LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

SEKHUKHUNE EAST- DISTRICT ON THE RISE

NATIONAL SENIOR CERTIFICATE

GRADE 10

GEOGRAPHY
TERM 1
MIDTERM TEST
2025.02.26

MARKS: 100

TIME: 90 Minutes

This question paper consists of 9 pages.

INSTRUCTIONS AND INFORMATION.

1. This question paper consists of two sections.
2. SECTION A : 60 marks CLIMATE AND WEATHER and SECTION B : 40 Mapwork.
3. Answer all the questions.
4. All diagrams are included in the Question Paper.
5. Number the questions correctly according to the numbering system used in this question paper.
6. Illustrate your answers with labelled diagrams, where possible.
7. The mark allocation is as follows: (2 x 1) (2) means that Two facts are required for ONE mark each,(2 x 2) (4) means that TWO facts are required for Two marks each.
8. Answer in FULL SENTENCES, except when you have to state, name, identify or list. All **paragraphs** questions must be answered in FULL sentences.
9. A 1: 50 000 topographical map 2629 DB ERMELO MIDDELBURG and a 1: 10 000 orthophoto map 2629 DB 5 ERMELO are provided.

SECTION A : ATMOSPHERE

QUESTION 1

1.1 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 number (1.1.1–1.1.7) in the ANSWER BOOK, for example, 1.1.8 D.

1.1.1 Incoming solar … is known as insolation.

A. radiation
B. absorption
C .reflection
D. scattering

1.1.2 The transfer of heat by vertical movement is …

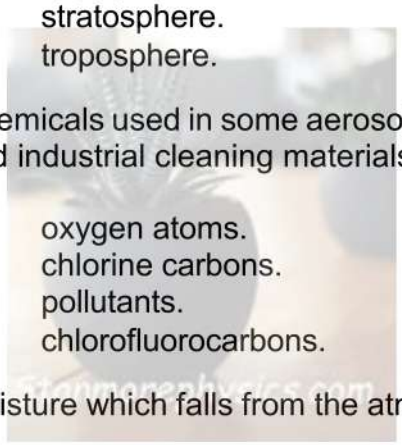
A convection.
B conduction.
C coriolis force.
D latent heat.

1.1.3 Gases in the atmosphere that absorb long-wave radiation and contribute to global warming are known as the …

A radiation gases.
B thermosphere.
C greenhouse effect.
D greenhouse gases.

1.1.4 The layer of atmosphere closest to the earth's surface is the …

A mesosphere.
B tropopause.
C stratosphere.
D troposphere.



1.1.5 Chemicals used in some aerosol sprays, refrigerants, air conditioners and industrial cleaning materials are known as …

A oxygen atoms.
B chlorine carbons.
C pollutants.
D chlorofluorocarbons.

1.1.6 Moisture which falls from the atmosphere onto the earth's surface is …

A thunderstorm.
B fog.
C precipitation.
D rainfall.

1.1.7 The temperature at which the condensation of water vapour takes place is known as …

A condensation.

B evaporation.

C sublimation.

D dew point temperature

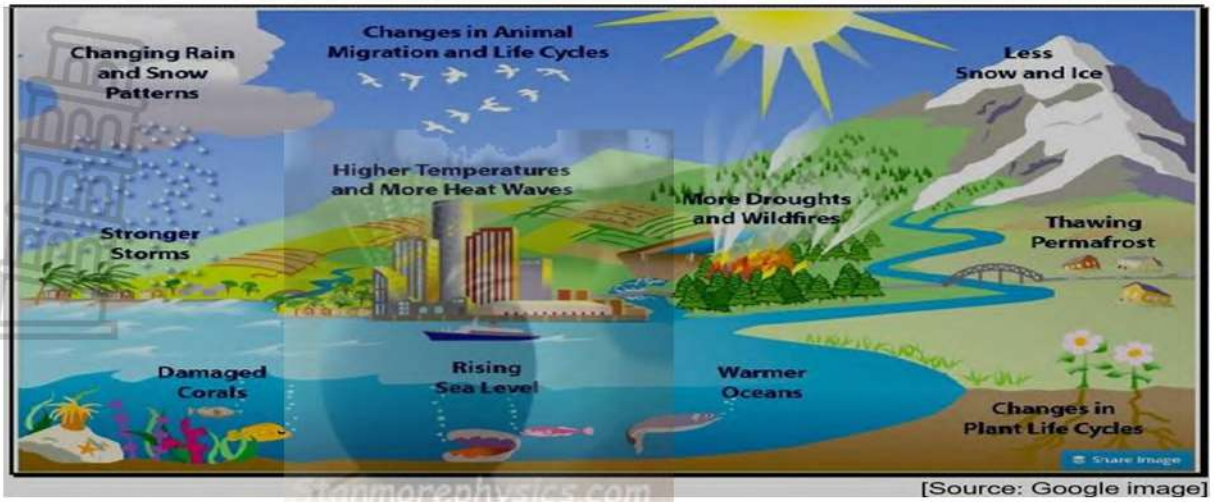
1.1.8 The height above sea level is referred to as

A Longitude
B latitude
C altitude
D radiation (8x1)(8)

1.2 Match the terms in COLUMN B with the descriptions in COLUMN A. Write only the correct letter (A–I) next to the corresponding question numbers (1.2.1–1.2.7) in your ANSWER BOOK, for example 1.2.8 K.

COLUMN A		COLUMN B	
1.2.1	Large, dense, towering clouds that cause thunderstorms	A	insolation
1.2.2	The permanent gas that makes up 21% of the atmosphere and is necessary for respiration	B	terrestrial radiation
1.2.3	A molecule of three oxygen atoms which absorb ultraviolet rays	C	tropopause
1.2.4	Incoming solar radiation	D	cumulonimbus clouds
1.2.5	The heat energy that the earth radiates	E	scattering
1.2.6	The upper layer of the troposphere	F	ozone
1.2.7	Radiation bounces off particles of dust in the atmosphere	G	reflection
		H	Oxygen (7x1)(7)

1.3Refer to FIGURE 1.3 showing the effects of global warming.



[Source: Google image]

1.3.1 Define the term *global warming*. (1 x 1) (1)

1.3.2 Identify TWO effects of global warming in FIGURE 1.3. (2 x 1) (2)

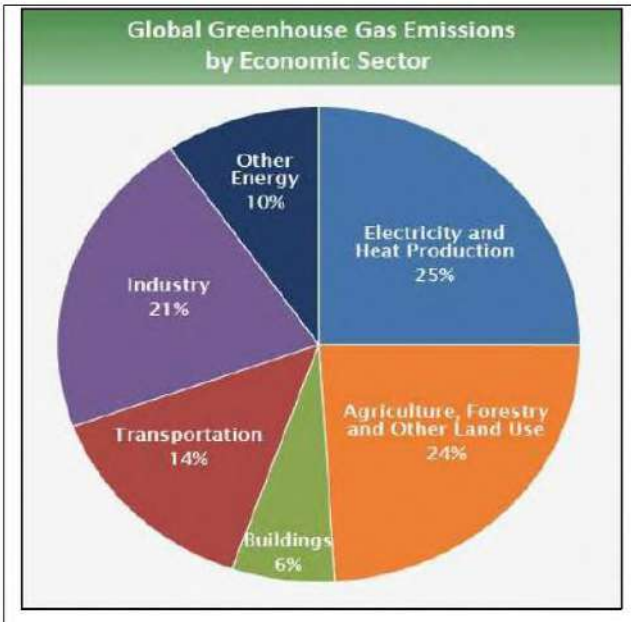
1.3.3 List any TWO gases that contribute to global warming (2 x 1) (2)

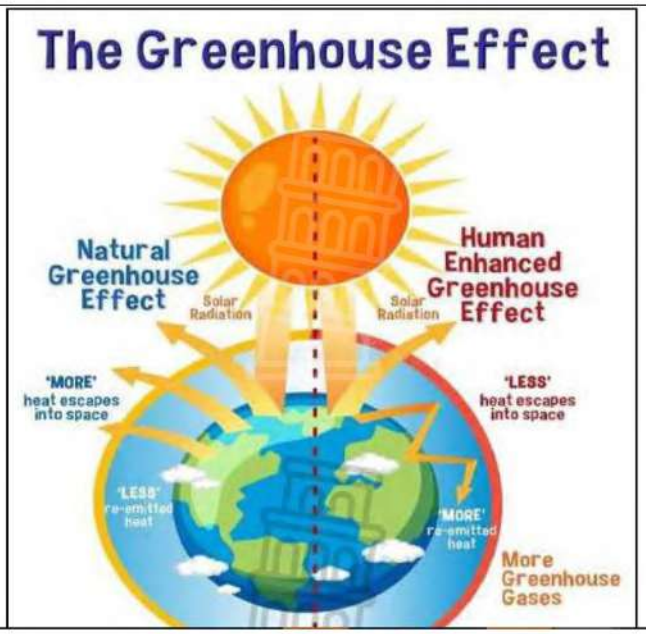
1.3.4 Explain TWO factors that caused the effects identified in QUESTION 1.3.2. (2 x 2) (4)

1.3.5 Discuss THREE sustainable strategies (ways) to reduce global warming. (3 x 2) (6)

/15/

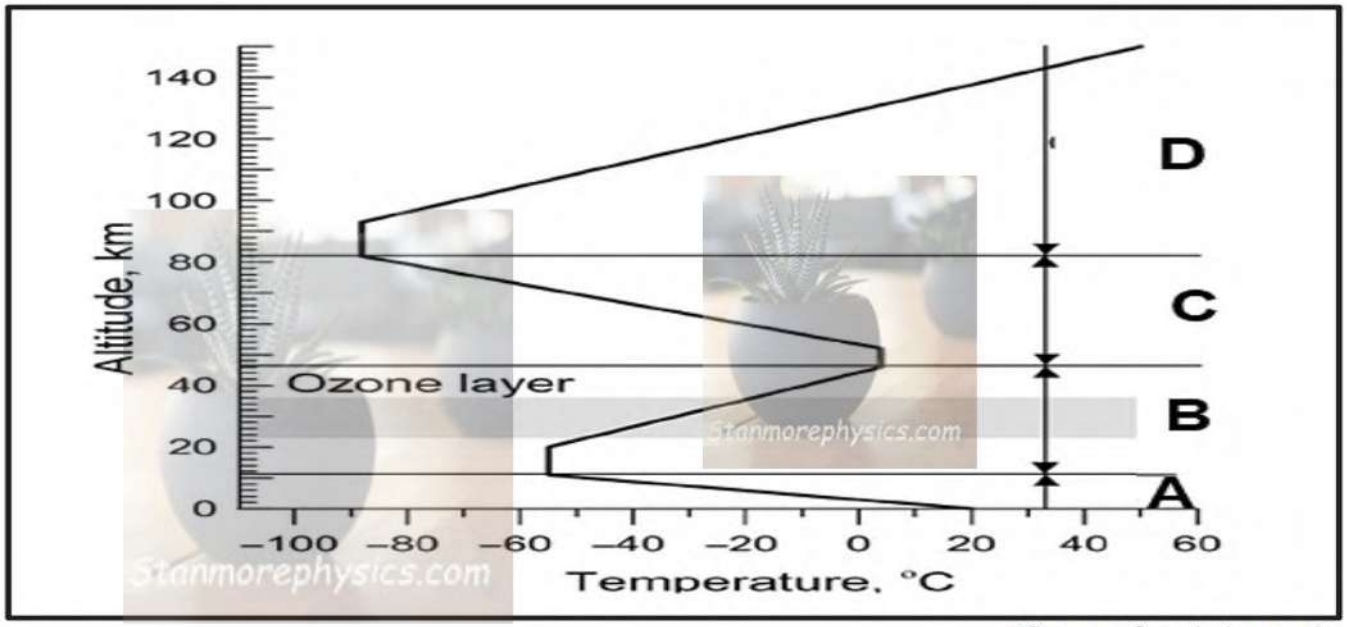
1.4 Study the inforgraphic showing the greenhouse gases





1.4.1. Explain the concept: the *greenhouse effect?* (1x2) (2)
1.4.2. According to the pie graph, which sector contributes the most to greenhouse emissions globally? (1x1)(1)
1.4.3 Name one greenhouse gases emitted by this sector(answer to 1.4.2).
1.4.4 Explain how continuous emission of greenhouse gases will have negative impact on the environment. (2x2)(4)
1.4.5 Suggest three strategies this sector (answer to 1.4.2) can implement to reduce greenhouses gases. (2x3)(6) /15/

1.4 Study FIGURE 1.5 showing the layers of the atmosphere and answer the questions that follow.



[Source: Google Images]

1.5.1 Name the layers labelled **A**, **B**, **C** and **D**. (4 x 1) (4)

1.5.2 State the approximate distance at layer **A**. (1 x 1) (1)

1.5.3 Explain why commercial flights (aeroplanes) usually fly just below layer **B**. (1 x 2) (2)

1.5.4 In a paragraph of approximately EIGHT lines, discuss the importance of the atmosphere. (4 x 2) (8)
/15/

SECTION B: MAPWORK

The following questions are based on the 1: 50 000 topographical map of 2629 DB Ermelo as well as the orthophoto map 2629DB 5 Ermelo of a part of the mapped area.

QUESTION 3

3.1 MAPWORK CALCULATIONS AND TECHNIQUES

3.1.1 Choose the correct word/phrase between brackets.

(a) The contour interval of the orthophoto map is (20 metres/5 metres). (1 x 1) (1)

(b) The 1: 50 000 scale of the topographic map is 5 times (larger/smaller) than the 1: 10 000 scale of the orthophoto map. (1 x 1) (1)

3.1.2 Calculate the straight-line distance in metres (m) that the power line covers from block **C1** to the intersection at R39 in block **D2** (2)

3.1.3 Refer to the area of the orthophoto map dermacated on the topographic map.

Calculate in km^2, the area of the orthophoto map **on** the topographic map. Show ALL calculations. Marks will be awarded according to your calculations. (5 x 1) (5)

3.1.4 Refer to block **D2** on the topographic map.

(a) Calculate the difference in height between spot height 1745,8 and trigonometrical beacon number 305. (2 x 1) (2)

(b) Is the slope steep or gentle between the two points named in QUESTION 3.1.3 (a)? (1 x 1) (1)

Refer to the topographic map

.

3.1.5. What is the compass direction from Trigonometrical station **305** in block **D2** to purification plant in block **D4?** (1x1) (1)

3.1.6. Calculate the True Bearing from Trigonometrical station 305 in block **D2** to purification plant in block **D4?** (1x2) (2)

/15/

3.2 MAP INTERPRETATION

3.2.1 Describe how excavation in block **D1 and E1** can be harmful to the environment and human activity (2 x 2) (4)

3.2.2 Suggest ONE reason why the people of John Voster park settlement would consider the dam in block **D4** as a threat to their lives during flooding.

(1 x 2) (2)

Refer to the table below together with the topographic map to answer the questions that follow.

ERMELO WEATHER BY MONTH / WEATHER AVERAGES

	Januar	Februar	March	April	May	June	July	August	Septem	Octobe	Novem	Decem
Avg. Temperature (°C)	21	21	20	18,1	15,2	12,8	12,8	15	16,9	18,7	19,6	20,6
Precipitation / Rainfall (mm)	148	123	100	43	22	11	13	20	43	92	122	149

3.2.3 What was the mean monthly temperature for June?

(1 x 1) (1)

3.2.4 State the month in which Ermelo receives its highest rainfall.

(1 x 1) (1)

3.2.5 Calculate the mean annual temperature range for Ermelo.

(2 x 1) (2)

3.2.6 Ermelo receives less than average rainfall. Provide TWO pieces of evidence from the map showing that Ermelo receives seasonal rainfall.

(2x2) (4)

3.2.7. The orthophoto is an example of a …

A. Low oblique aerial photograph

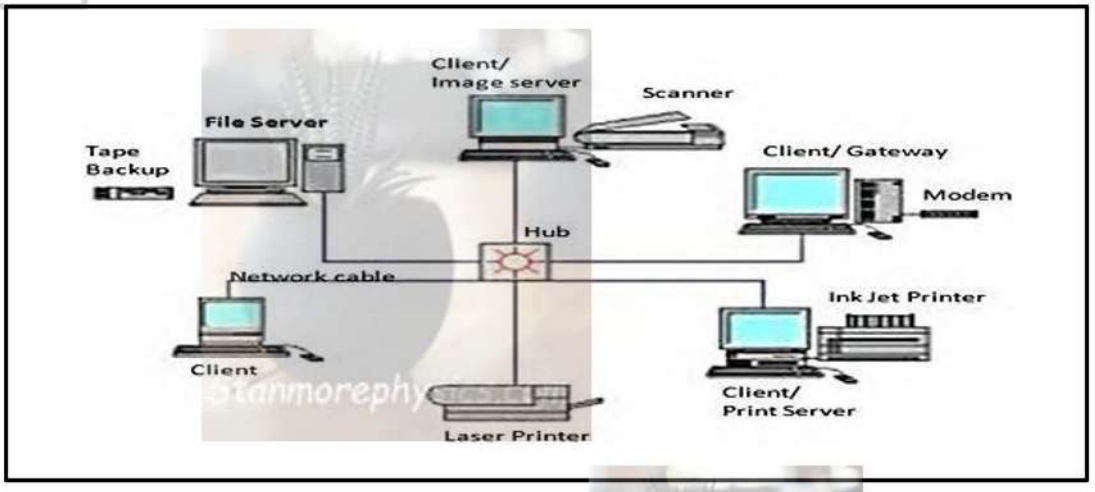
B. High oblique aerial photograph

C.Vertical photograph

D.Horizontal photograph (1x1) (1) /15/

3.3 **GIS**

Refer to FIGURE 3.3 below which shows parts of a GIS component system and how it operates to answer the following questions.



3.3.1 Write the acronym GIS in full. (1 x 1) (1)

3.3.2 List 3 components of GIS. (3x1) (3)

3.3.3 Is the Orthophoto an example of raster data or vector data? (1 x 1)(1)

3.3.4 Refer to block **D2** on the topographic map. Classify the following features under **node** (point), **linear** (line) and **polygon** (area).

Draw the table below in your ANSWER BOOK and mark with an **X** in the space that corresponds with the feature in block **D2**.

FEATURE	NODE	LINEAR	POLYGON
Cultivated land			
Reservoir			
Main road			

(2 x 1) (3)

3.3.5 Explain the importance of using GIS in today's fast-changing world.

(1 x 2) (2)
[40]

TOTAL: 100

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GEOGRAPHY MIDTERM TEST TERM 1

MARKING GUIDELINE

GRADE: 10

DATE: 26 FEBRUARY 2025

THIS MARKING GUIDELINE CONSISTS OF 6 PAGES

1.1.1 insolation

1.1.2 A (convection)

1.1.3 D (greenhouse gases)

1.1.4 D (troposphere)

1.1.5 D (chlorofluorocarbons)

1.1.6 C (precipitation)

1.1.7 A (frost)

1.1.8 C (synoptic weather map) (8 x 1) (8)

1.2 1.2.1 D (Cumulonimbus cloud)

1.2.2 H (Oxygen)

1.2.3 F (Ozone)

1.2.4 A (Insolation)

1.2.5 B (Terrestrial radiation)

1.2.6 C (Tropopause)

1.2.7 E (Scattering) (7 x 1) (7)

1.3 1.3.1 Global warming is the increase in the average temperature of the earth's atmosphere.
(Concept) (1 x 1) (1)

1.3.2 Changing rain and snow patterns
Changes in animal migration and life cycles
Less snow and ice
Higher temperatures and more heat waves
Stronger storms
More droughts and wildfires
Thawing permafrost
Damaged corals
Rising sea levels
Warmer ocean (Any 2 x 1) (2)

1.3.3 Methane
Carbon dioxide
Nitrous oxide
Ozone
Chlorofluorocarbon (Any 2 x 1) (2)

1.3.4 Power stations and factories burn fossil fuels
Deforestation
Livestock especially cattle
Aerosols release CFCs and harlocarbons into the atmosphere
Waste dumps release methane into the atmosphere
Increasing rice production causes the release more methane
(Any 2 x 2) (4)

1.3.5 Reduce the overall emissions of greenhouse gases
Use solar energy
Reduce the emission of methane
Promote sustainable forms of agriculture
Heavy fines
Reduce population numbers
Plant more trees to absorb
Use public transport
Public education (Any 3 x 2) (6)

1.4.

1.4.1. The process whereby heat is trapped close to the surface of the earth by greenhouse gasses. (2)
(CONCEPT) (1x2) (2)

1.4.2. Electricity and heat production (1) (1x1) (1)

1.4.3. Carbon dioxide (2) (2x1) (2)

1.4.4. Global temperature rises and leads to the melting of Ice caps. (2)
Plants and animals that cannot adapt to higher temperatures die and become extinct. (2)
More droughts and floods (2)
Warmer oceans leads to marine life and coral reefs to die. (2)
(ANY TWO) (2x2) (4)

1.4.5. Introduce measures to save electricity. (2)
Switch to renewable sources of generating electricity. (2)
Introduce carbon tax on generation of electricity. (2)
Introduce an energy tax on combined heat and power (2)
(ANY THREE) (3x2) (6)

1.5 1.5.1 A – Troposphere
B – Stratosphere
C – Thermosphere
D – Mesosphere (4 x 1) (4)

1.5.2 10 to 12 km (1 x 1) (1)

1.5.3 The low temperatures in this layer help to reduce fuel consumption (2)
Bad weather is less in this layer
Less turbulence/shaking of the aeroplane due to clear weather
(Any 1 x 2) (2)

1.5.4 **Importance of the atmosphere**
It helps to experience different weather conditions and climate
It absorbs dangerous radiation from the sun
It protects people against extremely high and extremely cold temperatures
It contains gases that are necessary for life on earth

It contains ozone that protects the earth from ultraviolet rays (Any 4 x 2) 8

15

SECTION B QUESTION 3

3.1 MAPWORK CALCULATIONS AND TECHNIQUES

3.1.1 (a) 5 metres (1 x 1) (1)

(b) 5 times smaller (1 x 1) (1)

3.1.2 6,5 cm(1) x 500m = 3250m (1) range (6,4 -6,6) (2)

3.1.3 Area = length (L) x breadth (B)

= Length 4, 2 cm(1) x 0, 5 = 2, 1 km range (4, 1-4, 3)

= Breadth 3, 8 cm (1) x 0, 5 = 1, 9 km range (3, 7 -3, 9)

= 2,1 km x 1,9 km (1)

= 3,99 km^2 (2) (5 x 1) (5)

3.1.4 (a) Difference in height = 1763,8m -1745,8 m

= 18 m (2 x 1) (2)

(b) Gentle, contour lines are far apart. (1 x 1) (1)

3.2 MAP APPLICATION AND INTERPRETATION

3.2.1
- The landscape loses shape
- It leads to land degradation /desertification
- Top soil/fertile soil with nutrients is lost
- Land loses importance for cultivation
- Plant and animal species lost by clearing vegetation
- It facilitates soil erosion

(**Any TWO**) (2 x 2) (4)

3.2.2
- Dam water can overspread causing flood into the settlement
- They are located on a lower ground
- Mosquitos in summer cause malaria (disease)
- Unclean water especially in dry seasons cause cholera

(**Any ONE**) (1 x 2) (2)

Refer to the table below together with the topographic map to answer the questions that follow.

3.2.3 What was the mean monthly temperature for June?

12,8 degrees Celsius √/12,8 °C

(1 x 1) (1)

3.2.4 State the month in which Ermelo receives its highest rainfall.

December √

(1 x 1) (1)

3.2.5 Calculate the mean annual temperature range for Ermelo.

21 °C – 12,8 °C √ = 8,2 °C √

(2 x 1) (2)

3.2.6 Ermelo receives less than average rainfall. Provide TWO pieces of evidence from the map showing that Vryheid receives seasonal rainfall.

Presence of non-perennial rivers √
Wind pumps √
Reservoirs √ **[Any TWO]**

(2 x 1) (2)

3.2.7 C

3.3 **GIS**

3.3 3.3.1 Geographical Information System (1 x 1) (1)

3.3.2 Software √/Users √/Procedures or Methods √/Data √/Network √ (3)

(3 x 1)

3.3.3 Raster (1 x 1) (1)

3.3.4

FEATURE	NODE	LINEAR	POLYGON
Cultivated land			X
Reservoir	X		
Main road		X	

(3 x 1) (3)

3.3.4
- Computers are faster
- More information is coming into the world
- GIS can be used in daily lives

(**Any ONE**) (1 x 2) (2)

TOTAL SECTION B: 30