



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

GEOGRAPHY P1

EXEMPLAR 2022

MARKS: 150

TIME: 3 hours



This question paper consists of 16 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections.

SECTION A

QUESTION 1: THE ATMOSPHERE (60 MARKS)

QUESTION 2: GEOMORPHOLOGY (60 MARKS)

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES (30 MARKS)

2. Answer ALL THREE questions.
3. All diagrams are included in the QUESTION PAPER.
4. Leave a line between subsections of questions you answer.
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 where you have to state, name, identify or list.
10. Units of measurement MUST be indicated in your final answers, 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 of 3319AD CERES and a 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. Show ALL calculations. Marks will be allocated for this.
17. You must hand in the topographic and orthophoto map to the invigilator at the end of the examination.



SECTION A: THE ATMOSPHERE AND GEOMORPHOLOGY

QUESTION 1: THE ATMOSPHERE

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 amount of insolation that heats the atmosphere depends on ...

- A winds.
- B the latitude.
- C the Coriolis force.
- D high temperature.

1.1.2 The rotation of the Earth on its axis is completed in ...

- A 365 days.
- B 24 days.
- C 24 hours.
- D 12 hours.

1.1.3 The further one moves away the equator, the more insolation will ...

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

1.1.4 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.

1.1.5 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.

1.1.6 The path that the Earth travels around the sun is called ...

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



1.1.7 The Earth receives more energy than it needs at the equator as ...

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

1.1.8 The seasons occur as a result of ...

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

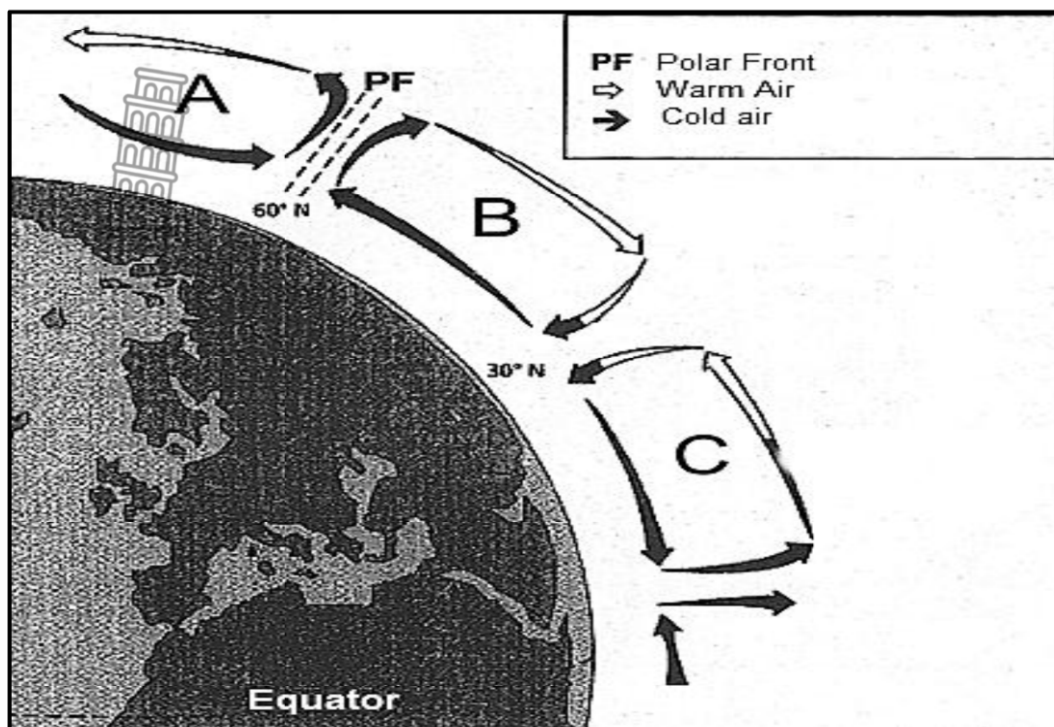
(8 x 1) (8)

1.2 Match the terms in COLUMN B with the descriptions in COLUMN A. Write ONLY the letter (A–H) next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK, e.g. 1.2.8 I.

COLUMN A		COLUMN B	
1.2.1	They cause orographic or relief rainfall in Asia	A	monsoon
1.2.2	The ITCZ moves northwards in the Northern Hemisphere	B	winter
1.2.3	They carry the warm equatorial waters and winds to the subpolar low-pressure belt	C	Coriolis force
1.2.4	The zone where winds from the tropics converge	D	mid-latitude
1.2.5	The change in planetary wind direction as a result of rotation	E	westerlies
1.2.6	The winds that change direction seasonally	F	summer
1.2.7	The ITCZ moves southwards in the Northern Hemisphere	G	ITCZ
		H	Himalaya Mountains

(7 x 1) (7)

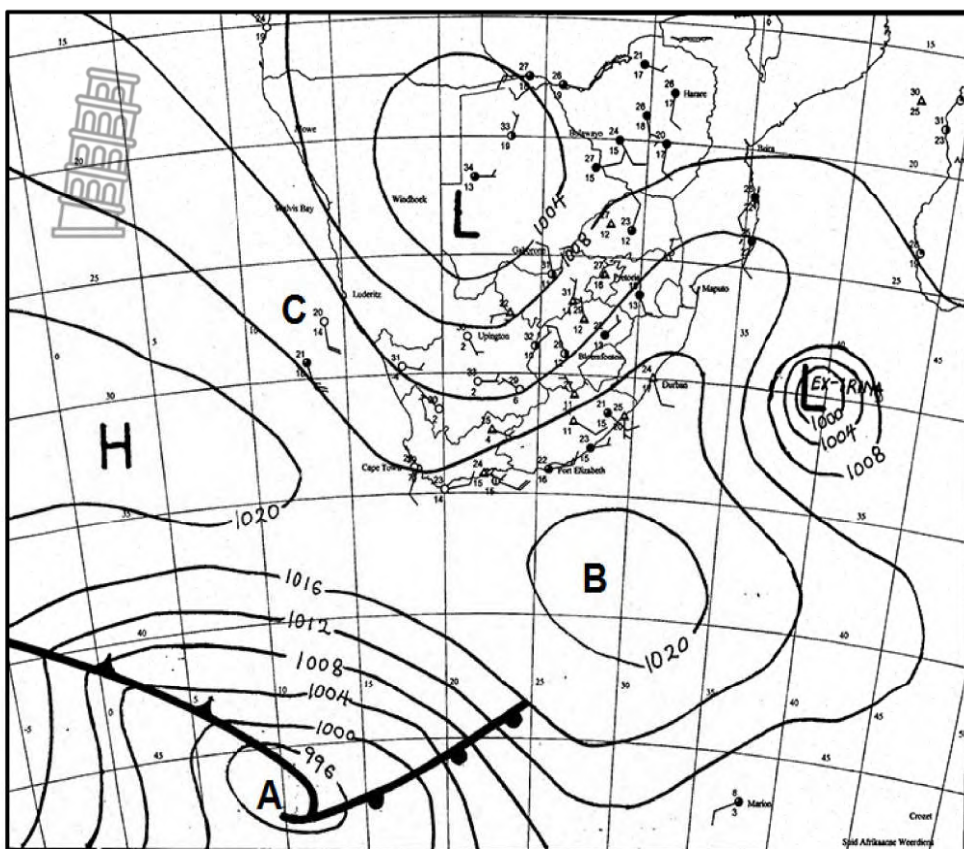
1.3 Refer to the sketch on the tri-cellular circulation.



- 1.3.1 Is there a high or a low pressure at 30°N? (1 x 1) (1)
- 1.3.2 Explain your answer given to QUESTION 1.3.1. (2 x 2) (4)
- 1.3.3 (a) Identify the TWO cells marked **B** and **C** respectively. (1 x 2) (2)
- (b) Describe the movement of air in cell **A**. (1 x 2) (2)
- 1.3.4 Explain the relation between temperature, air pressure and wind. (3 x 2) (6)




1.4 Refer to the synoptic weather map below.



- | | | | |
|-------|--|---------|-----|
| 1.4.1 | Name the weather system indicated by A . | (1 x 1) | (1) |
| 1.4.2 | (a) Is B on the synoptic weather map a low- or a high-pressure cell? | (1 x 1) | (1) |
| | (b) Give a reason for your answer to QUESTION 1.4.2(a). | (1 x 2) | (2) |
| 1.4.3 | (a) What is the season shown on the synoptic weather map? | (1 x 1) | (1) |
| | (b) Support your answer to QUESTION 1.4.3(a) with evidence from the map. | (2 x 2) | (4) |
| 1.4.4 | Give evidence from the synoptic weather map to prove that L on the eastern side is a low-pressure cell. | (1 x 2) | (2) |
| 1.4.5 | Describe the weather conditions experienced at C in terms of air temperature and cloud cover. | (2 x 2) | (4) |

1.5 Refer to the extract on drought below.

AGRICULTURAL MINISTER HAS RENEWED HOPE SA WILL SURVIVE THE DROUGHT

 **Johannesburg** – Agriculture Minister, Senzeni Zokwana, says he has renewed hope that the country will survive the current drought due to recent significant rainfall. The Department says it's being estimated that the latest harvest will produce 7,4 million tons of maize – that's a shortage of 3,8 million tons of the staple food. The Minister says he is extremely concerned about the food price increases linked to the drought.

Zokwana says the recent heavy rainfall in much needed provinces have changed the country's bleak picture of maize supply. 'Initially around November/December we may have been compelled to import five and six million tons, but that has gone down because of the rains.' He says the drought has hit the poor the hardest – something they tried to avoid.

Zokwana says the government and stakeholders in the agriculture industry need to come up with new ideas on how to change the current farming methods to avoid soil erosion and other drought-related issues.


[Source: News24]

- | | | | |
|-------|---|---------|-----|
| 1.5.1 | Define the term <i>drought</i> . | (1 x 2) | (2) |
| 1.5.2 | Why is maize regarded as an important crop in the article? | (1 x 1) | (1) |
| 1.5.3 | According to the article, describe TWO effects of drought on farming. | (2 x 2) | (4) |
| 1.5.4 | Discuss, in a paragraph of EIGHT lines, ways in which the government may reduce the impact of droughts. | (4 x 2) | (8) |



QUESTION 2: GEOMORPHOLOGY

- 2.1 Match a term/word in COLUMN B with the descriptions in COLUMN A. Write ONLY the letter (A–I) next to the question numbers (2.1.1 to 2.1.8) in the ANSWER BOOK, e.g. 2.1.9 J.

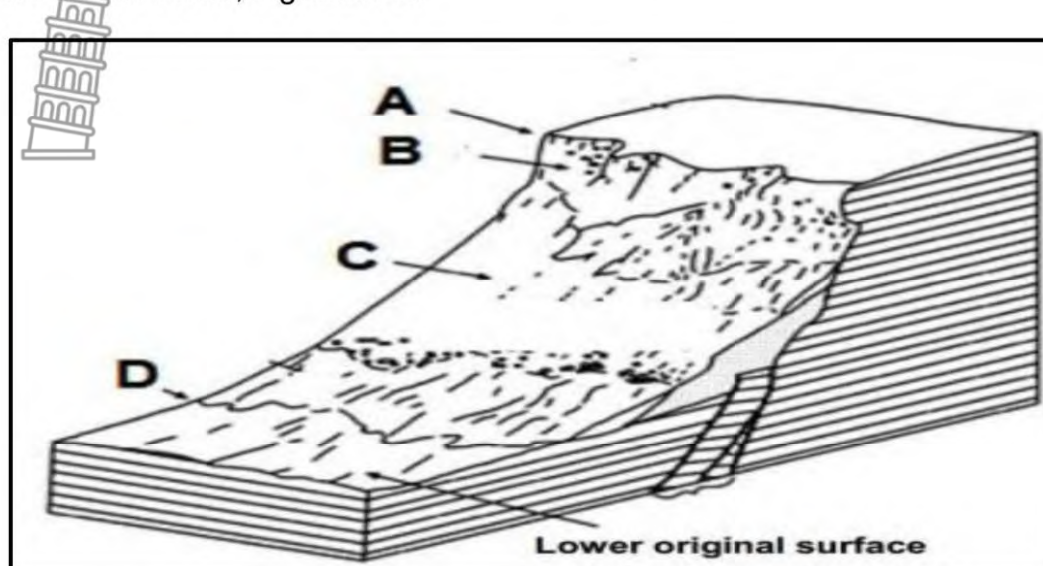
COLUMN A	COLUMN B
2.1.1  Large isolated flat-topped hill	A lava
2.1.2 The Three Sisters is an example of this	B scarp retreat
2.1.3 Small flat-topped hill	C mesa
2.1.4 Volcanic rock that forms a plateau on the surface	D conical hill
2.1.5 Molten volcanic rock that erupts on the surface of the Earth	E butte
2.1.6 This process is also known as backwasting	F basalt
2.1.7 Landscapes that develop out of canyon landscapes	G weathering
2.1.8 A process in which rocks are broken up into smaller pieces by mechanical and chemical processes	H hilly landscapes
	I Karoo landscapes

(8 x 1) (8)



2.2 Refer to the sketch on slope elements below.

Match EACH of the descriptions (2.2.1 to 2.2.7) with the letters (A, B, C or D) on the sketch below, e.g. 2.2.8 E.

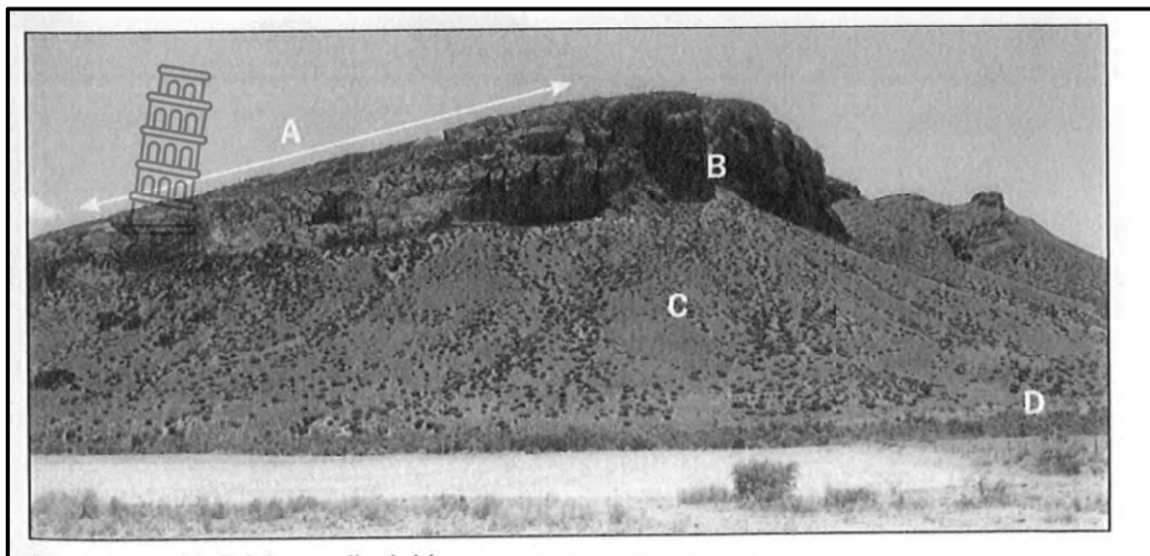


[Source: DBE past paper]

- 2.2.1 The steepest slope element
- 2.2.2 The slope element that usually has a convex shape
- 2.2.3 Minimum erosion takes place in this slope
- 2.2.4 Deposition is the main geological process on the slope element
- 2.2.5 It is also known as a free face
- 2.2.6 A point between two slope elements characterised by a sharp change in gradient
- 2.2.7 The slope element that may be slightly concave (7 x 1) (7)



2.3 Refer to the photograph below that shows a homoclinal ridge.

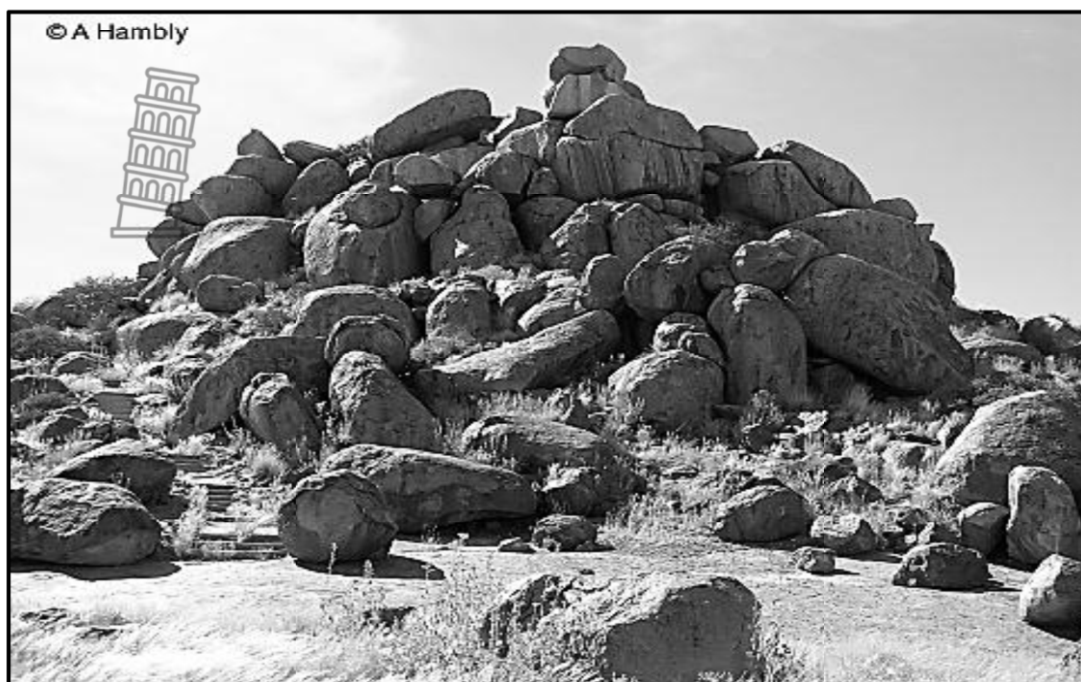


[Source: Jen's photograph]

- 2.3.1 Identify the type of rock associated with a homoclinal ridge and which is an example of a feature formed by inclined rock strata. (1 x 1) (1)
- 2.3.2 Identify slopes A and B associated with the homoclinal ridge. (2 x 1) (2)
- 2.3.3 Describe each of these slopes identified in QUESTION 2.3.2. (2 x 2) (4)
- 2.3.4 Give the reason/factor that determines the difference in each of the homoclinal ridges. (1 x 2) (2)
- 2.3.5 Explain THREE ways in which these landscapes can be utilised (used) by people. (3 x 2) (6)



2.4 Refer to the photograph which shows a tor.




[Source: Hambly, A]

- | | | | |
|-------|--|---------|-----|
| 2.4.1 | Identify the type of rock that is associated with the formation of tors. | (1 x 1) | (1) |
| 2.4.2 | Explain how weathering is a factor in the formation of tors. | (1 x 2) | (2) |
| 2.4.3 | Describe how a ruware develops. | (2 x 2) | (4) |
| 2.4.4 | Explain how a tor is formed. | (2 x 2) | (4) |
| 2.4.5 | Suggest ways in which a tor can be used by people. | (2 x 2) | (4) |



2.5 Read the article referring to mass movement.

CHAPMAN'S PEAK – SAFE OR NOT?

 **The safety of the Cape's Chapman's Peak road has become a talking point- yet again- since a 69-year old man died after a cliff plunge.**

The legendary coastal mountain pass, which connects Hout Bay to Noordhoek, is used by many commuters daily to avoid the rather elaborate M3 'freeway' round trip.

PRETTY VIEW, PRETTY DANGEROUS ...

Despite its spectacular views, the 9-km route with its 114 curves (many of them quite tight, slow-speed direction changes) has been stuck in controversy during the last two decades.

Although the most obvious danger is a driving error that can send one crashing over the edge and tumbling into the icy Atlantic, the road's most risky danger has in fact been geological – landslides and rock falls after rain.

On 10 July 2011, a 69-year-old Llandudno resident's Mercedes-Benz crashed through the retaining barrier and rolled down the cliff, close to the Noordhoek side of Chapman's Peak. The car came to rest just metres above the ocean. After a world-class rescue effort the man was helicoptered up the cliff face, transferred to an ambulance, and taken to hospital. He died later on Sunday evening. At least ten people have been killed and many injured as a result of rock falls along parts of the drive.

Subsequent to the deaths the road was closed, significant fires swept through the area, further destabilizing the slopes.

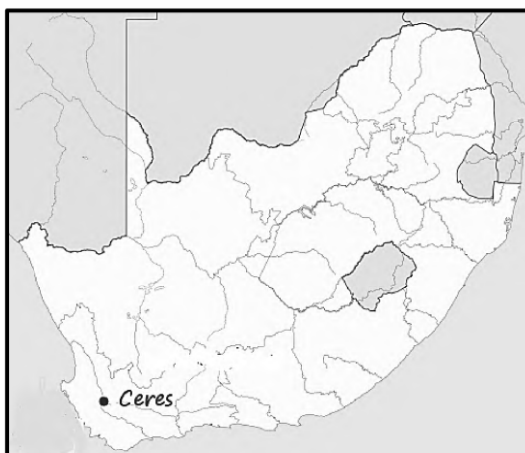
Source: www.wheels24.co.za

- 2.5.1 Define the term *mass movement*. (1 x 2) (2)
- 2.5.2 According to the article, name the type of mass movement that makes the road 'dangerous'. (1 x 1) (1)
- 2.5.3 Why do you think people driving along Chapman's Peak road should be made aware of the dangers of this type of mass movement? (2 x 2) (4)
- 2.5.4 In a paragraph of approximately EIGHT lines, suggest strategies to reduce the impact of this type of mass movement in the Chapman's Peak area. (4 x 2) (8)

[60]

SECTION B: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON CERES



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 [Google.com](https://www.google.com)]

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

ENGLISH

River
Hospital
Landing Strip
Golf Course
Diggings
Weir
Canal

AFRIKAANS

Rivier
Hospitaal
Landingstrook
Gholfbaan
Uitgrawings
Stuwal
Kanaal



QUESTION 3

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 The map index west of the topographic map 3319AD CERES is ...

- A 3319 CD.
- B 3320 DC.
- C 3319 DC.
- D 3320 CD. (1 x 1) (1)

3.1.2 The largest rectangular feature in block **C5** on the orthophoto map is a/an ...

- A industrial building.
- B school building.
- C police station.
- D farm building. (1 x 1) (1)

3.1.3 Calculate the vertical exaggeration of the map if the vertical scale of the map is 1 cm represents 20 m. The horizontal scale is 1 : 50 000.

Use the formula: $\frac{\text{Vertical scale}}{\text{Horizontal scale}}$ (3)

3.1.4 Calculate the average gradient between spot height **912** (Block **E4**) and spot height **622** (Block **E5**) on the topographical map.

Show ALL calculations. Marks will be awarded for calculations.

Formula: Average gradient = $\frac{\text{Vertical interval(VI)}}{\text{Horizontal equivalent(HE)}}$ (5)



3.2 MAP INTERPRETATION

Various options are provided as possible answers to QUESTIONS 3.2.1 and 3.2.2. Choose the answer and write only the letter (A–D) next to the question numbers (3.2.1 and 3.2.2) in the ANSWER BOOK.

3.2.1 What is the main land use in block **D1** on the orthophoto map?

- A Sewage works
 - B Golf course
 - C Sports ground
 - D Cemetery
- (1 x 1) (1)

3.2.2 The general direction in which the river in block **H7** on the topographic map flows is ...

- A south.
 - B north.
 - C north-east.
 - D south-west.
- (1 x 1) (1)

3.2.3 The mapped area receives seasonal rainfall. Give ONE piece of evidence from the topographic map to substantiate the statement.

(1 x 2) (2)

3.2.4 (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 3.2.4(a). (1 x 2) (2)

3.2.5 (a) What type of mass movement could possibly take place along the arterial road in block **G5**?

(1 x 1) (1)

(b) Suggest how the mass movement named in QUESTION 3.2.5(a) can be managed. (2 x 2) (4)



3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

The questions below are based on the 1 : 50 000 topographic map (3319AD CERES), as well as the orthophoto map of a part of the mapped area.

3.1.1 Various options are provided as a possible answer to the following question. Choose the answer and write only the letter (A–D) next to the question number (3.3.1) in the ANSWER BOOK.



Which ONE of the following features on the topographic map is NOT a line feature?

- A Hiking trail
- B Secondary road
- C Row of trees
- D Cemetery (1 x 1) (1)

3.3.2 What is the term used for combining data from different sources into a single view? (1 x 1) (1)

3.3.3 Give examples of the following data layers found in blocks **A6** and **B6**:

3.3.4 State the relevance of the drainage layer for the built-up area on the topographic map. (1 x 2) (2)

3.3.5 Refer to the power line in block **K1 and K2**. What are the attributes of the power line? (1 x 2) (2)
[30]

TOTAL: 150





basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

GEOGRAPHY P1

EXEMPLAR 2022

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 8 pages.



SECTION A

QUESTION 1: THE ATMOSPHERE

- 1.1
- 1.1.1 B (1)
 - 1.1.2 C (1)
 - 1.1.3 A (1)
 - 1.1.4 C (1)
 - 1.1.5 C (1)
 - 1.1.6 D (1)
 - 1.1.7 A (1)
 - 1.1.8 C (1) (8 x 1) (8)
- 1.2
- 1.2.1 H (1)
 - 1.2.2 F (1)
 - 1.2.3 E (1)
 - 1.2.4 G (1)
 - 1.2.5 C (1)
 - 1.2.6 A (1)
 - 1.2.7 B (1) (7 x 1) (7)
- 1.3
- 1.3.1 high pressure (1) (1 x 1) (1)
 - 1.3.2 Cold air from polar and Hadley cell converges at higher altitudes (2)
Air descends at 30° latitude (2)
More friction is applied as air descend (2)
As air descends, it compresses. (2) (2 x 2) (4)
 - 1.3.3 (a) B Ferrel cell/Mid-latitude cell (1)
C Hadley cell/Trade winds cell (1) (1 x 2) (2)
 - (b) At the poles air is cooled and sinks towards the ground to create a high pressure (2)
The air then flows towards the lower latitudes (2) (1 x 2) (2)
 - 1.3.4 When temperature increases/air is heated and air molecules expand (2)
Expanded air weighs less, air pressure decreases/is low (2)
Converging winds occur (2)
Winds start to blow from high to low pressure (2) (3 x 2) (6)



1.4	1.4.1	Mid-latitude cyclone/cold and warm front (1)	(1 x 1)	(1)
	1.4.2	(a) High pressure	(1 x 1)	(1)
		(b) The pressure reading increases towards the centre (2) Pressure reading is above 1 013 hPa (2)	(1 x 2)	(2)
	1.4.3	(a) Summer (1)	(1 x 1)	(1)
		(b) The date indicated is in summer (2) There is a low pressure over the continent (2) The presence of a tropical cyclone (2) High temperatures on the continent (2) High pressure systems are in their southerly positions (2) High cloud cover over the interior (2) Mid-latitude cyclone too far south to have an impact on the SA weather (2) (ANY TWO)	(2 x 2)	(4)
	1.4.4	It has a pressure reading of -1 000 hPa (2) Pressure decreases towards the centre The lowest pressure is recorded at the centre (2) (ANY ONE).	(1 x 2)	(2)
	1.4.5	Temperature is high (2) Clear skies/No clouds (2)	(2 x 2)	(4)
1.5	1.5.1	A prolonged period of less than average rainfall (CONCEPT) (2)	(1 x 2)	(2)
	1.5.2	It is a staple food (1)	(1 x 1)	(1)
	1.5.3	Losses in agricultural production (2) Increase in/High food prices (2) Shortage of food/food insecurity (2) Farmers may lose money/income (2) Job losses (2) [ANY TWO]	(2 x 2)	(4)
	1.5.4	Building dams/reservoirs to store water (2) Cloud seeding to artificially increase rainfall (2) Desalination of sea water (2) Crop rotation to protect soil to store water (2) Water restrictions (2) Recycling (2) Redirecting water to provide for irrigation in areas prone to drought (2) Harvesting rain water from rooftops (2) Development of sustainable agricultural practices (2) Education to change attitude towards water usage (2) Increase price of water to reduce usage (2) [ANY FOUR]	(4 x 2)	(8)


QUESTION 2: GEOMORPHOLOGY

- 2.1
- 2.1.1 C (mesa). (1)
 - 2.1.2 E (butte) (1)
 - 2.1.3 D (conical hill) (1)
 - 2.1.4 F (basalt) (1)
 - 2.1.5 A (lava) (1)
 - 2.1.6 B (scarp retreat) (1)
 - 2.1.7 I (Karoo landscapes) (1)
 - 2.1.8 G (weathering). (1) (8 x 1) (8)
- 2.2
- 2.2.1 B (1)
 - 2.2.2 A (1)
 - 2.2.3 C (1)
 - 2.2.4 D (1)
 - 2.2.5 B (1)
 - 2.2.6 D (1)
 - 2.2.7 B (1) (7 x 1) (7)
- 2.3.1 Sedimentary rock (1) (1 x 1) (1)
- 2.3.2 A = dip slope (1) B = scarp slope (1) (2 x 1) (2)
- 2.3.3 Dip slope – gentle (2)
 Scarp slope – steeper (2) (2 x 2) (4)
- 2.3.4 The angle of each slope (2)
 The unequal forces action of the unconsolidated rock (2) (1 x 2) (2)
- 2.3.5 Cuesta plains are suitable for agricultural/forestry activities and settlements (2)
 Underground water can be trapped in cuestas (2)
 Valuable deposits of oil and gas can be trapped in cuestas (2)
 Can be used to build/site a dam wall (2)
 Roads and railway lines are built parallel to the landscape (2)
 They may be used for recreational purposes (2)
(ANY THREE) (3 x 2) (6)



- 2.4 2.4.1 Igneous/Granite rocks(1) (1 x 1) (1)
- 2.4.2 Water penetrates along the joints and planes (2)
 Temperature alters the volume of water inside the rock, e.g. freezing. (2)
 During thawing the rock breaks as peels into bigger chunks/ boulders (2)
 The core rocks/stones sit/stacks on top of each other to a height of approximately 15 m (2)
(ANY ONE) (1 x 2) (2)
- 2.4.3 An underground intrusion (batholith) is exposed by erosion (2)
 Denudation removes the overburden on the intrusive rock (2)
 Weathering causes exfoliation and disintegration of the granite dome (2)
(ANY TWO) (2 x 2) (4)
- 2.4.4 Magma solidified below the surface of the earth (2)
 Water seeps into the ground where it will chemically weather igneous rocks along vertical and horizontal joints (2)
 The overlying rock is remove by erosion which is called off-loading (2)
 The released pressure on the igneous feature causes horizontal cracks to form (orthogonal joints) (2)
 The combination of vertical and horizontal joints causes rectangular blocks to form called core stones (2)
 Once the core stones reach the surface, weathered material is removed by erosion (2)
 The core stones are exposed to the elements (sun and wind) and undergo exfoliation forming round boulders (2)
 A pile of rounded igneous boulders is called a tor or balancing rock (2)
 Spheroidal weathering and processes of making rocks rounded (2)
[ANY TWO] (2 x 2) (4)
- 2.4.5 They can be a tourist attraction due to their nature (2)
 The rocks can be crushed to make smaller of finer rock/concrete (2)
 Some people earn a living by collecting stones (2)
 They can be used to build (2)
(ANY TWO) (2 x 2) (4)



- 2.5 2.5.1 Movement of soil, rock debris or weathered material down a slope under the influence of gravity.
[CONCEPT] (2) (1 x 2) (2)
- 2.5.2  Landslide (1)
Rockfall (1)
[ANY ONE] (1 x 1) (1)
- 2.5.3 To prevent loss of life (2)
To protect their cars/buses/trucks (2) (2 x 2) (4)
- 2.5.4 Concrete spraying on slopes (2)
Building tunnel roofs (2)
Wire mesh (2)
Gabions (building of retaining walls) (2)
Drilling of bolts into the sides of slopes to stabilise slopes (2)
[ANY FOUR] (4 x 2) (8)
[60]



SECTION B: GEOGRAPHICAL SKILLS AND TECHNIQUES

QUESTION 3

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 C ✓

3.1.2 A ✓ (2 x 1) (2)

3.1.3 Vertical scale 1 cm : 20
1 : 2 000 ✓
Horizontal scale 1 : 50 000

$$\frac{20\ 00}{50\ 000}$$

1 : 25 ✓

The vertical scale is exaggerated 25 times. (3)

3.1.4 **Average gradient** = $\frac{\text{Vertical interval (VI)}}{\text{Horizontal equivalent (HE)}}$
VI = 912 - 622 = 290 m ✓
HE = 1,3 cm ✓ x 500 ✓ (Range 1,3 to 1,5 cm = 650 to 750 m)

$$\frac{290\ \text{m}}{650\ \text{m}} \quad \checkmark$$

0,45 m ✓ (Range 0,45 to 0,39 m) (5)

3.2 MAP INTERPRETATION

3.2.1 B ✓

3.2.2 B ✓ (2 x 1) (2)

3.2.3 There are many non-perennial rivers/water ✓✓
There are many dams ✓✓
Many reservoirs ✓✓
The index to sheet/map index indicates that the mapped area borders are in the Western Cape which receives most of its rainfall in winter ✓✓ (1 x 2) (2)

3.2.4 (a) Ferrel cell ✓ (1 x 1) (1)

(b) Ceres lies between 30° and 60°S latitude where the Ferrel cell occurs. ✓✓
Ceres is located within the Horse latitudes/subtropical high pressure area (33°S). ✓✓
It is found within the westerly wind belt/where the air from the equator sinks and flows pole wards and back to the equator. ✓✓ (1 x 2) (2)

- 3.2.5 (a) Rock falls ✓ (1 x 1) (1)
- (b) Erecting a fence next to the road to catch falling rocks. ✓✓
Spreading concrete on the mountain slope to stabilize the slope. ✓✓
Using mesh wire to hold the rocks intact ✓✓ (2 x 2) (4)



3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

- 3.3.1 D ✓ (1 x 1) (1)
- 3.3.2 data integration ✓ (1 x 1) (1)
- 3.3.3 (a) power line ✓
reservoir ✓
roads ✓
buildings ✓
perennial water ✓ (1 x 1) (1)
- (b) (perennial/non-perennial) river, dam ✓ (1 x 1) (1)
- 3.3.4 River provides water for irrigation on the golf course. ✓✓
Provides water for domestic/industrial use. ✓✓
The built-up area follows the pattern of the stream ✓✓
(ANY ONE) (1 x 2) (2)
- 3.3.5 The power line is made of metal and cables ✓✓
It carries electricity over long distances ✓✓
The power line is straight ✓✓
The power lines carry high voltage power ✓✓
(ANY ONE) (1 x 2) (2)

[30]

TOTAL: 150

