UTHUKELA DISTRICT

GRADE 10

JUNE EXAMINATION

GEOGRAPHY

2026

DURATION: 3 HOURS

MARKS: 150

This paper consists of 17 pages and information page.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of THREE QUESTIONS

QUESTION 1: ATMOSPHERE (60)

QUESTION 2: GEOMORPHOLOGY (60)

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. Answer in FULL SENTENCES, except when you have to state, name, identify or list.
8. You may use a non-programmable calculator.
9. Write neatly and legibly.

SPECIFIC INSTRUCTIONS AND INFORMATION FOR QUESTION 3

10. A 1: 50 000 topographical map 3325DC & DD & 3425BA GQEBERHA (PORT ELIZABETH) and a 1: 10 000 orthophoto map 3325 DC 23 GQEBERHA (PORT ELIZABETH) are provided.
11. The area demarcated in RED/BLACK on the topographical map represents the area covered by the orthophoto map.
12. Show ALL calculations.

SECTION A: PHYSICAL GEOGRAPHY

QUESTION 1: THE ATMOSPHERE

1.1 Choose the word/term from COLUMN B with that matches the statement in COLUMN A. Write only **Y** or **Z**) next to the question numbers (1.1.1 – 1.1.7) in the ANSWER BOOK, e.g. 1.1.8 Z

COLUMN A	COLUMN B
1.1.1 Layer of gases surrounding the earth surface.	**X** atmosphere **Y** nitrogen
1.1.2 Water vapour is the moisture in the atmosphere in a ... state.	**X** gas **Y** liquid
1.1.3 Change of state of ice into water vapour.	**X** crystallisation **Y** sublimation
1.1.4 Gases that changes from time to time and from place to place.	**X** variable gases **Y** permanent gases
1.1.5 Atmospheric conditions that last over a short period of time.	**X** climate **Y** weather
1.1.6 The temperature at which the air becomes saturated with water vapour and water starts to condense.	**X** air temperature **Y** dew point temperature
1.1.7 A gas necessary for respiration.	**X** oxygen **Y** carbon dioxide
	(7 x 1) (7)

1.2 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A-D) next to the question numbers (1.2.1 - 1.2.8) in the ANSWER BOOK e.g. 1.1.9 D

1.2.1 The layer of the atmosphere nearest to the earth's surface is known as……

A Mesosphere
B Thermosphere
C Troposphere
D Absorption

1.2.2 The process of transferring heat through air or liquid currents.

A Convection
B Conduction
C Radiation
D Absorption

1.2.3 It occurs when small particles and gases diffuse (split up) the sun's rays in random directions without altering the wavelength.

A Solar constant
B Reflection
C Insolation
D Scattering

1.2.4 It is an overall increase in the earth's temperature caused by natural and human activities which increase greenhouse gases.

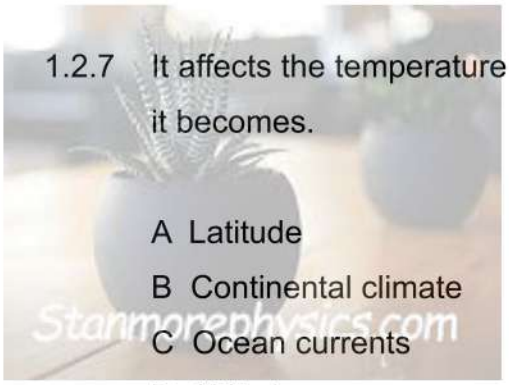
A Greenhouse effect
B Albedo
C Depletion in insolation
D Global warming

1.2.5 ….. determines the angle at which the sun's rays strike the surface.

A Angle of the earth surface
B Shape of the earth
C Angle of the sun
D Shape of the sun

1.2.6 The type of heat transfer that requires the molecules to be in contact with each other.

A Convection
B Conduction
C Radiation
D Absorption



1.2.7 It affects the temperature because the further from the equator the colder it becomes.

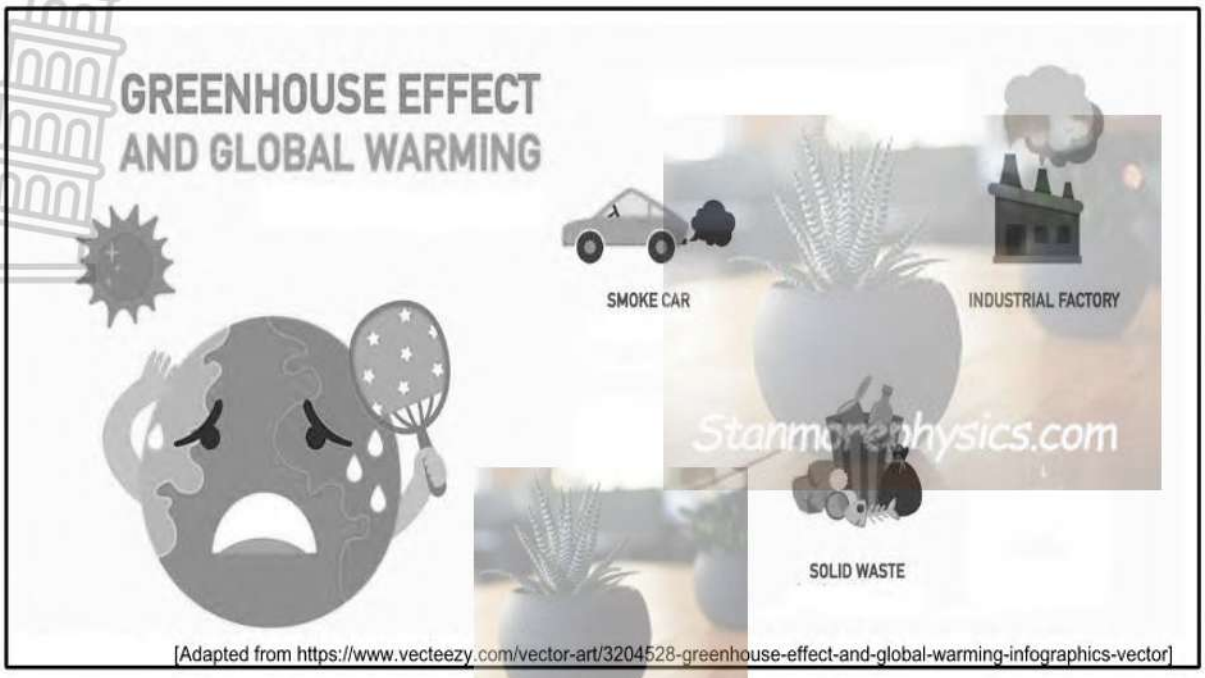
A Latitude
B Continental climate
C Ocean currents
D Altitude

1.2.8 Precipitation that occurs in winter at the bottom of a valley.

A Dew
B Frost
C Rain
D Snow

(8x1) (8)

1.3 Refer to the diagram on the greenhouse effect and global warming.



[Adapted from https://www.vecteezy.com/vector-art/3204528-greenhouse-effect-and-global-warming-infographics-vector]

1.3.1 Define the concept the *greenhouse effect* (1 x 2) (2)

1.3.2 Name the greenhouse gases released by the sources below.

(a) Smoke car (1 x 1) (1)

(b) Solid waste (1 x 1) (1)

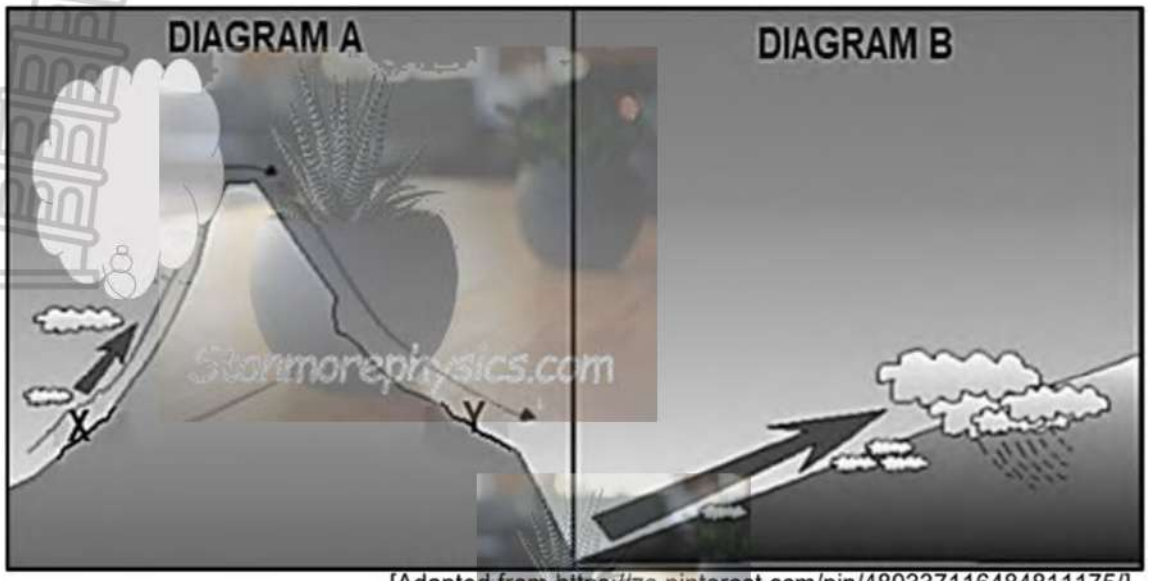
1.3.3 According to the diagram, why is the earth sweating? (1 x 1) (1)

1.3.4 What is the relationship between greenhouse effect and global warming (1 x 2) (2)

1.3.5 Explain how excessive greenhouse gases in the atmosphere will have a negative impact on the environment. (2 x 2) (4)

1.3.6 Suggest TWO strategies that can be implemented to reduce the emission of greenhouse gases. (2 x 2) (4)

1.4 Refere to the diagram below which illustrate types of rainfall



[Adapted from https://za.pinterest.com/pin/480337116484811175/]

1.4.1 Identify the types of rainfall in diagram **A** and **B** (2 x 1) (2)

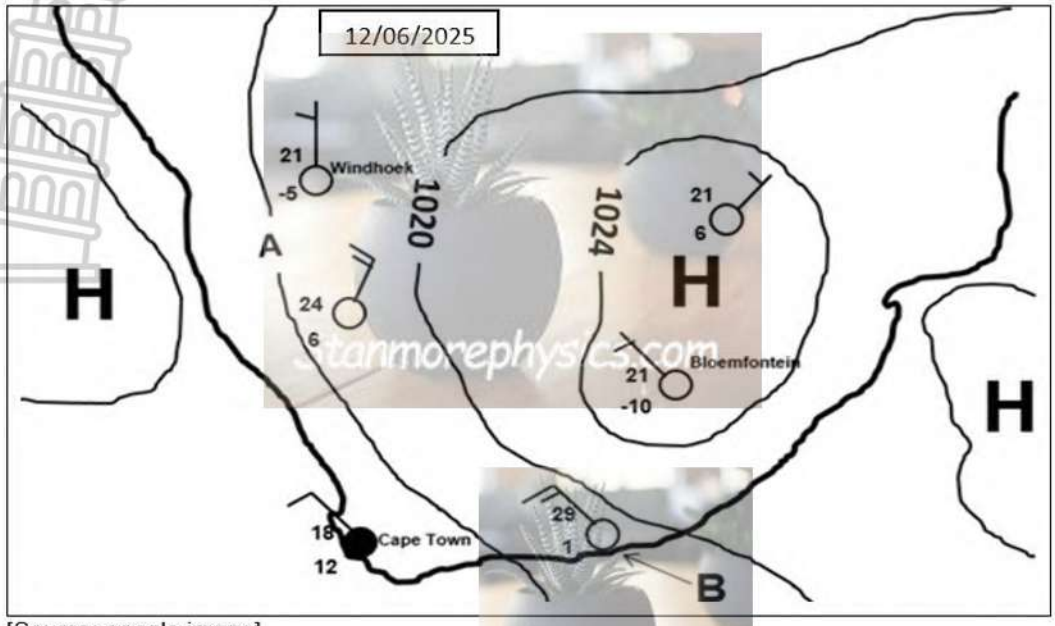
1.4.2 What trigger action caused the development of the types of rainfall in the diagrams **A** and **B** (2 x 1) (2)

1.4.3 Name slope marked **X** in diagram **A** (1 x 1) (1)

1.4.4 Describe the rainfall occurring in diagram **B** (1 x 2) (2)

1.4.5 In a paragraph of approximately EIGHT lines, explain how the rainfall in diagram **A** is formed (4 x 2) (8)

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? (1 x 1) (1)

1.5.7 Give evidence from the map to support your answer in question 1.5.6 (1 x 2) (2)

1.5.8 1.5.1 Interpret the weather conditions as represented in station model labelled **B** using the following information :-

a) Air temperature.

b) Dew point temperature.

c) Cloud cover.

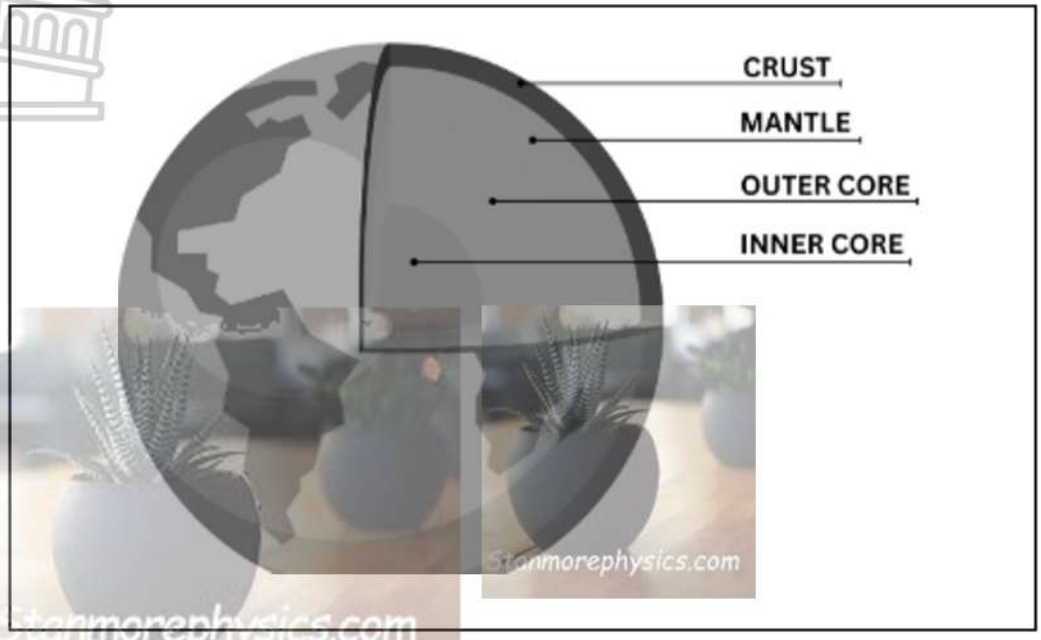
d) Wind direction.

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 Earth'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 which 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.

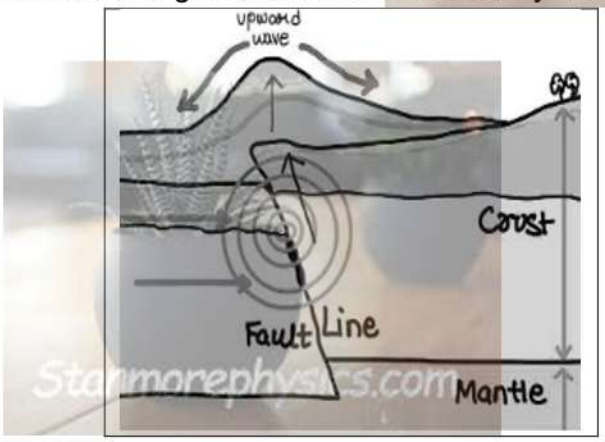
2.2.1 A section of the Earth's crust which can move on the mantle.

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.

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. earthquake
B. volcano
C. tsunami
D. primary wave

2.2.4 A slight shaking of the earth's crust with very little or no damage

A. focus
B. earthquake
C. earth tremor
D. axial planes

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.

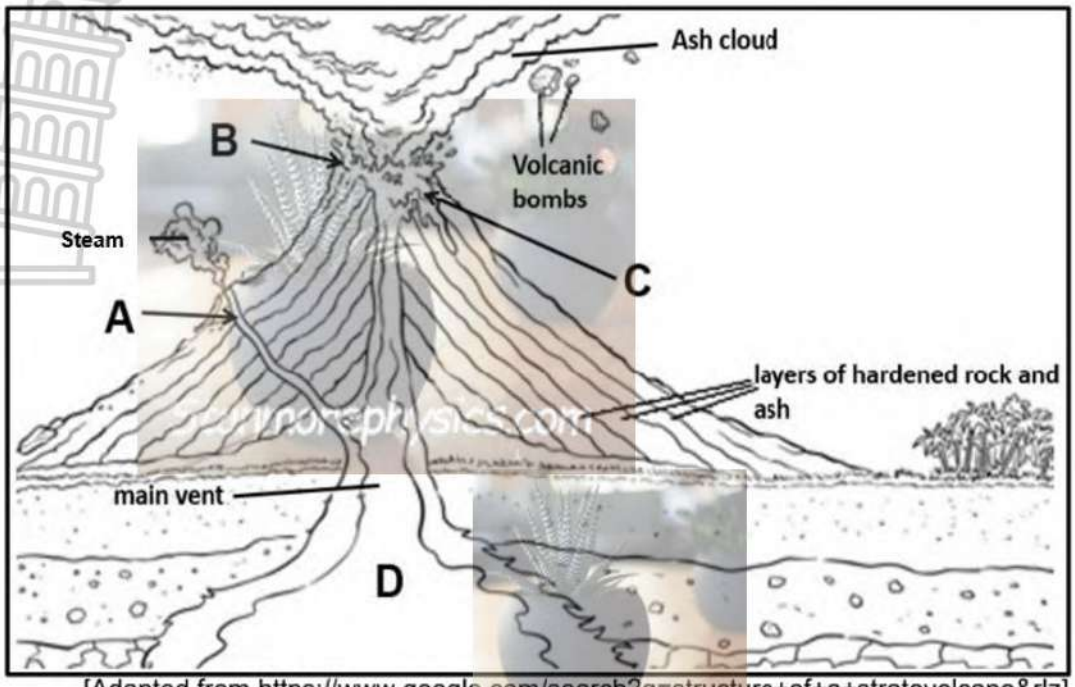
A. folding
B. faulting
C. fault line
D. rift valley

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 sketch below showing a strato-volcano (composite volcano).



[Adapted from https://www.google.com/search?q=structure+of+a+stratovolcano&rlz]

2.3.1 Why can this volcano be regarded as active? (1 x 1) (1)

2.3.2 Give TWO characteristics of strato-volcano. (2 x 1) (2)

2.3.3 Identify features **A** and **B** of the strato-volcano. (2 x 1) (2)

2.3.4 Name molten material **C** and **D.** (2 x 1) (2)

2.3.5 In a paragraph of approximately EIGHT lines, discuss the economic advantages and disadvantages of volcanoes. (4 x 2) (8)

2.4 Refer to the infographic below on earthquake.

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

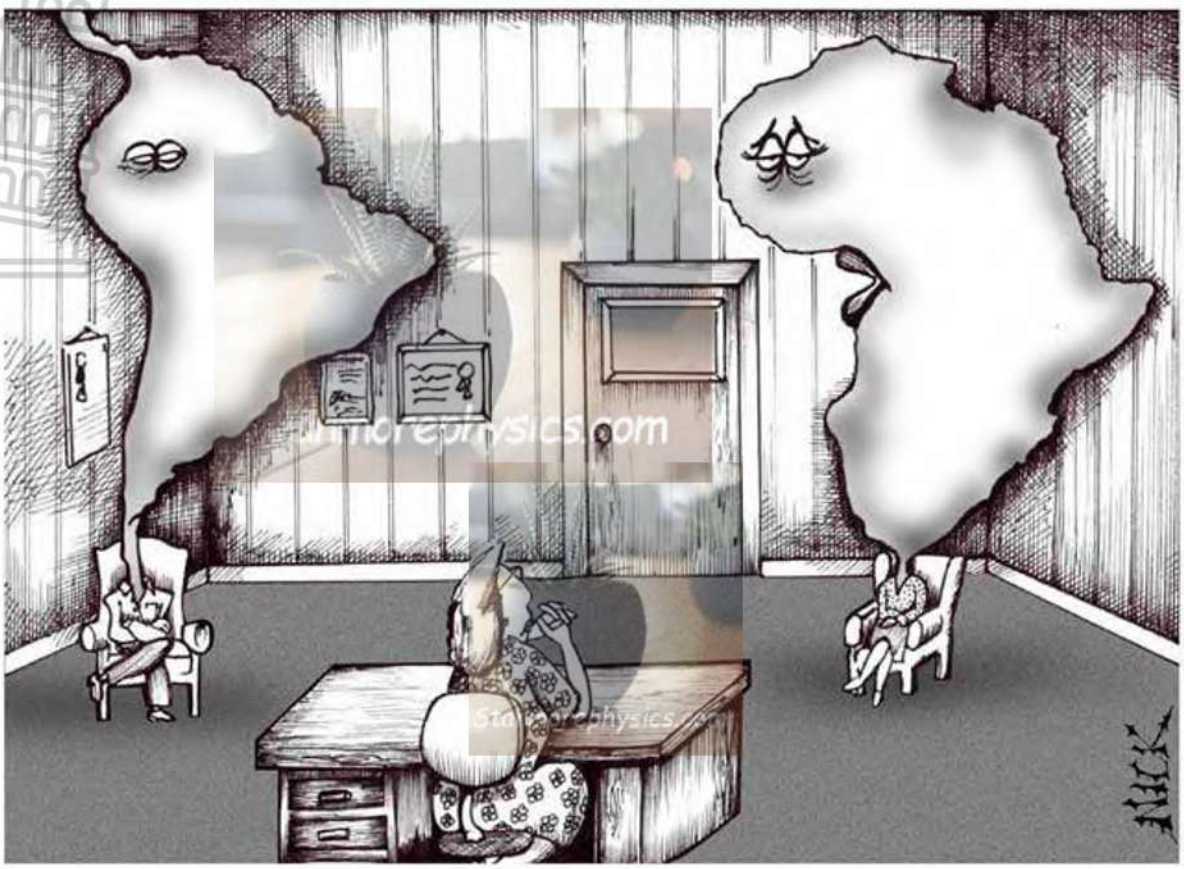
A 6.5-magnitude earthquake rattled Mexico's capital and a tourist hotspot on the Pacific coast on Friday, killing at least two people and causing moderate damage in a small town near the epicenter. The US Geological Survey said the quake struck shortly before 8:00 am near Acapulco, a major port and beach 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]

2.4.1	Define the term earthquake	(1 x 2) (2)
2.4.2	How many people were killed near the epicentre?	(1 x 1) (1)
2.4.3	According to the infographic (information with diagrams) above, what might have caused the earthquake?	(1 x 2) (2)
2.4.4	What is term used to describe lines joining places that experiences the same intensity of shock waves?	(1 x 1) (1)
2.4.5	What was the magnitude of the earthquake that hit Mexico's capital?	(1 x 1) (1)
2.4.6	Explain the negative impact of earthquakes on people and settlements.	(2 x 2) (4)
2.4.7	Suggest sustainable strategies mentioned in the infographic above that can be used to minimise the impact of earthquakes.	(2 x 2) (4)

2.5 Refer to the CARTOON below showing the movement of the continents over time.



"Well looking back I suppose it's been going on for quite some time, but I only noticed we were drifting apart during the last 50 million years..."

2.5.1	Name the theory described in the cartoon.	(1 x 1) (1)
2.5.2	What is the super continent that the two continents in the cartoon belonged to 50 million years ago.	(1 x 1) (1)
2.5.3	Explain the difference between divergent and convergent plate boundaries.	(2 x 2) (4)
2.5.4	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 evidence of continental drift theory	(3 x 2) (6)
2.5.5	Explain the mechanics (process) of plate movements.	(2 x 2) (4)

(60)

SECTION B: GEOGRAPHIC SKILLS AND TECHNIQUES

GENERAL INFORMATION ON GQEBERHA (PORT ELIZABETH)

Coordinates: 33°57'S; 25°36'E

Gqeberha (Port Elizabeth) is a major seaport (harbour) and a densely populated city in the Eastern Cape in South Africa. It lies at Algoa Bay in the Indian Ocean.

The residential area is on flat land, with an industrial sector at North End. Gqeberha is characterised by a large number of green belts.

The Coega Industrial Development Zone is located close to Gqeberha. It has a world-class infrastructure which provides for the increased accessibility of services and industries to the rest of the world.

[Source: https://www.google.com/search?q Port Elizabeth]

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

ENGLISH	AFRIKAANS
International airport	Internasionale lughawe
River	Rivier
Bridge	Brug
Furrow	Voor
Golf course	Gholfbaan
Firebreak	Voorbrandstrook

QUESTION 3

3.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A-D) next to the question numbers (3.1.1 – 3.1.3) in the ANSWER BOOK e.g., 3.1.1 D

3.1.1 In which province is GQEBERHA

A. Kwa Zulu Natal
B. Eastern cape
C. Western cape
D. Gauteng

3.1.2 The map index for the map of Gqeberha is…….

A. 3325 DC
B. 3325 DD
C. 3425 BA
D. 3425 DD

3.1.3 The contour interval for the topographical map of Gqeberha is …

A. 15 metres
B. 20 metres
C. 25 metres
D. 30 metres

(3 x 1) (3)

3.1.4 Calculate the gradient between trig beaconΔ 266 in block **D3** and trig beacon Δ254 in block **D2**. $(Gradient = \frac{VI}{HE})$ (4 x 1) (4)

3.1.5 Use the information on the map to calculate the magnetic declination for the current year (2026). (4 x 1) (4)

3.2 Refer to the topographical map 3325 DC GQEBERHA

3.2.1 Does Gqeberha receive LOW or HIGH rainfall? Give TWO reasons for your answer. (1 + 2) (3)

3.2.2 Write down two reasons why the Dam (North End Lake) in block **B3** is so important. (2 x 2) (4)

3.2.3 Refer to **Orthophoto** map, give two possible reasons for the location of Chief Stuurman International Airport in the area where it is found. (2 x 2) (4)

3.3 Geographic Information System

3.3.1 Define the concept *Geographical information system* (1 x 2) (2)

3.3.2 What is a difference between spatial data and attribute data. (2 x 2) (4)

3.3.3 3.3.3 Refer to Block **E 2** to identify the following: (2 x 1) (2)

a) line feature

b) point feature

(30)

TOTAL: 150

UTHUKELA DISTRICT

GRADE 10

GEOGRAPHY

JUNE EXAMINATION 2026

MEMORANDUM

SECTION A: PHYSICAL GEOGRAPHY

QUESTION 1

1.1

1.1.1 X (1)
1.1.2 X (1)
1.1.3 Y (1)
1.1.4 X (1)
1.1.5 Y (1)
1.1.6 Y (1)
1.1.7 X (1)

1.2

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

1.3

1.3.1 Trapping of heat near the earth surface by substances known as greenhouse gases. (2)

1.3.2 (a) Carbon monoxide (1)
(b) Methane/ Carbon dioxide (1)

1.3.3 It is experiencing very high temperatures (2)

1.3.4 The more greenhouse gases are trapped by greenhouse effect (2) the higher average increase in global temperatures of the earth. (2)

1.3.5 Increased average global temperatures will melt ice caps causing coastal flooding and soil erosion. (2)

Increased average global temperatures will result in climate change. (2)

Increased average global temperatures can disturb the ecosystems and biodiversity. (2)

Increased average global temperatures will destroy vegetation. (2)

Increase in average global temperatures are unbearable to some species. Eg polar bears. (2)

(ANY TWO)

1.3.6 Rewards and incentives for reducing carbon emissions (2)

Carbon taxes (2)

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 **A-** Orographic/Relief (1)

B- Cyclonic/Frontal (1)

1.4.2 **A-** Mountain (1)

B- Frontal conditions (1)

1.4.3 Windward (1)

1.4.4 Soft, continuous rain over a wide area (2)

1.4.5 Orographic rainfall occurs when warm, moist air blows off the ocean onto the mountain (2)

The warm, moist air is then forced to rise by the mountain (2)

As the warm air rises, it cools and condenses (2)

Clouds are formed and it rains on the windward side **(A)** of the mountain. (2)

1.5

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

1.5.2 Winter (1)

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

Clear skies in the interior (1)

Lower air temperatures (1)

(ANY TWO)

1.5.4 4 hpa (2)

1.5.5 High pressure cell

1.5.6 Cape Town (1), (3)

1.5.7 Cloud cover is overcast (2)

1.5.8 a) 29ºC (1)

b) 1ºC (1)

c) Clear skies (1)

d) North west(1)

e) 15 knots (1) (5 x 1) (5)

QUESTION 2

2.1

2.1.1 Mantle (1)

2.1.2 Crust (1)

2.1.3 Inner core (1)

2.1.4 Outer core (1)

2.1.5 Crust (1)

2.1.6 Mantle (1)

2.1.7 Crust (1)

2.2

2.2.1 A (1)

2.2.2 B (1)

2.2.3 C (1)

2.2.4 C (1)

2.2.5 A (1)

2.2.6 B (1)

2.2.7 A (1)

2.2.8 C (1)

2.3

2.3.1 Eruptions are evident (1)

2.3.2 Symmetrical shape (1)

Very steep sides (1)

Alternative layers of lava flow (1)

2.3.3 **A**-Side vent

B-Crater

2.3.4 **C**-Lava

D-Magma

2.3.5 **ADVANTAGES:**

Materials produce fertile soils. (2)

Ash and cinder are natural fertilizers as they are rich in minerals. (2)

As lava cools and is eroded by elements it also adds to soil fertility. (2)

Creates beautiful landscapes that promote tourism. (2)

Mineral deposits. (2)

DISADVANTAGES:

Destroys infrastructure. (2)

Harmful gases that destroy crops. (2)

Lava heat promotes global warming which causes drought and floods. (2)

Lava flow destroys crops and livestock. (2)

Lava flows cause wild fires which burn forests. (2)

Lava flow is dangerous to humans which reduces tourism. (2)

2.4

2.4.1 The vibration or shaking of the earth's crust (2)

2.4.2 2 people. (1)

2.4.3 Plate movement (2)

2.4.4 Isoseismal lines (1)

2.2.5 6.5 (1)

2.2.6 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 (2)

Disruption of telecommunication for reporting of damages (2)

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

2.5

2.5.1 Continental drift (1)

2.5.2 Pangaea (2)

2.5.3 Divergent plate boundary occurs when tectonic plates are moving away from each other (2) whereas convergent plate boundary occurs when tectonic plates are moving towards each other (2)

2.5.4 Identical rocks, of the same type and age, are found on both sides of the Atlantic Ocean. Mountain ranges with the same rock types, structures, and ages are now on opposite sides of the Atlantic Ocean (2)

Ancient fossils of the same species of extinct plants and animals are found in rocks of the same age but are on continents that are now widely separated. (2)

Grooves and rock deposits left by ancient glaciers are found today on different continents very close to the equator. (2)

Coral reefs and coal-forming swamps are found in tropical and subtropical environments, but ancient coal seams and coral reefs are found in locations where it is much too cold today. (2)

Africa and South America appeared to fit like puzzle pieces.(2)

(ANY THREE)

2.5.5 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)
(ANY TWO)

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1

3.1.1 B (1)

3.1.2 A (1)

3.1.3 B (1)

3.1.4 G= VI/HE

=86,4 m-71,6m

=14,8m

HE=4,3 m X 500 m

=2150 m

14,8 m/2150m=1/145,27

G=1 : 145,27

3.1.5 Difference in years= 2026-2021=5 yrs

Total annual change= 5yrs X 12'=60'

MD for current year= 29˚ 00' + 60'

=30˚ 00' W of TN

3.2.1 Low, presence of dams,presence of reservoir .(1+2)(3)

3.2.2 Recreational area,domestic use, generate hydroelectricity .(2X2)(4)

3.2.3 Flat land,away from people to avoid noise and safety of communities .(2X2)(4)

3.3

3.3.1 It is a system for capturing ,storing, analysing and displaying geographic data.(2)

3.3.2 Spatial data refers to location and shape of geographical features. And attribute data is a data that describes words,numbers and pictures.(2X2)(4)

3.3.3 a) secondary road,hiking trail (1)

b) buildings,rock of trees (1)

TOTAL: 150