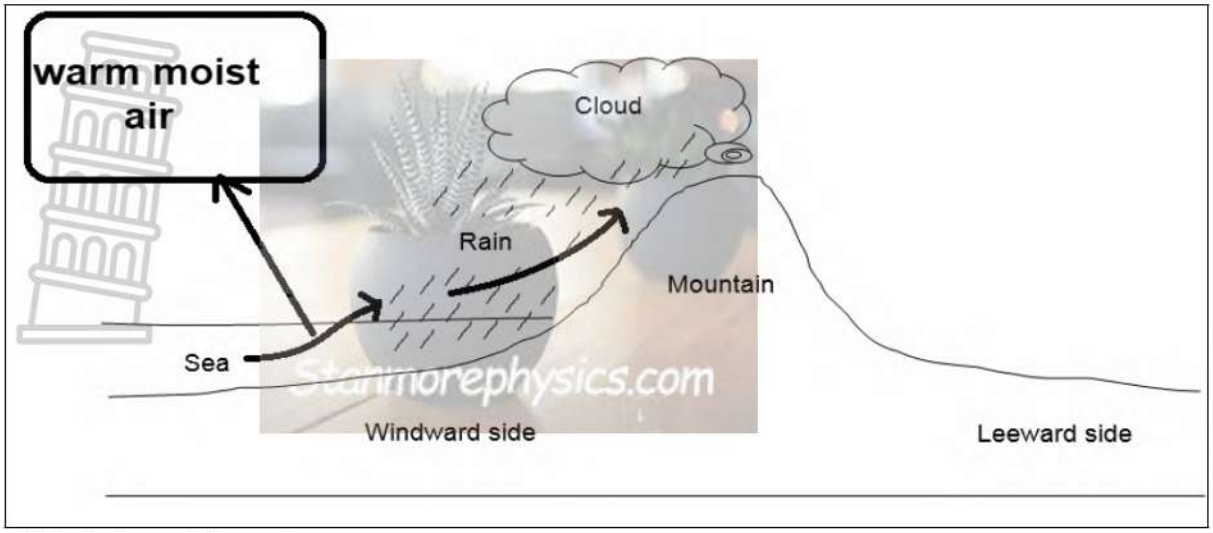
1.3.4 Briefly explain how the process of greenhouse effect led to global warming. (2 x 2) (4)

1.3.5 Describe any ONE human activity from the extract that releases greenhouse gases that increase global warming. (1 x 1) (1)

1.3.6 Suggest TWO strategies that people can use to minimise global warming. (2 x 2) (4)

[15]

1.4 Refer to the diagram below on Orographic rainfall



[Adapted: google image]

1.4.1 Identify the side of the mountain at which orographic rainfall occurs. (1 x 1) (1)

1.4.2 Name the type of cloud generally associated with this type of rainfall. (1 x 2) (2)

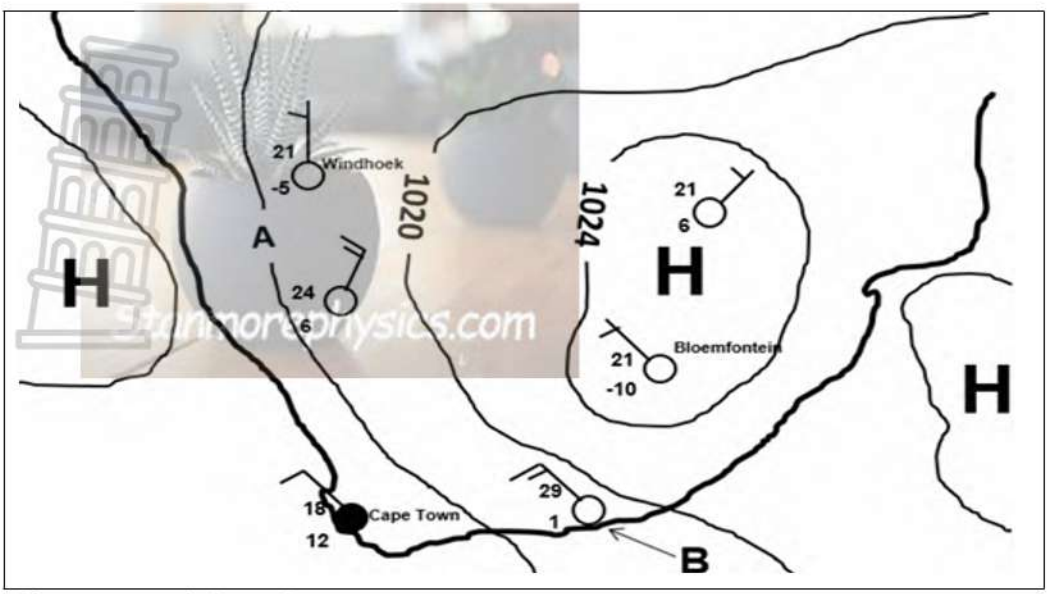
1.4.3 State the moisture content and temperature of the air on the windward side of the mountain. (2 x 1) (2)

1.4.4 Explain why the temperature increases as the air moves down the escarpment (leeward side). (1 x 2) (2)

1.4.5 In a paragraph of approximately EIGHT lines, explain how orographic rainfall forms. (4 x 2) (8)

[15]

1.5 Refer to the synoptic weather map below



[Source: google image]

1.5.1 Define the concept *isobar*. (1 x 2) (2)

1.5.2 Which season is represented on the synoptic weather map? (1 x 1) (1)

1.5.3 Give TWO reasons for your answer in QUESTION 1.5.2. (2 x 1) (2)

1.5.4 Determine the isobaric interval of this synoptic weather map. (1 x 1) (1)

1.5.5 What does the letter H represent on the map? (1 x 1) (1)

1.5.6 In which city is there greater possibility of precipitation? Give evidence from the map to support your answer. (1 + 2) (3)

1.5.7 Interpret the station model labelled **B** using the following information

a) Air temperature.

b) Dew point temperature.

c) Cloud cover.

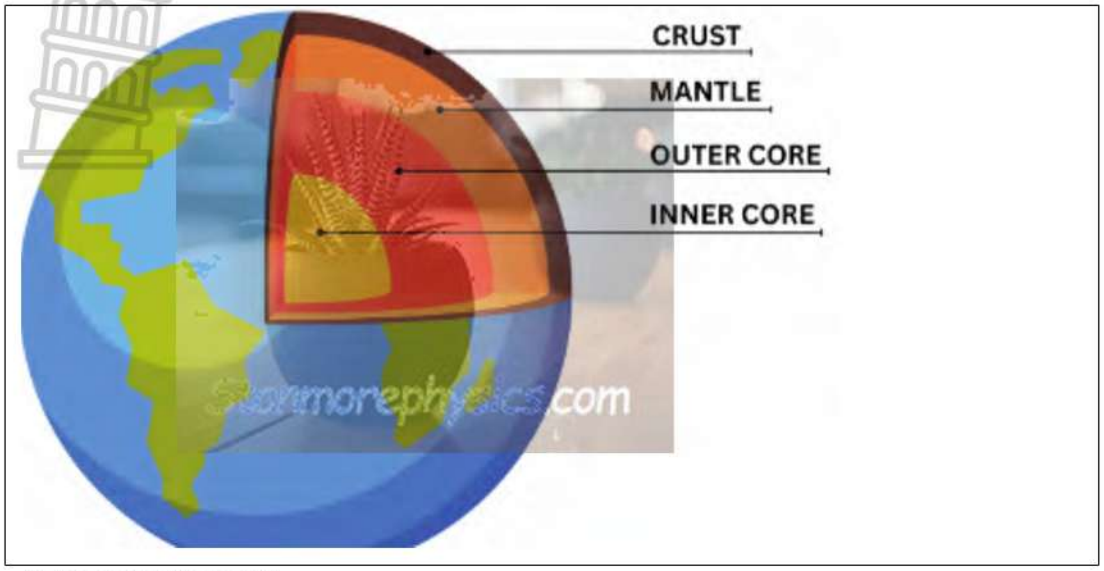
d) Wind direction.

e) Wind speed. (5 x 1) (5)

[60]

QUESTION 2: GEOMORPHOLOGY

2.1 Match the descriptions below with the labels of the internal structure of the Earth (Crust, Mantle, Outer core, Inner core). Write only the label next to the question number (2.1.1 to 2.1.7) e.g. 2.1.8 Crust



[Source: Google image]

2.1.1 The layer of molten material around the Erath's core.

2.1.2 The outer layer of the Earth, formed of solid rock.

2.1.3 The layer that is extremely dense, solid metallic ball.

2.1.4 The layer that is thick, very dense but still molten.

2.1.5 The thickest layer beneath the continents and thinner beneath the oceans.

2.1.6 This layer consists of plastic or semi-fluid rock material that allows it to move and flow slowly.

2.1.7 The layer with the thickness that ranges from 6km and 90 km.

(7 x 1) (7)

2.2 Various options are provided as possible answers to the following questions. Choose the correct answer and write only letter (A–D) next to the question number (2.2.1 to 2.2.8) e.g. 2.2.9 D.

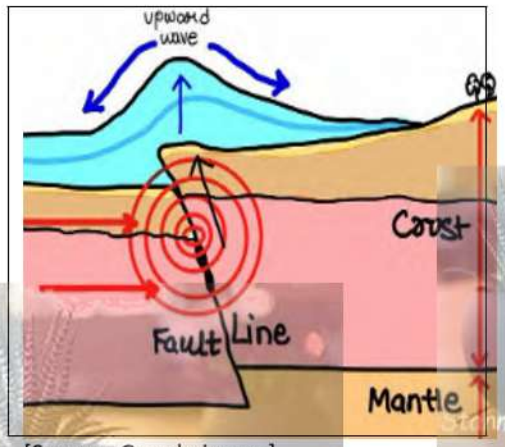
2.2.1 A section of the Earth's crust which can move on the mantle.

A. tectonic plate
B. plate boundary
C. fossil
D. ocean plate

2.2.2 Large crack which forms as a result of continuous tension and compression forces. Stanmorephysics.com

A. folding
B. fault
C. block mountain
D. rift valley

2.2.3 Refers to a giant tidal wave caused by an earthquake.



[Source: Google image]

A. earhthquake
B. volcano
C. tsunami
D. primary wave

2.2.4 The type of fault formed where their s a tensional stress.

A. reverse fault
B. tear fault
C. fault line
D. normal fault

2.2.5 Edge of a crustal plate

A. plate boundary

B. convergent plate boundary
C. divergent plate boundary
D. transform plate boundary

2.2.6 Two plates move sideways past each other

A. convergent plate boundary
B. transverse / passive plate boundary
C. divergent plate boundary
D. crustal plate

2.2.7 Bending of rocks into folds due to strong compressional forces from the sides.

A. folding
B. faulting
C. fault line
D. rift valley

2.2.8 A block of land uplifted between parallel faults.

A fault scarp
B tear fault
C block mountain
D reverse fault

(8 x 1) (8)

2.3 Refer to the table below which compares different rock types to answer the questions.

Feature	Rock Type A	Rock Type B	Rock Type C

Texture	Crystalline, coarse-grained	Stratified (layered)	Foliated (banded)
Formation	Cooling of magma	Compaction of sediment	Heat and pressure
Fossils	None	Common	Rare

2.3.1 Identify the rock types **A, B** and **C.** (3 x 1) (3)

2.3.2 Differentiate between intrusive and extrusive Igneous rocks. (2 x 2) (4)

2.3.3 Describe any TWO characteristics of Sedimentary rocks. (2 x 2) (4)

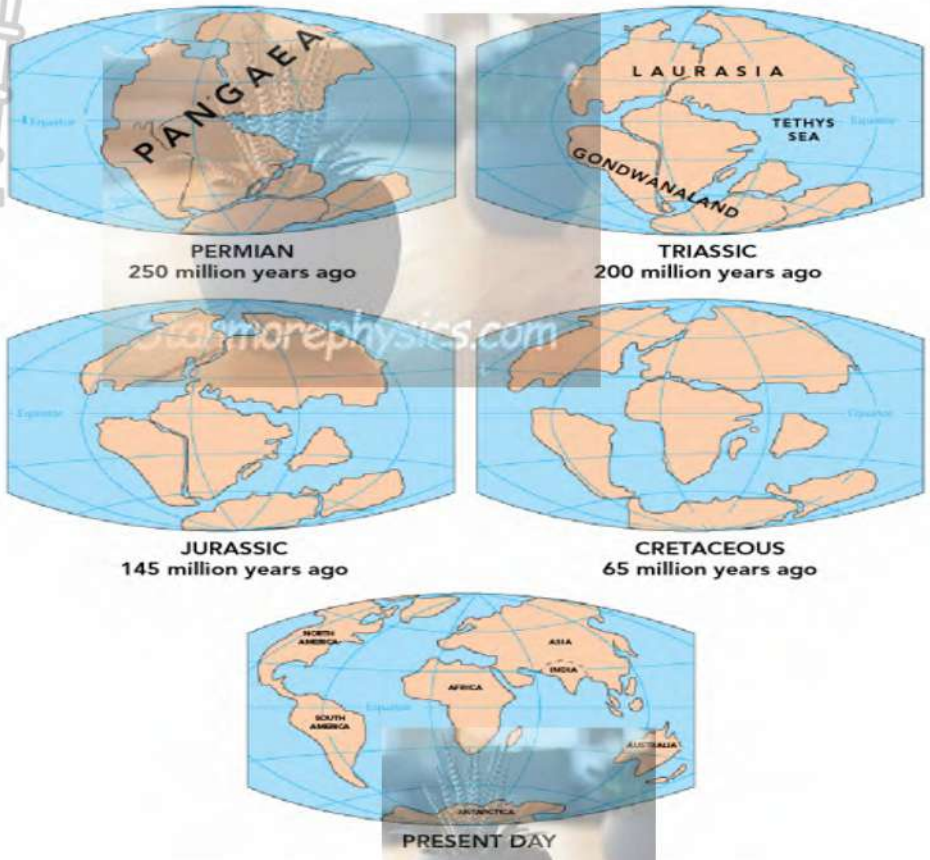
2.3.4 Describe any use of Metamorphic rock. (1 x 2) (2)

2.3.5 Give any TWO types of Igneous rocks. (2 x 1) (2)
(15)

2.4 Refer to the infographic below on continental drift theory

While William Morris Davis is referred to as the father of Geomorphology according to United states scholars, the theory of continental drift is most associated with the scientist Alfred Wegener. In the early 20th century, Wegener published a paper

explaining his theory that the continental landmasses were "drifting" across the Earth, sometimes moving through oceans and into each other. He called this movement continental drift.



[source: google image]

2.4.1 Define the concept *continental drift theory*. (1 x 2) (2)

2.4.2 Who is associated with the theory of continental drift from the source? (1 x 1) (1)

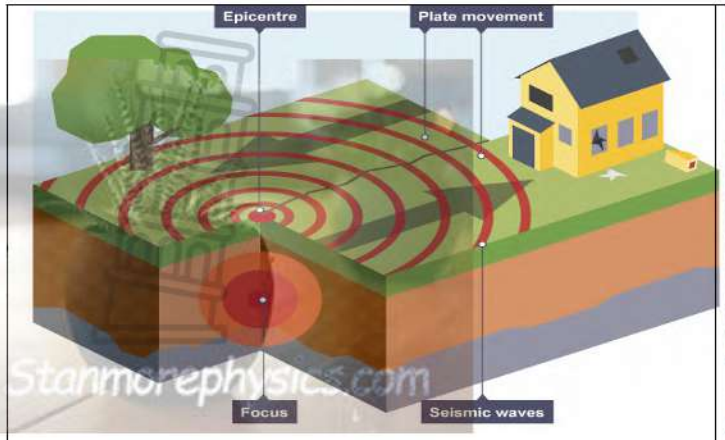
2.4.3 According to the continental drift theory, 200 million years ago, Pangea split into TWO separate land masses, Name them. (2 x 1) (2)

2.4.4 Most scholars believe that Alfred Wagner presented enough evidence to back up his claims about the movement of continents. With reference to the above statement discuss THREE evidence of continental drift theory (3 x 2) (6)

2.4.5 Explain the mechanics (process) of plate movements. (2 x 2) (4)

(15)

2.5 Refer to the infographic below on earthquake



6.5-magnitude quake shakes Mexico City and beach resort, killing two

A 6.5-magnitude earthquake rattled Mexico's capital and a tourist hotspot on the Pacific coast on Friday, killing at least two people and causing moderate damage in a small town near the epicenter. The US Geological Survey said the quake struck shortly before 8:00 am near Acapulco, a major port and beach resort. A 60-year-old man died after falling while evacuating his second-floor apartment in the capital, local authorities' said, twelve others were injured, and city President Claudia Sheinbaum was forced to evacuate the presidential palace during her regular morning press conference. "San Marcos has been badly affected, devastated," lamented Rogelio Moreno, a resident, standing in front of his damaged home. However early warning systems, including smartphone apps, have been developed to warn citizens' about strong quakes and urge them to reach safety.

The US Geological Survey, 03-01-2026

[Adopted: new York Times// google image]

2.5.1 Define the term earthquake (1 x 2) (2)

2.5.2 The area that experiences the greatest damage from the earthquake is called (Focus/Epicentre) Stanmorephysics.com (1 x 1) (1)

2.5.3 Name the term used to describe lines joining places that experiences the same intensity of shock waves (1 x 1) (1)

2.5.4 What was the magnitude of the earthquake that hit Mexico's capital? (1 x 1) (1)

2.5.5 Mention any ONE negative impact of earthquake on human from the extract. (1 x 2)(2)

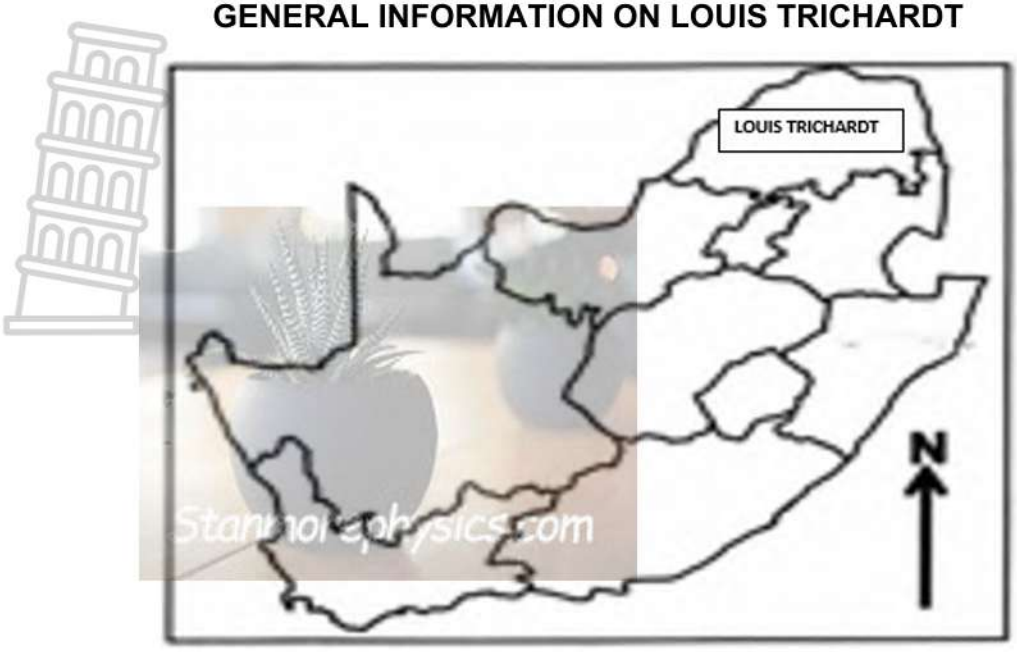
2.5.6 In a paragraph of approximately EIGHT lines, discuss the negative impact of earthquakes on people and settlements. (4 x 2) (8)

[60]

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON LOUIS TRICHARDT



Coordinates: 23 03′ 00"S 29 54′ 00"E

Louis Trichardt is a town at the foot of Songozwi, in the Soutpansberg mountain range in the Limpopo Province. It is the Centre of Makhado Local Municipality, which comprises 16,000 km2 with a total population of 86 980. Louis Trichardt is located in a fertile region where subtropical fruits such as litchis, bananas, mangoes and nuts are produced. The town receives an average summer rainfall of about 449mm. The N1 National Route runs through the town. Louis Trichardt is 437 kilometres from Johannesburg and one hour's drive from the Zimbabwean border at Beitbridge.

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

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

ENGLISH	AFRIKAANS
Furrow	Voor
Aerodrome	Vliegveld
Klip River	Kliprivier
Sewage works	ioolwerke
Weir	Studam

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 Louis Trichardt is located in the …province.

A. Mpumalanga

B. Free state

C. Limpopo

D. North West (1 x 1) (1)

3.1.2 The contour interval of the orthophoto map is…

A. 5m

B. 20m

C. 25m

D. 50m (1 x 1) (1)

3.1.3 The height of the trigonometrical beacon in block **E6** on the topographical map is (185/1146.7m) (1 x 1) (1)

3.1.4 Calculate the distance of **6** on the orthophoto map in metres. (2 x 1) (2)

Formula: **Actual distance= Map distance x Scale**

3.1.5 Determine the true bearing of trig.beacon **185 i**n block **E6** from spot height **1346** in block **C5** on the topographical map. (1 x 2) (2)

3.1.6 Use the magnetic declination of the map **14 23'** to calculate the magnetic bearing of trig.beacon 185 in block E6 from spot height **1346** in block **C5**.

Magnetic bearing= True bearing + Magnetic declination (1 x 2) (2)

3.1.7 Name the type of road labelled **522** passing through Louis Trichardt on the topographical map. (1 x 1) (1)

3.2 MAP INTERPRETATION AND APPLICATION

3.2.1 Identify the type of slope at **9** on the orthophoto map and give reason to support the answer. (1 + 2) (3)

3.2.2 Identify the type of human activity dominant in block **J1, J2** and **K2** on the topographical map. (1 x 1) (1)

3.2.3 Identify the type of activity represented with black dotted lines dominant from block **A5 ,B5** to **A10** and **B10** on the topographical map. (1 x 1) (1)

3.2.4 Give reason why the type of activity mentioned in QUESTION 3.2.3 is preferred to be done within those blocks (1 x 2) (2)

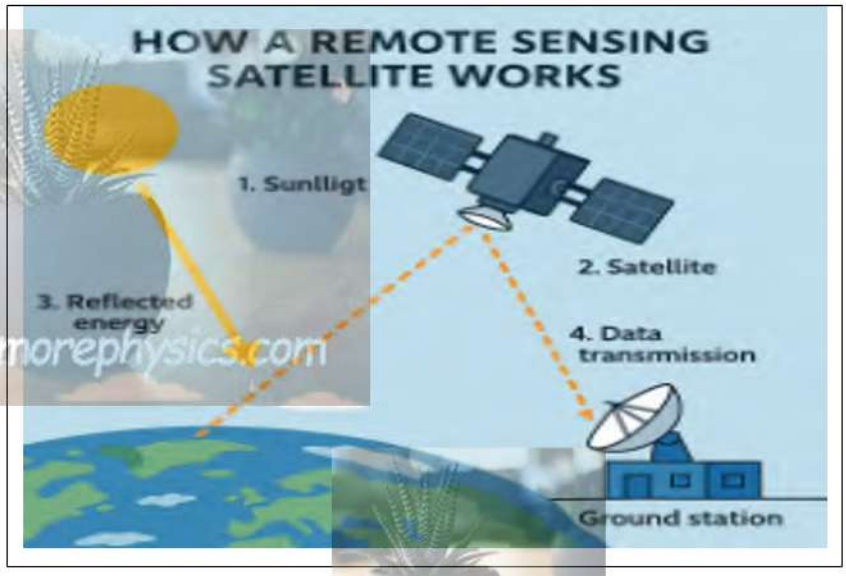
3.2.5 Name two types of scale visible on both topographical map and orthophoto map. (2 x 1) (2)

3.2.6 State the general direction of the flow of the river in block **K10** on the topographical map (1 x 1) (1)

3.2.7 Give reason for your answer in QUESTION 3.2.6 (1 x 2) (2)

3.3 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Refer to the diagram on how a remote sensing satellite works.



[Source: Google image]

3.3.1 Define the concept *remote sensing*. (1 x 2) (2)

3.3.2 Identify ONE tool of remote sensing on the diagram. (1 x 1) (1)

3.3.3 State any THREE components of GIS. (3 x 1) (3)

3.3.4 Identify TWO polygon features visible in block **K10** on the topographical map (2 x 1) (2)

TOTAL SECTION B: 30

GRAND TOTAL: 150

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MAY/JUNE 2026

MARKING GUIDELINES

MARKS : 150

These marking guidelines consist of 8 pages.

SECTION A

QUESTION 1: ATMOSPHERE

1.1

1.1.1 Troposphere
1.1.2 Mesosphere
1.1.3 Mesosphere
1.1.4 Stratosphere
1.1.5 Troposphere
1.1.6 Thermosphere
1.1.7 Ozone layer
1.1.8 Troposphere (8 x 1) (8)

1.2

1.2.1 Y
1.2.2 Z
1.2.3 Z
1.2.4 Y
1.2.5 Y
1.2.6 Z
1.2.7 Y (7 x 1) (7)

1.3

1.3.1 The average increase in global temperatures of the earth (2) (1 x 2) (2)
[CONCEPT]

1.3.2 Altering of ecosystems
Forcing animals to migrate to cooler places for survival (2 x 1) (2)

1.3.3 Carbon dioxide(1) methane(1) nitrous oxide(1) chlorofluorocarbons(1) and water vapour(1) **(ANY TWO)** (2 x 1) (2)

1.3.4 Burning of fossil fuel by industries increases carbon dioxide which absorbs more terrestrial radiation causing an increase temperatures (2)
Deforestation increases the concentration of carbon dioxide which absorbs more terrestrial radiation thus increasing temperatures (2)
Refrigerators releases Chlofluorocarbons that absorbs more long wave /terrestrial radiation increasing temperatures (2)
Methane from livestock absorbs more long wave / terrestrial radiation causing an increase in temperatures (2) (2 x 2) (4)
(ANY TWO)

1.3.5 Burning of fossil fuel (1) (1 x 1) (1)

1.3.6 Rewards and incentives for reducing carbon emissions(2)
Carbon taxes (2) Stanmorephysics.com
Recycling, as manufacturing new products emits more greenhouse gases (2)
Using of environmentally friendly sources of energy e.g. solar power, wind power, etc. (2)
Planting more trees and conserving forest (2)
Educating people on ways to reduce their carbon footprint (2)
Use of public transport to reduce the release of burning fuel (2)
Use of electric cars to reduce emission of carbon (2)
Impose fines for deforestation (2) (2 x 2) (4)
(ANY TWO)

1.4

1.4.1 Windward side (1) (1 x 1) (1)

1.4.2 Nimbostratus(2), cumulus(2), stratocumulus(2) **(ANY ONE)** (1 x 2) (2)

1.4.3 Moisture content: wet (1)
Temperature: high (1) (2 x 1) (2)

1.4.4 Air heats up adiabatically (2)
Air temperature increases by 1ºC per 100m (2)
Temperature increase with decrease in height (2) (1 x 2) (2)
(ANY ONE)

1.4.5 Relief/ Orographic rainfall forms when warm moist wind blows off the ocean onto a mountain (2), which then forces it to rise (2), The rising air cools (2) and have the water vapour it contains condenses to form clouds (2), This results in rain falling on the windward side of the mountain (2).

(ANY FOUR) (4 x 2) (8)

1.5

1.5.1 Line on the map joining places with the same atmospheric pressure.(2)(1x2)(2)

1.5.2 Winter (1) (1 x 1) (1)

1.5.3 Kalahari/ high pressure cell in the interior (1)

Clear skies in the interior (1)
Lower air temperatures (1) (2 x 1) (2)

(ANY TWO)

1.5.4 4 hpa (2) (1 x 1) (1)

1.5.5 high pressure cell (2) (1 x 1) (1)

1.5.6 Cape Town (1), cloud cover is overcast (3) (1 + 3) (3)

1.5.7

a) 29ºC (1)
b) 1ºC (1)
c) Clear skies (1)
d) North west(1)
e) 15 knots (1) (5 x 1) (5)

[60]

QUESTION 2: GEOMORPHOLOGY

2.1

2.1.1 Mantle
2.1.2 Crust
2.1.3 Inner core
2.1.4 Outer core
2.1.5 Crust
2.1.6 Mantle
2.1.7 Crust (7 x 1) (7)

2.2

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

2.3

2.3.1 A – Igneous

B – Sedimentary

C – Metamorphic (3 x 1)(3)

2.3.2 Intrusive forms when magma cools beneath the earth's surface while extrusive forms when magma cools quickly above the earth's surface. **(CONCEPT**) (4)

(2 x 2) (4)

2.3.3 Characteristics of Sedimentary rocks:

They usually form in layers

Fossils are found in these rocks

Can be able to be folded or bent **(ANY TWO)** (2 x 2) (4)

2.3.4 Use of Metamorphic rocks:

Used in the building industry (2)

Slate can be used for making roof tiles and floor tiles (2)

Can be used for decoration e.g making sculptures/ grave stones (2)

(ANY ONE) (1 x 2) (2)

2.3.5 Granite (1)/basalt (1)/ Dolerite (1) **(ANY TWO)** (2 x1) (2)

2.4

2.4.1 The theory about the movement of the Earth's continents relative to each other over geologic time (2) **(CONCEPT)** (1 x 2) (2)

2.4.2 Alfred Wagner (1) (1 x 1) (1)

2.4.3 Gondwana land and Laurasia (2) (2 x 1) (2)

2.4.4 The continents fit together like a jig saw puzzle (2)

Rocks of similar type, age and formation were found in South east Brazil and South Africa (2)

Fossils of small reptiles were also found in South East Brazil and South Africa (2)

Coal which forms in hot wet conditions is found beneath the Antarctic ice cap (2)

(ANY THREE) (3 x 2) (6)

2.4.5 The movement of plate is caused by convection currents in the mantle, which drag along the overlaying crust (2)

Plates rest on top of the underlying mantle (2)

Heat generates convection currents in the mantle (2)

Plates move along convection currents that are created (2)

Plates move away from each other or towards each other (2) (2 x 2) (4)

(ANY TWO)

2.5

2.5.1 The vibration or shaking of the earth's crust (2) **(CONCEPT)** (1 x 2) (2)

2.5.2 Epicentre (1) (1 x 1) (1)

2.5.3 Isoseismal lines (1) (1 x 1) (1)

2.5.4 6.5 (1) (1 x 1) (1)

2.5.5 A 60 year old man died / loss of life (2)

Twelve others were injured (2)
(ANY ONE) (1 x 2) (2)

2.5.6 High number of deaths and injuries (2)

Power failure which leads to power outage (2)
Destruction of houses which leads to homeless people (2)
Damage of water pipes which leads to lack of clean water (2)
Destruction of roads which leads to areas being inaccessible for relief services (2)
Disruption of telecommunication for reporting of damages (2)
(ANY FOUR) (4 x 2) (8)

[60]

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 C (1) (1 x 1) (1)

3.1.2 A (1) (1 x 1) (1)

3.1.3 1146.7m (1) (1 x 1) (1)

3.1.4 Formula: **Actual distance= Map distance x Scale**

8.5 (1) cm x 100

= 850m (1) (2 x 1) (2)

3.1.5 161º(2) (Range 160 º-162º) (2 x 1) (2)

3.1.6 161º + 14º 23' (1)

175º 23' (1) (Range 174º- 176º) (2 x 1) (2)

3.1.7 Main road (1) (1 x 1) (1)

3.2 MAP INTERPRETATION AND APPLICATION

3.2.1 Gentle slope(1), contour lines are far apart from each other(2) (1+2) (3)

3.2.2 Crop farming/ farming/ cultivation (1), (1 x 1) (1)

3.2.3 Track and hiking (1 x 1) (1)

3.2.4 The area is mountainous / hiking is done in mountainous area(2) (1 x 2) (2)

3.2.5 Ratio (1) and linear / line scale(1) (2 x 1) (2)

3.2.6 South west (1) (1 x 1) (1)

3.2.7 Dam wall is at the south west(2) (1 x 2) (2)

3.3 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

3.3.1 Gathering of information about the earth's surface without physical contact

(CONCEPT) (1 x 2) (2)

3.3.2 Satellite(1) (1 x 1) (1)

3.3.3 Hardware (1) Software (1) Data (1) People (1) Method (1)
(ANY THREE) (3 x 1) (3)

3.3.4 Dam (1), Cultivated land (1) (2 x 1) (2)

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TOTAL: 150