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education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

# PROVINCIAL ASSESSMENT

## GRADE 11

## GEOGRAPHY P1

## JUNE 2024

**MARKS:** 150

**TIME:** 3 hours

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**This question paper consists of 17 pages.**

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**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of TWO SECTIONS.

   SECTION A
   QUESTION 1: CLIMATE AND WEATHER (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 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 topographic map 3126DD QUEENSTOWN and a 1 : 10 000 orthophoto map 3126DD 1 NOOITGEDACHT 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 steps in calculations.
17. You must hand in the topographic and orthophoto map to the invigilator at the end of this examination session.

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## SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

## QUESTION 1: CLIMATE AND WEATHER

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.7) in the ANSWER BOOK, e.g. 1.1.8 D.

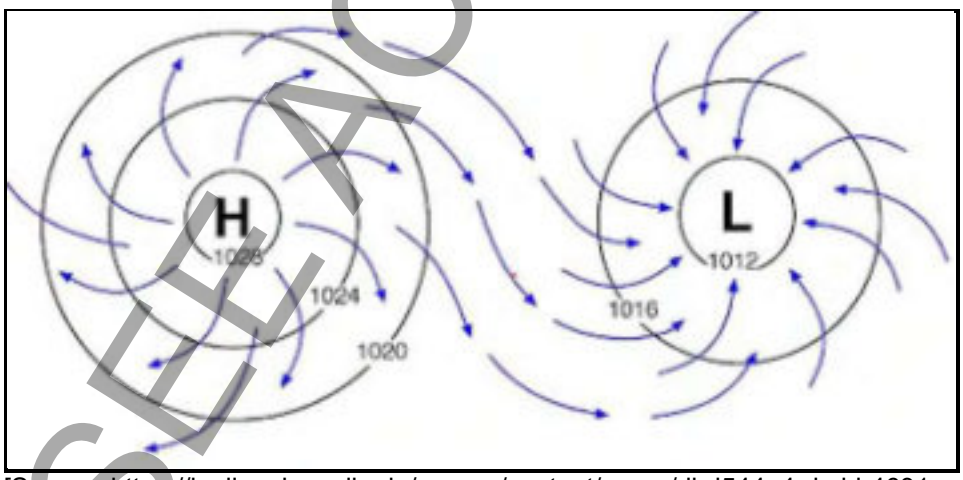
1.1.1 A force that determines the speed at which air flows from a high pressure region to a low pressure region.

A Coriolis force
B Geostrophic flow
C Mobility flow
D Pressure gradient force

1.1.2 When air temperature is …, air is heavy and sinks creating high pressure.

A normal
B average
C high
D low

1.1.3 The diagram below shows that air moves …



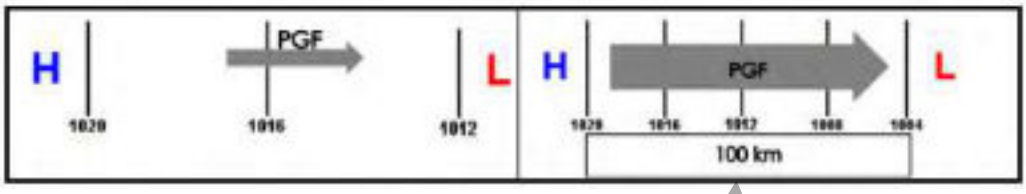

[Source: https://laulima.hawaii.edu/access/content/group/dbd544e4-dcdd-4631-b8ad-3304985e1be2/book/chapter_4/motion.htm]

A from a low pressure to a high pressure.
B from a high pressure to a low pressure.
C descends at a low pressure.
D rises at a high pressure.

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1.1.4 According to Ferrel's law when your back is to the wind, deflection takes place to the left in the …




Source: File:///C:/Users/HS%20Brits%20Adjunk%20Hoof/Downloads/ Geography %20 Grade%2011%20Term%201%20Week%203_2021%20(1).pdf

A eastern hemisphere.
B western hemisphere.
C southern hemisphere.
D northern hemisphere.

1.1.5 The rate of change at the gentle PGF is only … hPa over 100 kilometers.

A 4 hPa
B 8 hPa
C 12 hPa
D 16 hPa

1.1.6 When the lines of a PGF are far apart the …

A air pressure gradient is gentle and the wind speed is low.
B air pressure gradient is steep and the wind speed is high.
C air pressure gradient is gentle and the wind speed is high.
D air pressure gradient is steep and the wind speed is low.

1.1.7 Pressure is indicated on synoptic charts by lines called ...

A isobars.
B isohels.
C isohyets.
D contour lines.

(7 x 1) (7)

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1.2 Refer to the cartoon, which shows drought in Cape Town. Complete the statements in COLUMN A with the options in COLUMN B. Write only **Y** or **Z** next to the question numbers (1.2.1 to 1.2.8) in the ANSWER BOOK, e.g. 2.2.9 Y.




[Source: https://twitter.com/zapiro/status/921278147856949248]

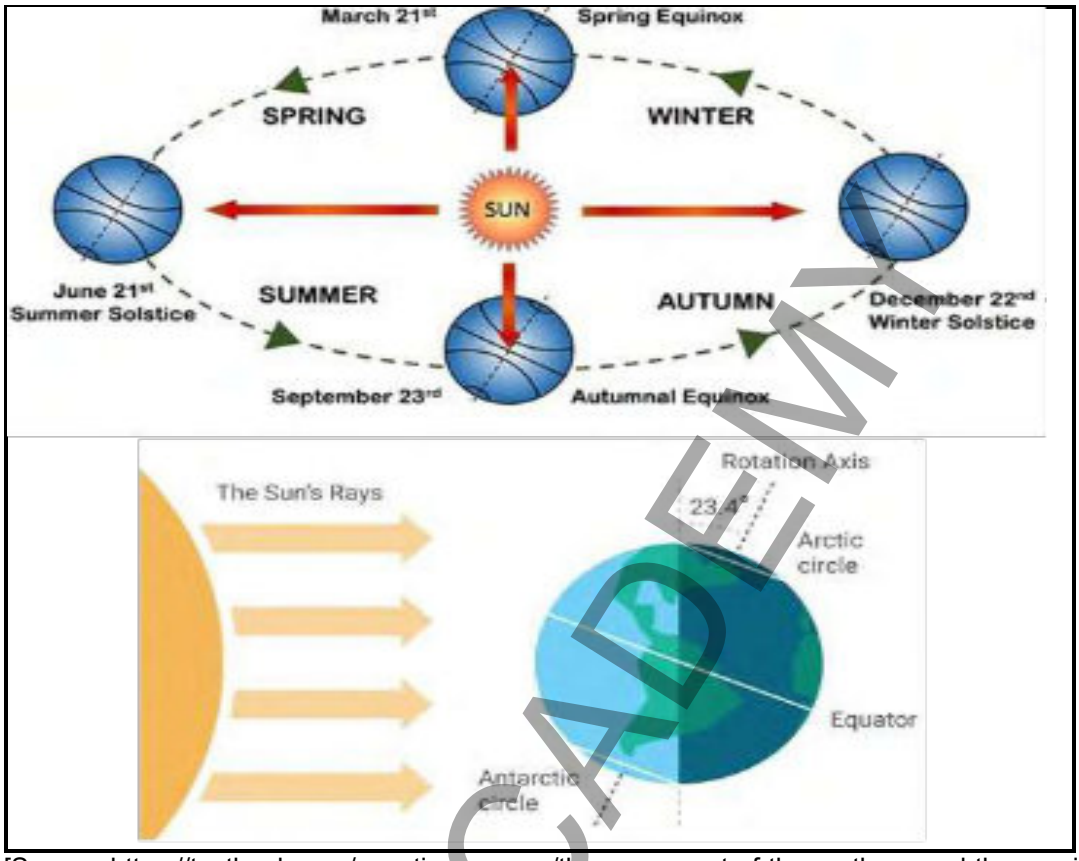
| COLUMN A | | COLUMN B | |
|---|---|---|---|
| 1.2.1 | The cartoon suggests the area to have conditions of … | **Y**<br>**Z** | drought<br>desertification |
| 1.2.2 | A drought is … | **Y**<br>**Z** | a long period without rain<br>fertile areas becoming more arid |
| 1.2.3 | The availability of food and people having access to it. | **Y**<br>**Z** | Food security<br>Food insecurity |
| 1.2.4 | A physical impact of the cartoon. | **Y**<br>**Z** | Swimming pool dry up<br>Soil erosion |
| 1.2.5 | Causes of the problem in the cartoon. | **Y**<br>**Z** | Low pressure systems<br>High pressure systems |
| 1.2.6 | Water restrictions and water shortages force industries to reduce production. | **Y**<br>**Z** | A challenge for the economy<br>A challenge for the tourism industry |
| 1.2.7 | The construction of … dams helps to increase the water holding capacity. | **Y**<br>**Z** | wide and shallow<br>deep and narrow |
| 1.2.8 | A sustainable measure to address challenges. | **Y**<br>**Z** | Drought awareness<br>Adapt to the changes |

(8 x 1) (8)

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1.3 Refer to the sketches below regarding the significance of the Earth's axis and revolution around the sun.




[Source: https://testbook.com/question-answer/the-movement-of-the-earth-around-the-sun-is-known--60cadad6da92e204f43a5cd9]

1.3.1 The Earth rotates on an imaginary axis. How many degrees is the Earth tilted? (1 x 1) (1)

1.3.2 The Earth rotates in an anticlockwise direction or from … to … (1 x 1) (1)

1.3.3 a) Give the date of the summer solstice in the southern hemisphere? (1 x 1) (1)

b) Explain how seasons occur. (2 x 2) (4)

1.3.4 Differentiate between equinox and solstice. (2 x 2) (4)

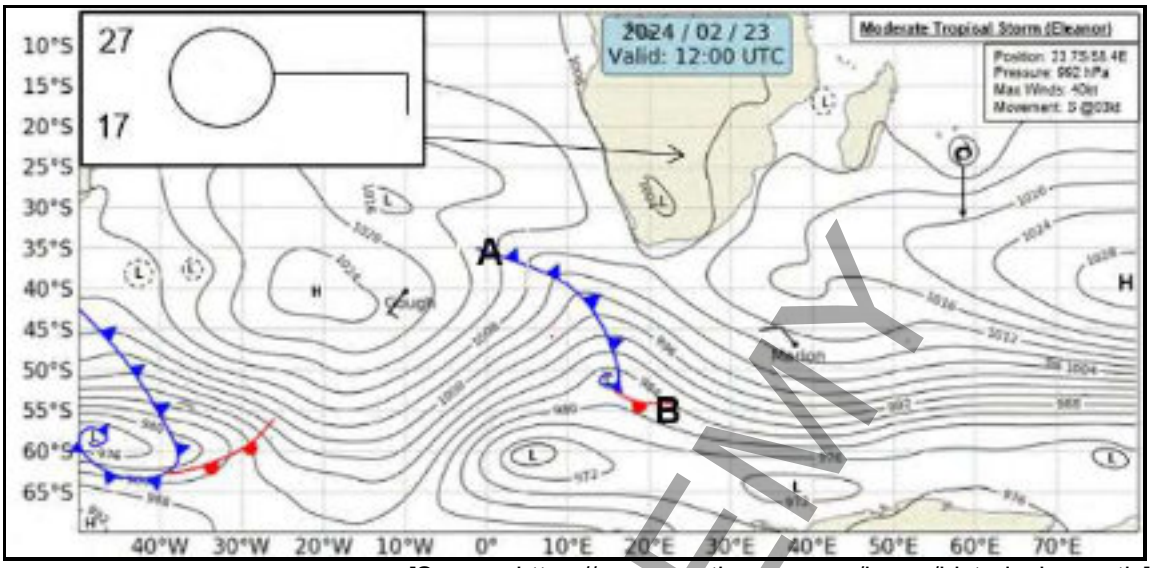
1.3.5 Explain the reason why the equator is warmer than the poles. (2 x 2) (4)

**[15]**

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1.4 Refer to the synoptic weather map below.




[Source: https://www.weathersa.co.za/home/historicalsynoptic]

1.4.1 Which season does the synoptic weather map indicate? (1 x 1) (1)

1.4.2 Give TWO reasons for your answer to QUESTION 1.4.1. (2 x 2) (4)

1.4.3 Identify weather features **A** and **B**. (2 x 1) (2)

1.4.4 Name the pressure belts that are found in the following latitudinal position.

a) Around 0º
b) Around 30º (2 x 1) (2)

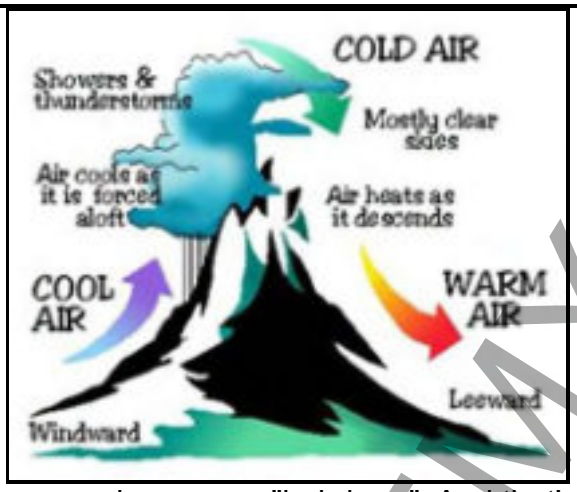
1.4.5 Describe the weather station for Taung in the North West province. (2 x 3) (6)

**[15]**

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1.5 Refer to the sketch and case study below on Föhn winds.




It's a word that, in German, also means "hairdryer". And that's just what it's like. A hot, dry wind that sweeps down a mountainside, baking everything in its path. It is powerful enough to raise air temperatures by many degrees. This is the strange, and sometimes dangerous, weather event known as Föhn.

The term Föhn comes from the Alpine region of Europe but the same effect has been given different names elsewhere in the world. In parts of the US, such as in the Rocky Mountains and Alaska, they are known as Chinook winds, while in South Africa it is Bergwind.

Wildfires, supercharged by strong winds and a heatwave with temperatures exceeding 40°C, have left the land scorched, at least 40 people dead and thousands more forced to flee. On the opposite side of the Mediterranean huge wildfires in Algeria and Tunisia have claimed dozens of lives and led to widespread evacuations.

Source: https://www.bbc.com/future/article/20230817-the-weird-wind-that-cansupercharge-heatwaves-and-wildfire

1.5.1 Define the term *Föhn* wind. (1 x 2) (2)

1.5.2 Give the name of the side of the mountain where warm wind rises. (1 x 1) (1)

1.5.3 Explain the process taking place at the leeward side of the mountain. (2 x 2) (4)

1.5.4 In a paragraph of approximately EIGHT lines, explain possible challenges that a Föhn wind can cause for the environment. (4 x 2) (8)

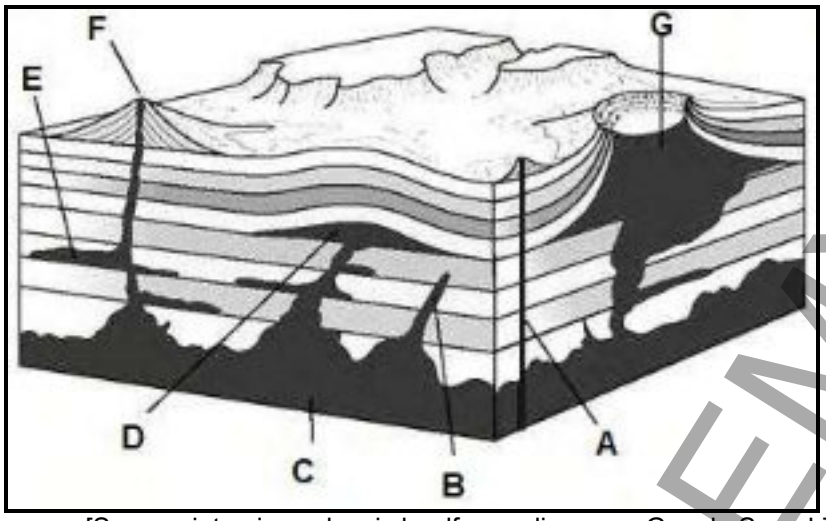
**[15]**

**TOTAL QUESTION 1: 60**

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2.1 Refer to the sketch below based on features of intrusive volcanism. Match each of the descriptions (2.1.1 to 2.1.7) with the letters on the sketch below, e.g. 2.1.8 H.




[Source: intrusive volcanic landforms diagram - Google Search]

2.1.1 It is the largest of all intrusive forms, covering thousands of square km.

2.1.2 A rupture in the crust of the Earth, that allows hot lava, volcanic ash, and gases to escape.

2.1.3 The exposed laccolith then forms a hill or mountain.

2.1.4 A horizontal intrusion of igneous rock that forms a sheet.

2.1.5 It is an igneous intrusion that forms when sedimentary strata sag creating a basin shaped mass.

2.1.6 A vertical intrusion of igneous rock that forms a wall.

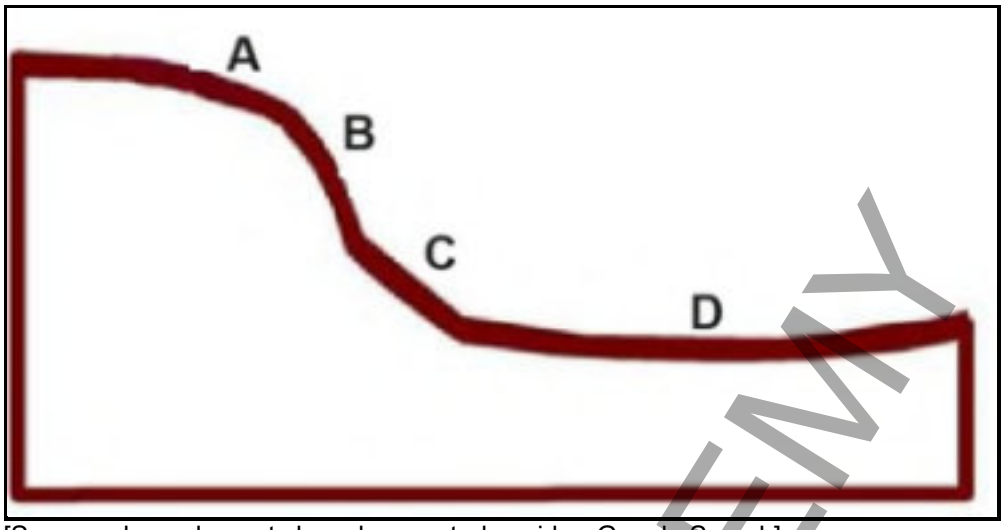
2.1.7 It is an igneous intrusion that forms when strata are forced upwards thus forming a mushroom shape. (7 x 1) (7)

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2.2 Match the correct slope from the table below to the letter. Write only the letter next to the question number (2.2.1 to 2.2.8) for example 2.2.9 I




[Source: slope elements boardmans study guide - Google Search]

2.2.1 A low-angled concave slope.

2.2.2 Soil creep occurs here.

2.2.3 The slope is mostly suitable for farming.

2.2.4 The most vertically inclined slope.

2.2.5 Has a constant angle.

2.2.6 The slope is also called the debris slope.

2.2.7 Eroded materials cannot accumulate on this slope.

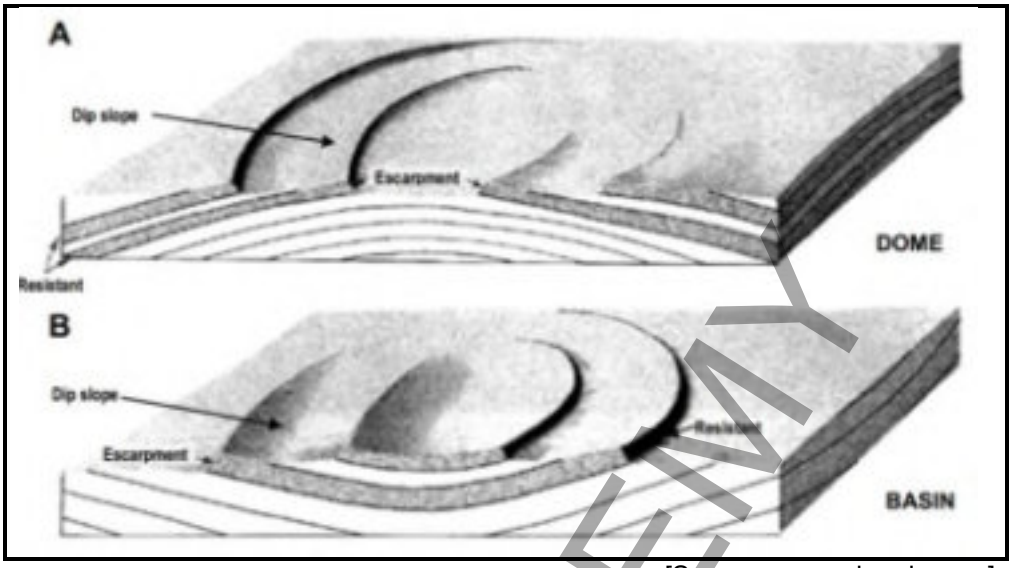
2.2.8 This slope is convex in shape. (8 x 1) (8)

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2.3 Refer to diagrams **A** and **B** below, showing cuestas.




[Source: geo,mdu,edu.com]

2.3.1 Define the concept *cuesta*. (2 x 1) (2)

2.3.2 Describe the difference in the formation of cuestas in diagrams **A** and **B**. (2 x 2) (4)

2.3.3 Other than cuestas, name ONE other type of ridge. (1 x 1) (1)

2.3.4 Describe the difference between the dip slope and the scarp slope of a cuesta. (2 x 2) (4)

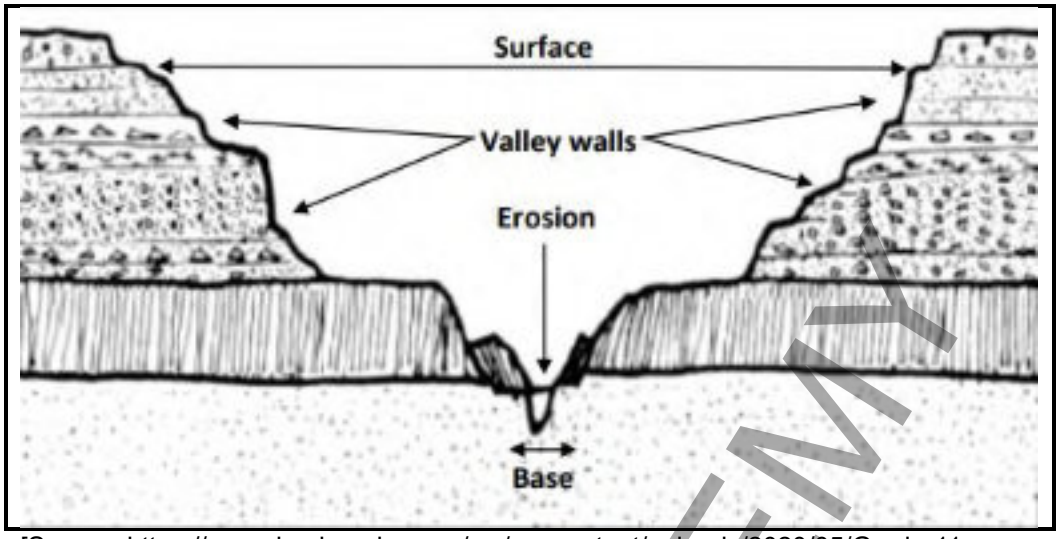
2.3.5 Explain how humans can utilise cuestas. (2 x 2) (4)

**[15]**

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2.4 Refer to the diagram below showing a valley.




[Source: https://news.hselspark.co.za/wp/wp-content/uploads/2020/05/Grade-11-Geomorphology-Test.html]

2.4.1 Canyon landscapes develop in (horizontal strata/tilted sedimentary) rock. (1 x 1) (1)

2.4.2 Draw a free hand sketch of contour lines representing the canyon above. (1 x 2) (2)

2.4.3 Explain the main process responsible for the development of a canyon. (2 x 2) (4)

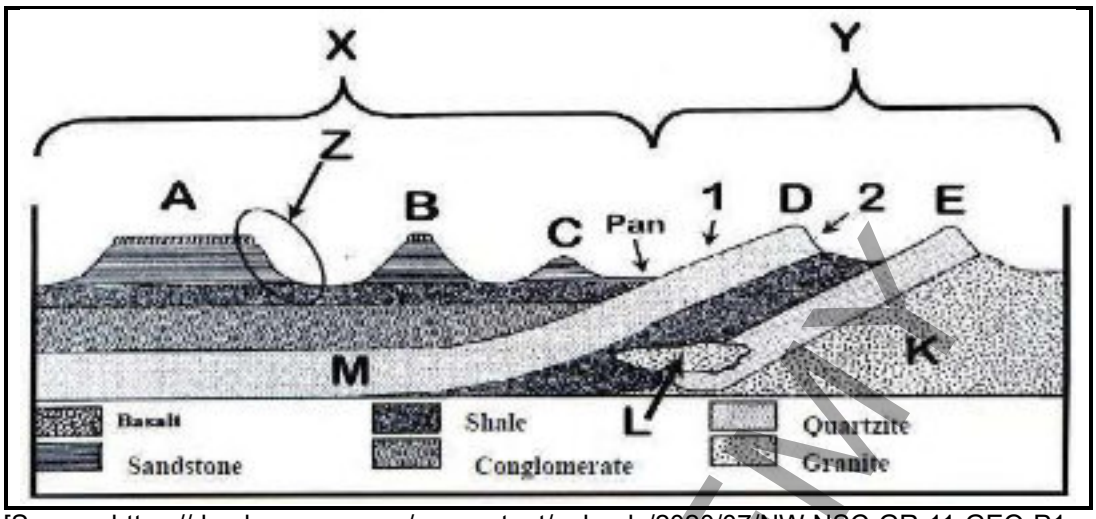
2.4.4 What impact does canyon landscapes have on people? (2 x 2) (4)

2.4.5 Explain how karoo landscapes form millions of years after a canyon landscape. (2 x 2) (4)
**[15]**

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2.5 Refer to the source below showing structural landforms.




[Source: https://desd.nwpg.gov.za/wp-content/uploads/2020/07/NW-NSC-GR-11-GEO-P1-ENG-ANNEXURE-NOV-2019.pdf]

2.5.1 Identify the rock structure at **X** and **Y**. (2 x 1) (2)

2.5.2 Is landform **D** horizontal or inclined? (1 x 1) (1)

2.5.3 Differentiate between landforms **A** and **B**. (2 x 2) (4)

2.5.4 In a paragraph of approximately EIGHT lines, explain the significance (importance) of the structural landforms to humans. (4 x 2) (8)

**[15]**

**TOTAL QUESTION 2: 60**

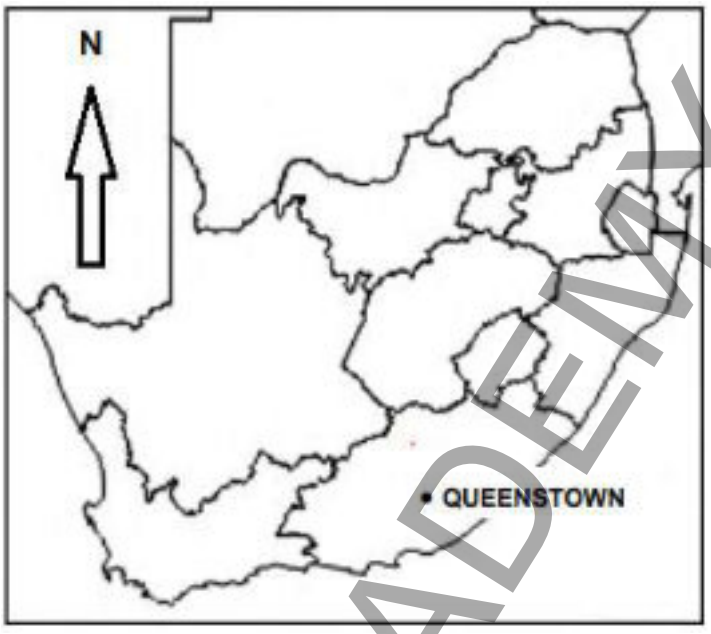
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**SECTION B**

**QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES**

**BACKGROUND INFORMATION ON QUEENSTOWN**




Coordinates: 31°54'S; 26°53'E

Queenstown is a town in the Eastern Cape in South Africa. It lies on the Komani River, which forms part of the Great Kei system of rivers. Queenstown has a refreshing climate and plentiful water supply from the surrounding rugged mountains.

The Queenstown area is in the Burgersdorp Formation of the Tarkastad sub group, in the upper Beaufort Group Triassic in age in the karoo super group. The lithology is red mudstone 1 to 10 m rich layers and sub-ordinate 1 to 2 m rich sandstone layers deposited by meandering rivers in the flood plain in an oxidising environment gradually filling the Karoo basin. The formation reaches thickness of 600 m in the Komani (Queenstown) and Lady Frere area. Numerous dolerite dykes and ring structures intruded the area creating localities for ground water exploration.

[Adapted from http://en.wikipedia.org/wiki/Queenstown, Eastern Cape]

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

| ENGLISH | AFRIKAANS |
|---|---|
| Diggings | Uitgrawings |
| Golf course | Gholfbaan |
| River | Rivier |
| Sewerage works | Rioolwerke |
| Estate | Landgoed |
| Salt pan | Soutpan |

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## 3.1 MAP SKILLS AND CALCULATIONS

3.1.1 Queenstown is situated in the …

A North west
B Limpopo
C Free state
D Eastern cape (1 x 1)(1)

3.1.2 The numbers **3126** in the map index refers to …

A 31' latitude and 26' longitude.
B 26' latitude and 31' longitude.
C 26° latitude and 31° longitude.
D 31° latitude and 26° longitude. (1 x 1)(1)

3.1.3 The feature found at grid reference 31°49'06" S; 26°48'19" E is a …

A spot height 1326
B cultivated land
C row of trees
D non-perennial river (1 x 1)(1)

3.1.4 Refer to the topographic map

Give the difference in height between the trigonometrical station number 173 in block **E3** and trigonometrical station number 270 in block **B2**. (1 x 1)(1)

3.1.5 Is the slope calculated in question 3.1.4 steep or gentle? (1 x 1)(1)

3.1.6 Calculate the magnetic declination of the map for 2024. (5 x 1)(5)

**[10]**

## 3.2 MAP INTERPRETATION

Refer to the orthophoto map.

3.2.1 The natural feature in block **B4** and **C4** on the orthophoto map is a …

A spur.
B gap.
C saddle.
D valley. (1 x 1)(1)

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3.2.2 Feature **11** on the orthophoto map is a/an …

A dam.
B coastal rock.
C woodland.
D golf course. (1 x 1)(1)

Refer to the table and answer the following questions.

Climate data for Queenstown

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average precipitation | 77 | 88 | 83 | 40 | 24 | 14 | 13 | 16 | 26 | 40 | 58 | 72 |

3.2.3 Name the season in which Queenstown receives its highest rainfall. (1 x 1) (1)

3.2.4 Which weather system is responsible for Queenstown receiving its highest rainfall in the season named in QUESTION 3.2.3? (1 x 2)(2)

Refer to block **B4** on the topographical map.

3.2.5 (a) Is the hiking recommended for novice (first-time) or expert hikers? (1 x 1)(1)

(b) Motivate your answer to QUESTION 3.2.5 (a). (1 x 2)(2)

3.2.6 Explain TWO reasons for the rivers flowing from east to west in block **D4**. (2 x 2)(4)
**[12]**

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## 3.3 GEOGRAPHICAL INFORMATION SYSTEMS

Refer to the topographic map.

3.3.1 Define the term *attribute* data. (1 x 1)(1)

3.3.2 Explain ONE attribute that influenced the location of the silo in block **C3**. (1 x 2)(2)

Refer to the orthophoto map.

3.3.3 The orthophoto map has a high resolution. Does this mean that the orthophoto map has a low level of clarity? (1 x 1)(1)

3.3.4 Explain why the orthophoto map has a high level of clarity. (1 x 2)(2)

3.3.5 The cultivated land in block **E4** and **E5** is an example of co-ordinate-based. Explain the statement. (1 x 2)(2)

**[8]**

**TOTAL SECTION B: 30**

**GRAND TOTAL: 150**

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