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education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 11

GEOGRAPHY P1
NOVEMBER 2024

MARKS: 150

TIME: 3 hours

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This question paper consists of 16 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 topographical map 3319 AD CERES and an 1: 10 000 Orthophoto map 3319 AD 12 CERES are provided.
15. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.
16. Marks will be allocated for steps in calculations.

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SECTION A: CLIMATE, 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 1.1.8) in the ANSWER BOOK, e.g. 1.1.9 D.

1.1.1 The seasons occur as a result of …

A insolation.
B rotation.
C revolution.
D ocean currents.

1.1.2 The Earth receives more energy than it needs at the equator as …

A energy surplus.
B energy distribution.
C energy deficit.
D energy balance.

1.1.3 The path that the Earth travels around the sun is called …

A perihelion.
B revolution.
C axis.
D orbit.

1.1.4 The summer solstices in the Southern Hemisphere are characterised by …

A days and nights being of equal length.
B short days and long nights.
C long days and short nights.
D long days and long nights.

1.1.5 Hot air that is drawn towards a low pressure on the surface of the Earth …

A lowers temperature.
B forms clouds.
C converges.
D diverges.

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1.1.6 The further one moves away the equator, the more insolation will …

A decrease.
B increase.
C fluctuate.
D stay the same.

1.1.7 The amount of insolation that heats the atmosphere depends on …

A winds.
B the latitude.
C the Coriolis force.
D high temperature. (7 x 1) (7)

1.2 Choose a statement in COLUMN B that matches the description in COLUMN A. Write only the letter (A–I) next to the question numbers (1.2.1 to 1.2.8) in the ANSWER BOOK. e.g. 1.2.9 J.

COLUMN A	COLUMN B
1.2.1 Solstice	A The deflection of winds caused by … the rotation of the earth
1.2.2 Equinox	B Horizontal movement of air across the isobars from a high pressure to a low pressure
1.2.3 Coriolis effect	C Large body of air with the same temperature and humidity
1.2.4 Pressure gradient	D These are strong winds blowing from west to east in the upper atmosphere
1.2.5 Geostrophic wind	E The boundary between the sunlight and dark hemisphere
1.2.6 Jet streams	F The movement of air parallel to the isobars
1.2.7 Circle of illumination	G The time of the year when day and night is of equal length in both the northern and southern hemispheres
1.2.8 Air mass	H The time of the year on which the overhead sun shines on the Tropic of Cancer or the Tropic of Capricorn
	I The orientation of the Earth's axis at any position in its orbit is always parallel to that in any other position

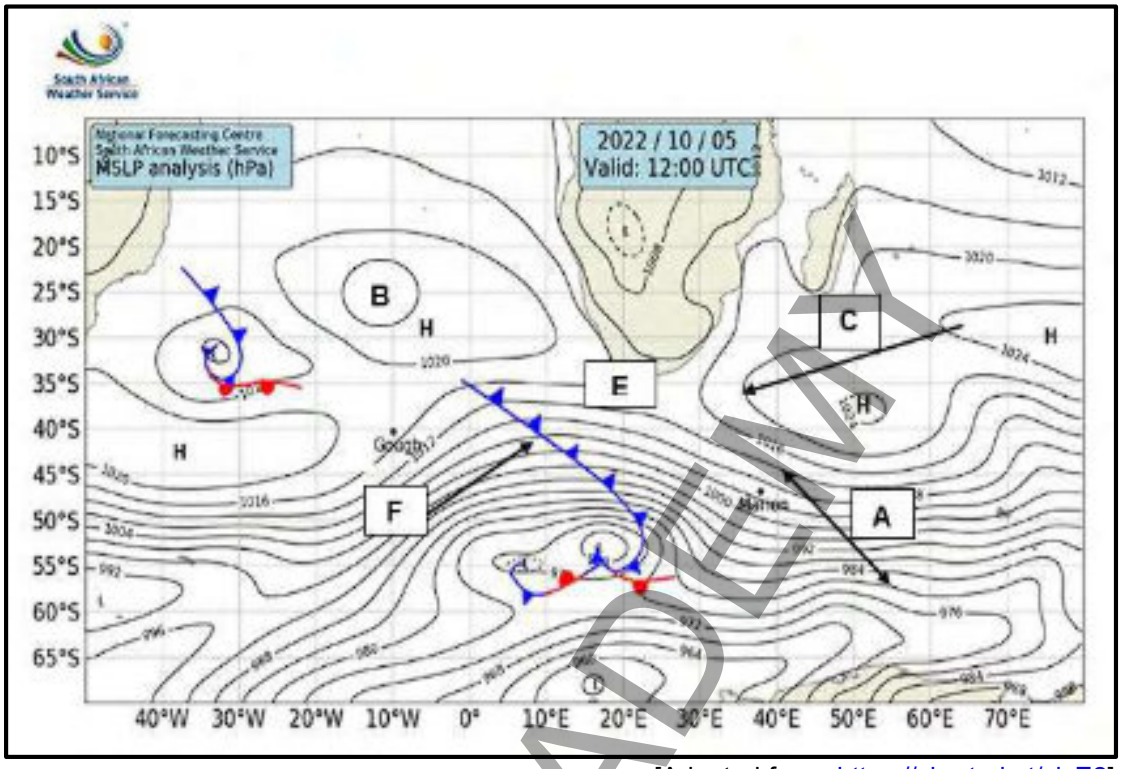
(8 x 1) (8)

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1.3 Refer to the synoptic weather map below.



[Adapted from: https://shorturl.at/clsE2]

1.3.1 The pressure gradient at **A** is (steep/ gentle), due to isobars being located closer together. (1 x 1) (1)

1.3.2 Identify the high-pressure cell at **B**. (1 x 1) (1)

1.3.3 In which direction does the air circulate around the high pressure cell identified in QUESTION 1.3.2? (1 x 1) (1)

1.3.4 Draw a weather station of Gough Island that indicates the following weather conditions:

(a) Cloud cover: Overcast

(b) Wind direction: South West

(c) Air temperature: 13 °C

(d) Dew point temperature: 11°C (4 x 1) (4)

1.3.5 **Refer to weather phenomenon at F.**

(a) Name the front of the weather phenomenon at **F** (1 x 1) (1)

(b) In which general direction does this weather phenomenon move? (1 x 1) (1)

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(c) Name the planetary wind belt that steers this weather phenomenon in the direction mentioned in QUESTION 1.3.5 (b). (1 x 2) (2)

(d) Discuss how the weather conditions will change when this weather phenomenon **F** moves pass Cape Town. (2 x 2) (4)

1.4 Refer to the cartoon about an agricultural drought below.



[Adapted from: https://shorturl.at/KhjSw]

1.4.1 Define the term *drought*. (1 x 2) (2)

1.4.2 State ONE cause of drought. (1 x 1) (1)

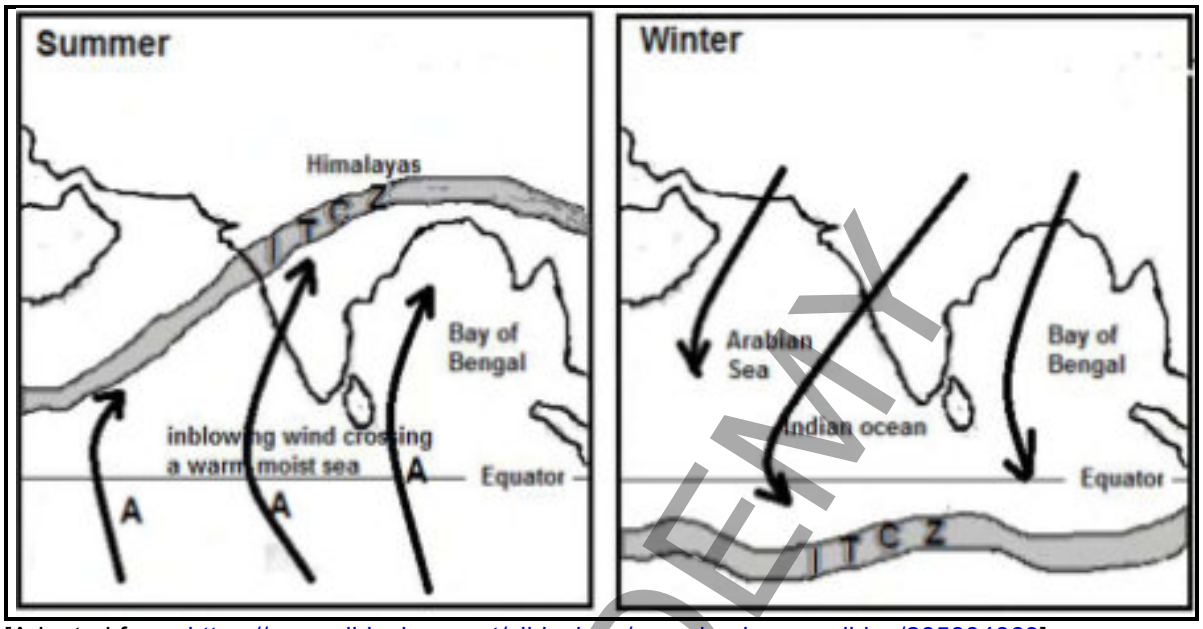
1.4.3 Why are developing countries more vulnerable (at risk) to droughts than developed countries? (2 x 2) (4)

1.4.4 In a paragraph of approximately EIGHT LINES, briefly discuss sustainable measures that could be implemented to manage droughts effectively. (4 x 2) (8)

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1.5 Study the FIGURE 1.5 below on Monsoons.



[Adapted from: https://www.slideshare.net/slideshow/geomicrolesson-slides/265884869]

1.5.1 Define the term *Monsoon winds*. (1 x 2) (2)

1.5.2 What does ITCZ stand for? (1 x 1) (1)

1.5.3 Why does the wind at **A** change direction from south east to south west? (1 x 2) (2)

1.5.4 Account for the difference in the position of the ITCZ during winter and summer as illustrated by these diagrams above. (2 x 2) (4)

1.5.5 Evaluate how heavy rain associated with summer monsoon can be a blessing and a curse on human activities in India (3 x 2) (6)

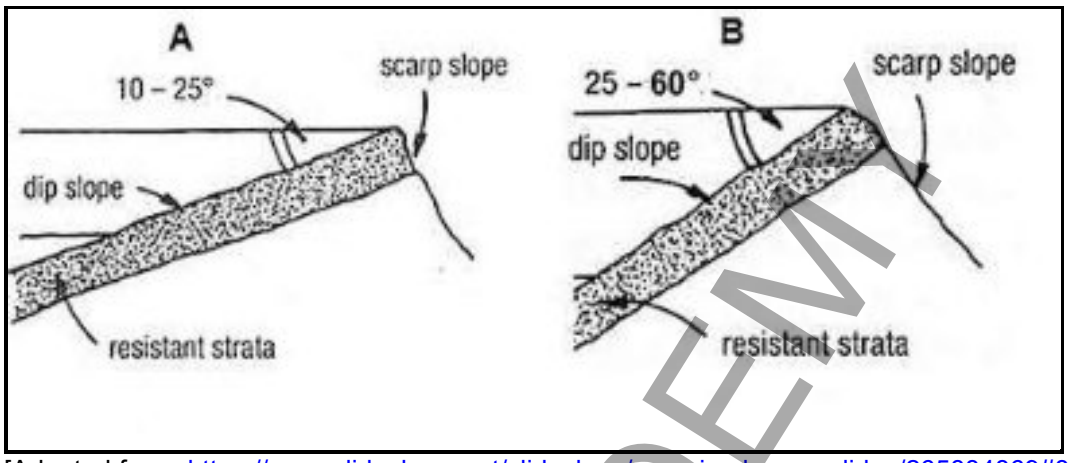
[60]

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QUESTION 2: GEOMORPHOLOGY

2.1 Refer to diagram **A** and **B** below which have inclined strata. Match the description in QUESTION 2.1.1 to 2.1.8 with **A** and **B.** Write only **A** or **B** next to the question numbers, e.g. 2.1.9 A**.**



[Adapted from: https://www.slideshare.net/slideshow/geomicrolesson-slides/265884869#8]

2.1.1 Has the steepest scarp and dip slope.

2.1.2 It has the most suitable location for dams.

2.1.3 The dip slope can be utilized for farming.

2.1.4 Composed of steeply tilted rock strata (layers).

2.1.5 Formed by gently tilting rock strata (layers)

2.1.6 The scarp slope is more than 45°.

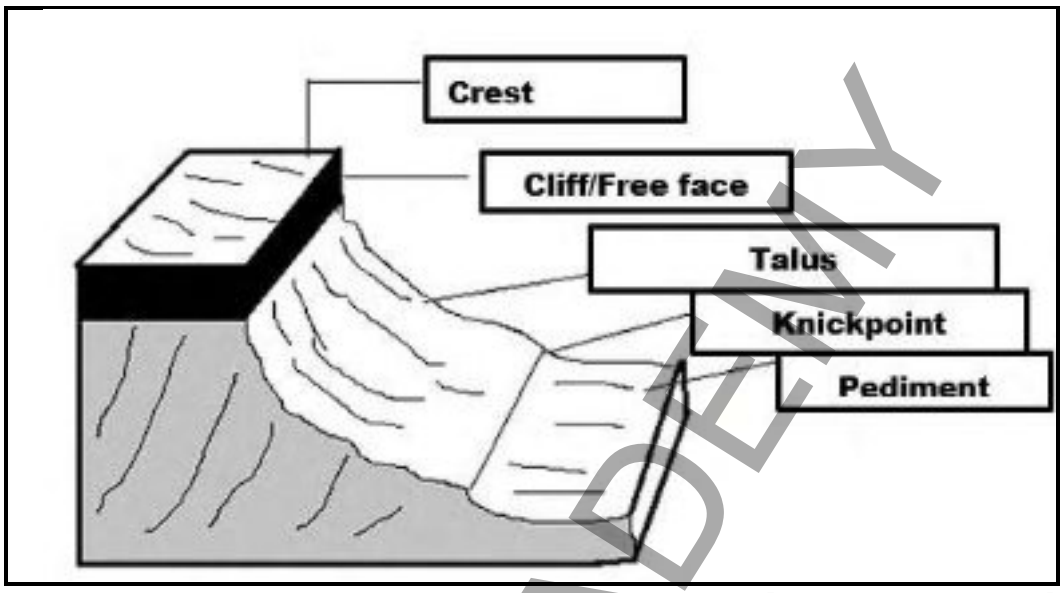
2.1.7 Has a steep scarp slope and a gentle dip slope.

2.1.8 The scarp slope is more than 10°-25°. (8 x 1) (8)

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2.2 The sketch below illustrates slope elements. Choose the correct slope element from the sketch that matches the descriptions below. A slope element can be used more than once. Write only the slope element next to the question number (2.2.1 to 2.2.7) e.g. 2.2.8 Crest.



[Examiner's own sketch]

2.2.1 The slope element with the least soil coverage.

2.2.2 The slope element where the construction of buildings and infrastructure is easier.

2.2.3 The dominant geomorphological process on this slope element is rockfalls.

2.2.4 The feature that indicates the sudden change in the profile from one slope element to another.

2.2.5 The slope element that has a convex shape.

2.2.6 The slope element with a constant gradient.

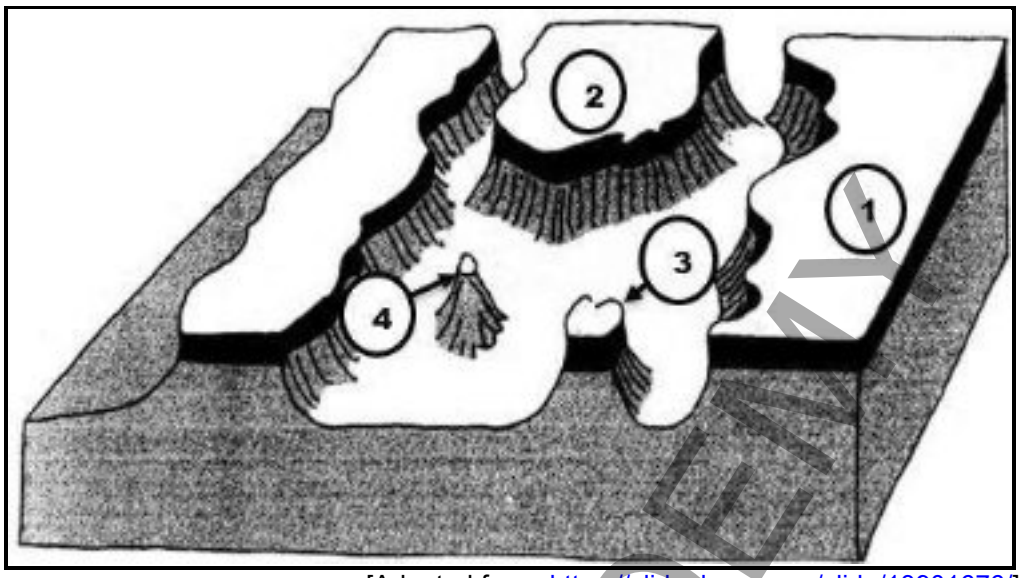
2.2.7 The slope element where the accumulation of weathered material is impossible.

(7 x 1) (7)

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2.3 Refer to the diagram below illustrating Karoo landscapes.



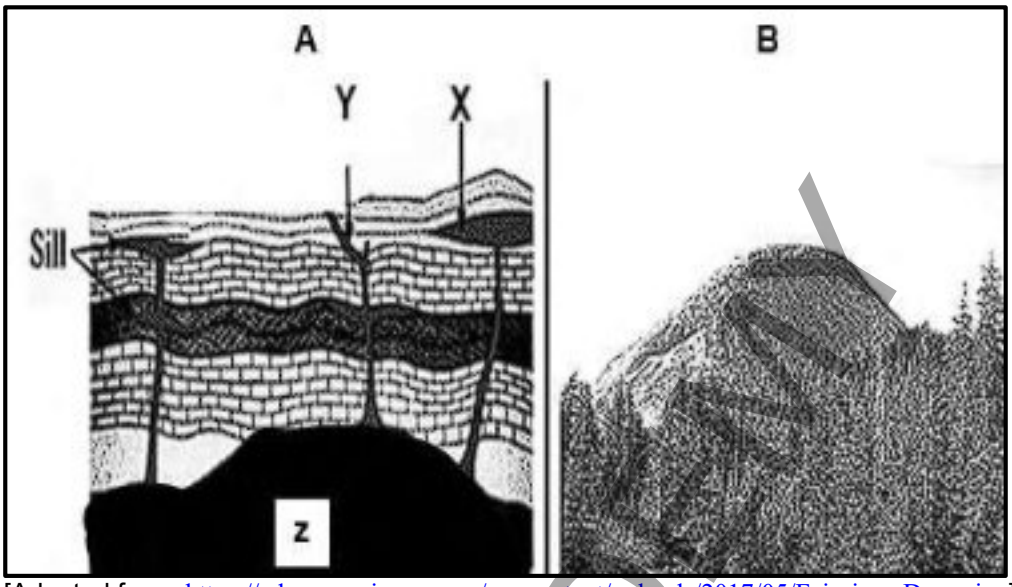
[Adapted from: https://slideplayer.com/slide/13901676/]

2.3.1	Are these Karoo landscapes associated with horizontal or inclined rock structures?	(1 x 1) (1)
2.3.2	Identify the Karoo landscape numbered **2** and **4**.	(2 x 1) (2)
2.3.3	Describe the formation of Karoo landscape labelled **4**	(1 x 2) (2)
2.3.4	Define the term *scarp retreat*.	(1 x 2) (2)
2.3.5	Describe the similarities and differences between landform **1** and **3**	(2 x 2) (4)
2.3.6	Discuss why these landforms are not suitable for human activities.	(2 x 2) (4)

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2.4 Refer to sketch **A** and **B** below showing topography associated with massive igneous rocks and answer the following questions.



[Adapted from: https://cdn.zmescience.com/wp content/uploads/2017/05/Fairview_Dome.jpg]

2.4.1 Identify the igneous landforms at **X** and **Y**. (2 x 1) (2)

2.4.2 Explain the differences and similarities between landform **X** and **Z**. (2 x 2) (4)

2.4.3 Refer to photo **B**, a dome-shaped landform.

(a) A South African example of photo **B** is (Vredefort / Paarlberg) (1 x 1) (1)

(b) Is photo **B** an example of an intrusive or extrusive igneous landform? (1 x 1) (1)

(c) Give a reason for your answer to QUESTION 2.4.3 (b). (1 x 2) (2)

(d) Name the type of weathering that occurs on this dome shaped landform. (1 x 1) (1)

(e) Explain how this landform in photo **B** has developed. (2 x 2) (4)

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2.5 Refer to the case study of Mass Movement below.

MPUMALANGA ROAD CLOSURE UPDATES FOLLOWING FLOODING RESULTS TO ROCK FALL AND LANDSLIDES.

Several roads across Mpumalanga remain closed due to having collapsed or being hit by rockfalls due to the heavy downpours and flooding around the province in recent days (2021). The spokesperson for the Department of Community Safety, Security and Liaison, Moeti Mmusi, said the R536 between Hazyview and Sabie remains closed and will be for some time. It has also been reported that a section of the R37 between Sabie and Mbombela had also been partially obstructed due to a rockslide. The R40 between Barberton and the Josefsdal Border Post has also been closed due to a section of the road having collapsed.



[Adapted from: https://shorturl.at/Va7oz]

2.5.1 Name ONE physical factor mentioned in the extract that contributed to this type of mass movement. (1 x 1) (1)

2.5.2 What are the factors that determine the speed of mass movements? (2 x 1) (2)

2.5.3 Briefly explain negative impacts of rock falls on the physical environment. (2 x 2) (4)

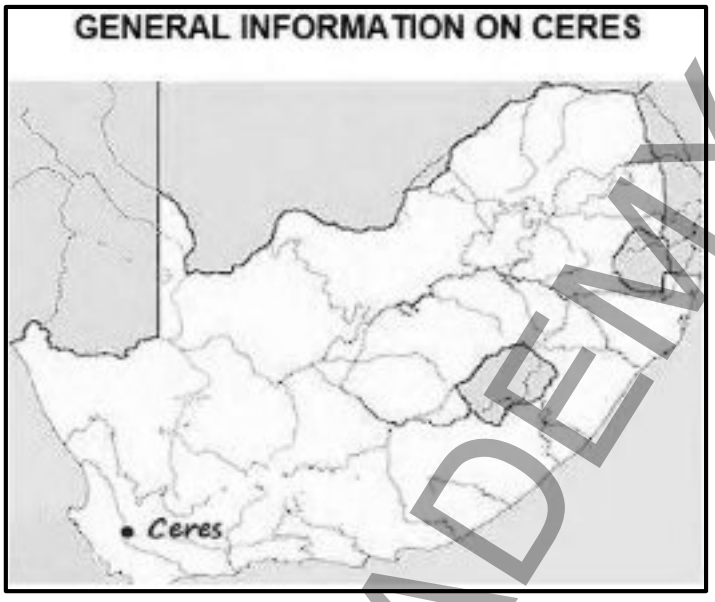
2.5.4 In a paragraph of approximately EIGHT lines, explain precautionary measures that the municipalities of Mpumalanga can implement to minimise the negative impacts of rock falls in this region. (4 x 2) (8)

[60]

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SECTION B
QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES



Coordinates: 33°22′S; 19°19′E

Ceres (said to be named after the Roman goddess of agriculture) is a town located in the Cape Winelands region of the Western Cape. It is a town rich in history with many historical buildings, the gateway to Route 62.

It is situated in a wonderful fertile area and is South Africa's top producer of deciduous fruit. Ceres offers many scenic mountain passes, which provide recreational activities and routes, and is about 150 kilometres from Cape Town.

The town's climate is controlled by its altitude, with frequent snowfalls at higher ground levels during winter.

[Adapted from: https://en.wikipedia.org/wiki/Ceres,_South_Africa]

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

ENGLISH	AFRIKAANS
River	Rivier
Hospital	Hospitaal
Landing Strip	Landingstrook
Golf Course	Gholfbaan
Diggings	Uitgrawings
Weir	Stuwal
Canal	Kanaal

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3.1 MAP SKILLS AND CALCULATIONS

Various options are provided as possible answers to QUESTIONS 3.1.1 and 3.1.2. Choose the answer and write only the letter (A—D) next to the question numbers (3.1.1 and 3.1.2) in the ANSWER BOOK.

3.1.1 In which province is CERES town located?

A North-West
B Eastern Cape
C Western Cape
D Gauteng (1 x 1) (1)

3.1.2 The scale of the Orthophoto Map:

A 1 cm represents 100 m
B 1 cm represents 100 cm
C 1 m represents 500 m
D 1 cm represents 500 cm (1 x 1) (1)

3.1.3 Refer to the topographic map. Use the information below to calculate the magnetic declination for 2024.

Difference in years: 2024 – 2014 = 10 years.
Mean annual change
Total change
Mean magnetic declination for 2024 (4 x 1) (4)

3.1.4 What is the purpose of calculating the magnetic declination for the current year? (1 x 1) (1)

3.1.5 Calculate the actual distance of LINE **F** in (metres) between spot height 622 and spot height 473,2 on topographical map.

Formula: **Actual distance = Map Distance x Map scale** (2 x 1) (2)

3.1.6 Why does features appear larger on the Orthophoto map than in Topographic map? (1 x 1) (1)

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3.2 MAP INTERPRETATION

3.2.1 The feature at **E** in block **K5** is…

A embarkment.
B railway line.
C bridge.
D cutting. (1 x 1) (1)

3.2.2 (a) Which cell in the tri-cellular model of the global air circulation affects the climate of Ceres? (1 x 1) (1)

(b) Give a reason for your answer to QUESTION 3.2.2 (a) (1 x 2) (2)

3.2.3 (a) In which general direction does the Dwarsriver in block **G6** flow? (1 x 1) (1)

(b) Give TWO pieces of evidence from the map to support your answer in QUESTION 3.2.3(b). (1 x 2) (2)

3.2.4 (a) What type of mass movement could possibly take place along the arterial road in block **F6** (1 x 1) (1)

(b) Suggest how human activities contributes to mass movement mentioned in QUESTION 3.2.4 (a). (2 x 2) (4)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.3.1 Briefly define the concept buffering? (1 x 2) (2)

3.3.2 Is a map scale an example of attribute or spatial data? (1 x 1) (1)

3.3.3 The statistic below refers to Ceres and the percentage (%) increase in crime levels from 2015 to 2017.

PERCENTAGE (%) INCREASE IN CRIME LEVELS			
TYPE OF CRIME	YEAR(S)		
	2015	2016	2017
Housebreaking	18,6%	11,3%	23,4%
Car Hijacking	100%	177,8%	36,4%

[Adapted from: https://shorturl.at/HN0QI]

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(a) Name TWO ways in which this data could have been collected (2 x 1) (2)

(b) Is the information in the table primary or secondary data? (1 x 1) (1)

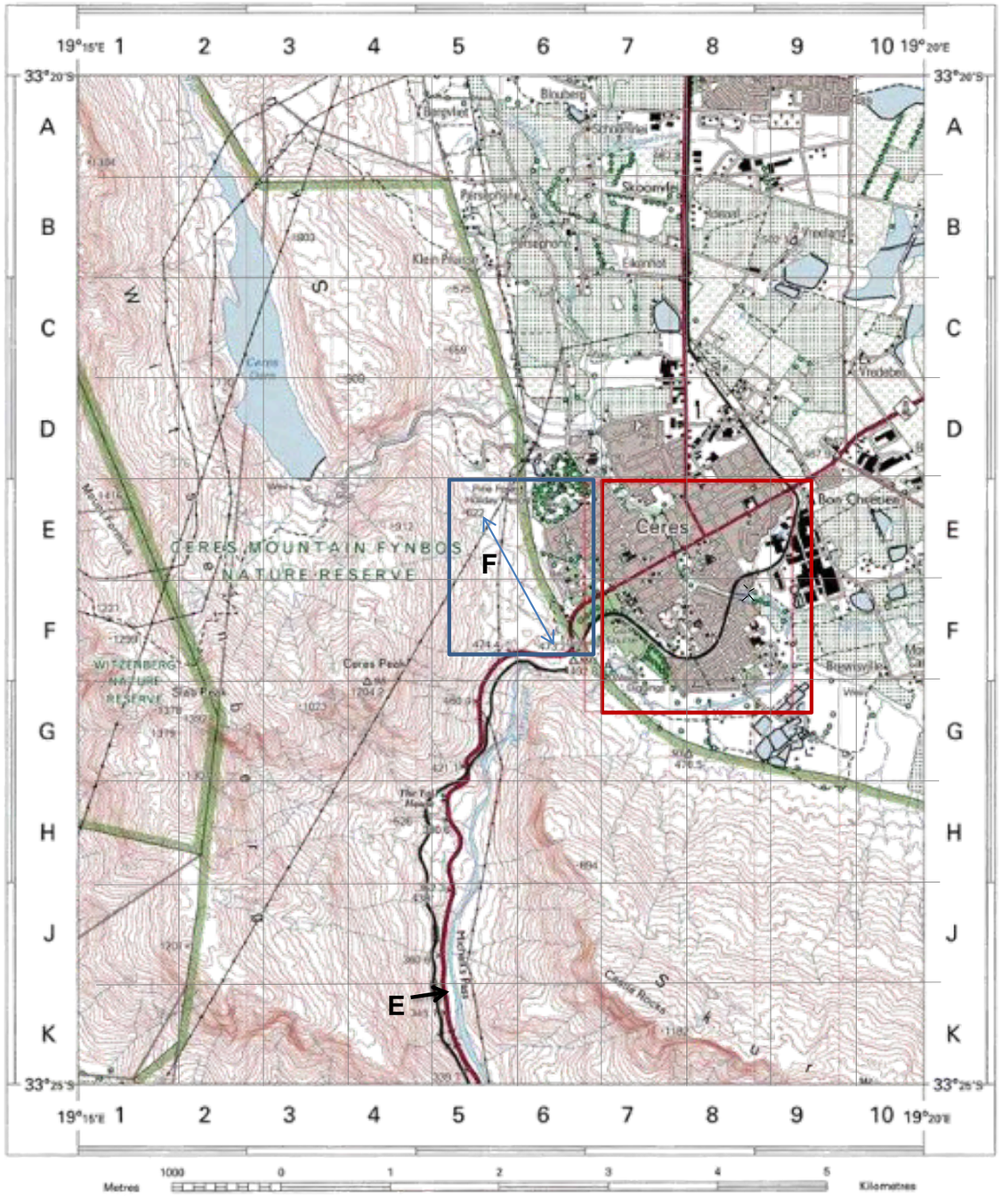
(c) Explain the importance of this statistics to the community of Ceres (1 x 2) (2)

TOTAL SECTION B: 30
GRAND TOTAL: 150

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EXTRACT FROM 3319AD CERES 1:50 000



Mean magnetic declination 24°38' West of True North (October 2014).
Mean annual change 5' westwards (Oct. 2014 - Sept. 2015).

CONTOUR INTERVAL 20 METRES

REFERENCE

National Freeway; National Route	International Boundary and Beacon	Fence; Wall	
Arterial Route	Provincial Boundary	Windpump; Monument	
Main Road	Protected Area	Communication Tower	
Secondary Road; Bench Mark	Perennial River	Mine Dump; Excavation	
Other Road; Bridge	Perennial Water	Trigonometrical Station; Marine Beacon	
Track and Hiking Trail	Non-perennial River	Lighthouse and Marine Light	
Railway; Station or Siding	Non-Perennial Water	Cemetery; Grave	
Other Railway; Tunnel	Dry Water Course	Erosion; Sand	
Embankment; Cutting	Dry Pan	Woodland	
Power Line	Marsh and Vlei	Cultivated Land	
Built-up Area (High, Low Density)	Pipeline (above ground)	Orchard or Vineyard	
Buildings; Ruin	Water Tower; Reservoir; Water Point	Recreation Ground	
Post Office; Police Station; Store	Coastal Rocks	Row of Trees	
Place of Worship; School; Hotel	Prominent Rock Outcrop	Original Farms	

EXTRACT FROM 3319AD 12 ortho - rectified image 1:10 000



1:10000 KONTOERTUSSENRUIMTE 5 METER

VERKLARING

Nasionale Deurpad; Nasionale Roete	Internasionale Grens en Baken	Dreadheining; Muur	
Hoofverkeersroete	Provinsiale Grens	Windpomp; Monument	
Hoofpad	Bewarings Gebied	Kommunikasietoring	
Sekondêre Pad; Hoogtemerk	Standhoudende Rivier	Mynhoop; Uitgrawing	
Ander Pad; Brug	Standhoudende Water	Peilbaken; Seevaartbaken	
Dowwe Pad en Voetslaanpad	Nie-standhoudende Rivier	Vuurtoring en Seevaartlig	
Spoorweg; Stasie of Sylyn	Nie-standhoudende Water	Begraafplaas; Graf	
Ander Spoorweg; Tonnel	Droë Loop	Erosie; Sand	
Opvulling; Deurgrawing	Droë Pan	Bebosde Gebied	
Kraglyn	Moeras en Vlei	Bewerkte Land	
Beboude Gebied (Hoë, Lae Digtheid)	Pyphyn (bo die grond)	Boord of Wingerd	
Gebou; Murasie	Watertoring; Reservoir; Waterpunt	Oropeningsmerein	
Poskantoor; Polisiestasie; Winkel	Kusfynrotse	Rye Borne	
Plek van Aanbidding; Skool; Hotel	Prominente Klipbank	Oorspronklike Plase	