



# basic education

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Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS**

**GEOGRAPHY P1**

**2023**

**MARKS: 150**

**TIME: 3 hours**

**This question paper consists of 20 pages.**

**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.

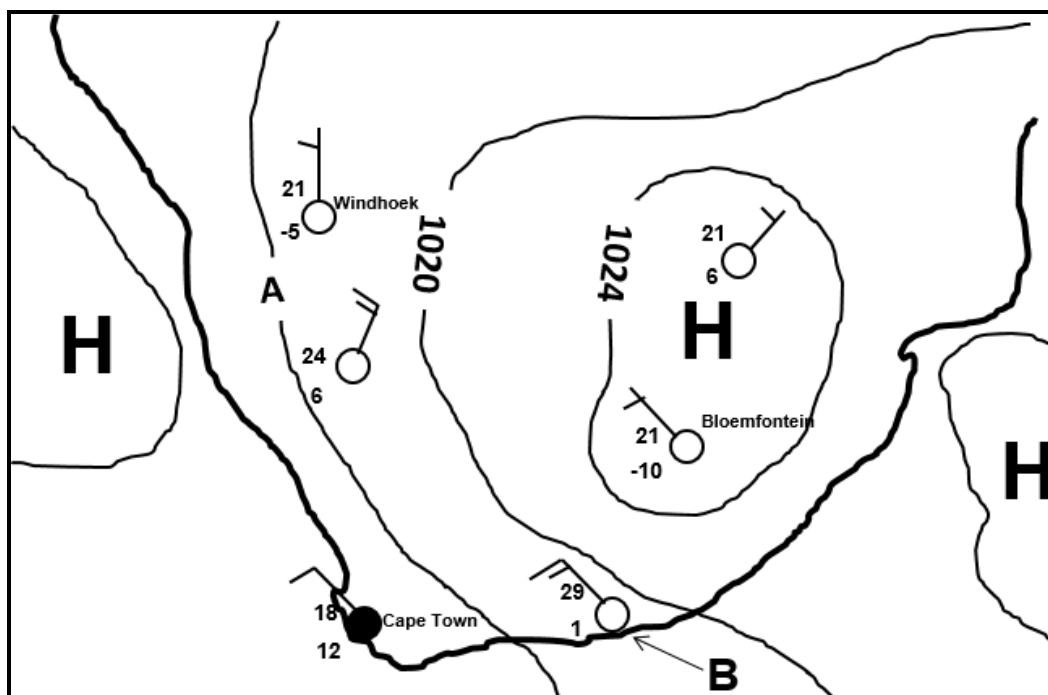
**SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B**

14. A 1 : 50 000 topographic map 2526CA ZEERUST and a 1 : 10 000 orthophoto map 2526 CA 2 ZEERUST 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.
17. You must hand in the topographic map and the orthophoto map to the invigilator at the end of this examination.

**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 1.1.8) in the ANSWER BOOK, e.g. 1.1.9 D.

Refer to the sketch below to answer QUESTIONS 1.1.1 to 1.1.5.



[Source: Examiner's own sketch]

- 1.1.1 The season represented on the synoptic weather map is ...
- A autumn.
  - B spring.
  - C summer.
  - D winter.
- 1.1.2 The isobaric interval of the isobars on the synoptic weather map is ... hPa.
- A 2
  - B 4
  - C 6
  - D 8
- 1.1.3 The air pressure reading at **A** is ... hPa.
- A 1016
  - B 1018
  - C 1022
  - D 1024

1.1.4 The dew point temperature indicated at weather station **B** is ... °C.

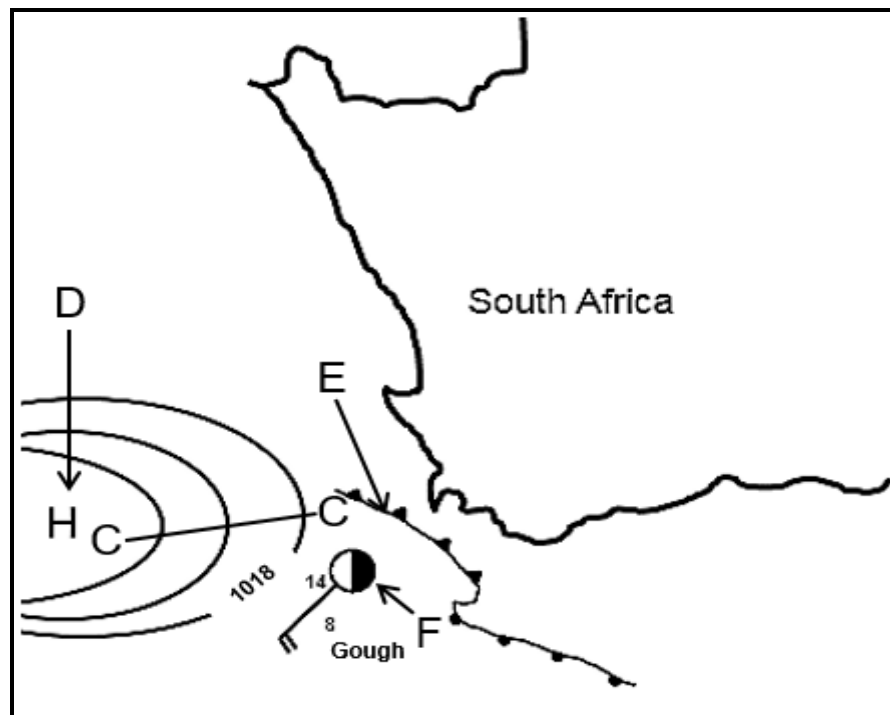
- A 4
- B 29
- C 1
- D 28

1.1.5 The weather stations around the interior high-pressure cell show clear skies due to ... air, and the anticlockwise circulation results in ... winds.

- (i) subsiding
- (ii) rising
- (iii) south-easterly
- (iv) north-westerly

- A (i) and (iii)
- B (i) and (iv)
- C (ii) and (iii)
- D (iii) and (iv)

Refer to the map below to answer QUESTIONS 1.1.6 to 1.1.8.



[Source: Examiner's own sketch]

1.1.6 Line **C-C** represents a ...

- A ridge.
- B saddle.
- C trough.
- D depression.

1.1.7 The high-pressure cell at **D** will cause weather system **E** to move in a ... direction.

- A south-easterly
- B north-easterly
- C south-westerly
- D north-westerly

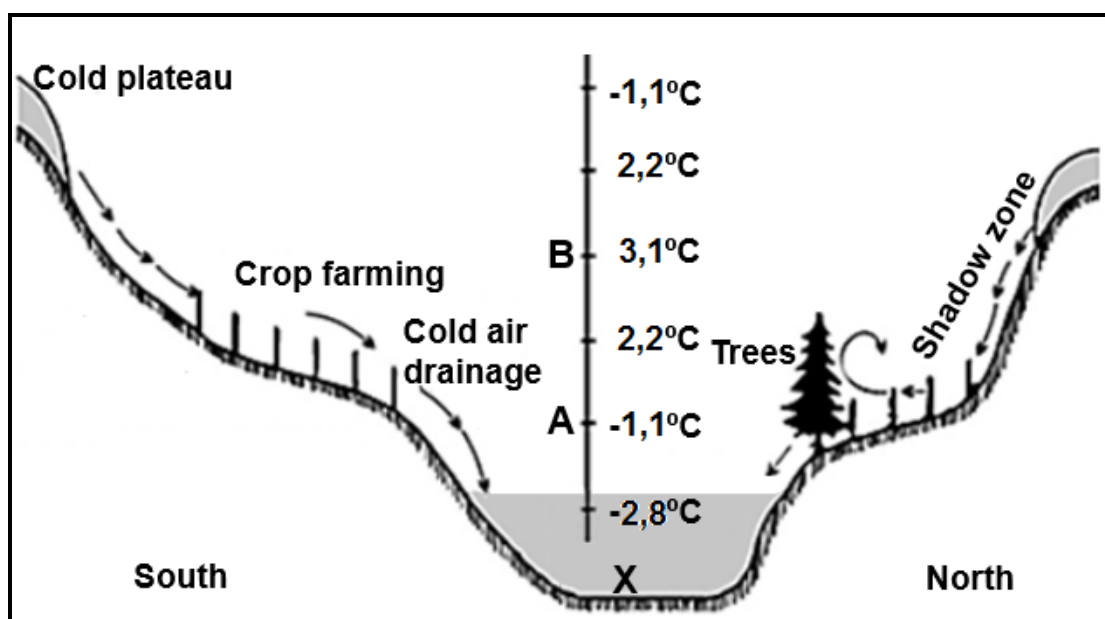
1.1.8 The weather conditions at weather station **F**:

- (i) Air temperature is 8 °C
- (ii) Cloud cover is 4/8
- (iii) South-westerly wind
- (iv) Wind speed is 5 knots

- A (i) and (ii)
- B (ii) and (iii)
- C (i) and (iv)
- D (ii) and (iv)

(8 x 1) (8)

- 1.2 Refer to the sketch below showing valley climates. Complete the statements in COLUMN A with the options in COLUMN B. Write down only **Y** or **Z** next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK, e.g. 1.2.8 Y.



[Adapted from <https://journals.ashs.org/hortsci/view/journals/hortsci/43/6/article-p1652.xml>]

COLUMN A		COLUMN B	
1.2.1	The direction in which the slope faces in relation to insolation is ...	Y	orientation
		Z	aspect
1.2.2	The sketch represents a valley in the ... Hemisphere.	Y	Southern
		Z	Northern
1.2.3	... wind occurs due to terrestrial radiation.	Y	Katabatic
		Z	Anabatic
1.2.4	A temperature inversion occurs between <b>A</b> and <b>B</b> due to a/an ... in temperature with height.	Y	decrease
		Z	increase
1.2.5	The form of precipitation that could occur at <b>X</b> is ...	Y	dew
		Z	frost
1.2.6	... fog may form in the valley on clear, calm nights.	Y	Radiation
		Z	Advection
1.2.7	The northern side of the valley is covered by trees because of ... evaporation.	Y	high
		Z	low

(7 x 1)

(7)

1.3 Refer to the extract below on cold fronts.

**TWO COLD FRONTS TO HIT WESTERN CAPE THIS WEEKEND –  
'HEAVY RAINFALL' TO FOLLOW**

Date: 10 June 2022

According to the South African Weather Service (SAWS), two cold fronts are expected to bring rain, strong winds, high waves and a significant drop in temperatures to South Africa.

The first cold front is expected to hit the Western Cape on Sunday evening 12 June. Ahead of this first cold front, strong north-westerly to westerly winds between 50–60 km/h, gusting up to 70–80 km/h, are expected over the southern parts of the Northern Cape and the interior of the Western and Eastern Cape from Sunday.

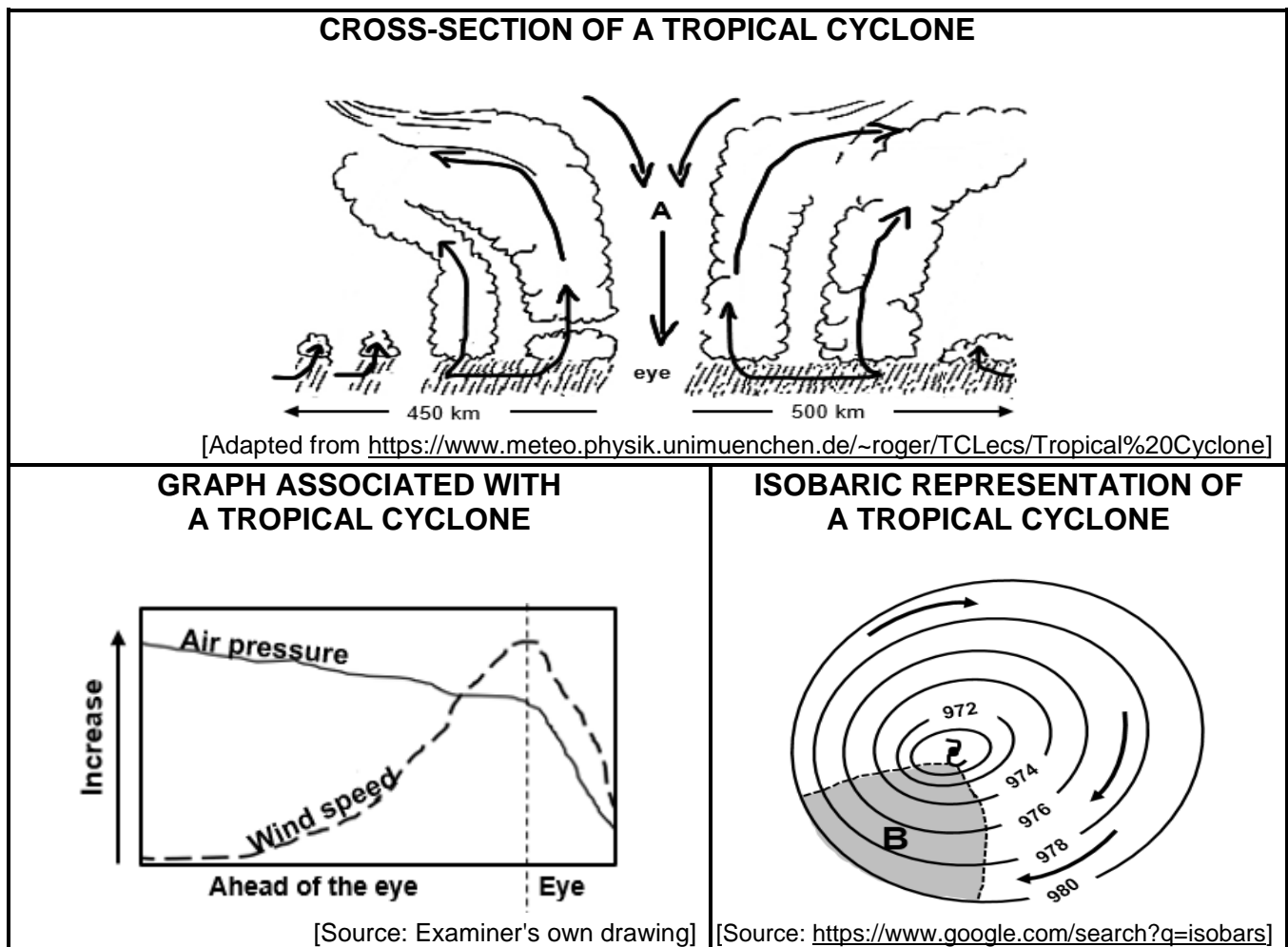
The second cold front is expected to reach the Western Cape by Monday evening 13 June, bringing continued high amounts of rainfall mainly to the south-western parts of the Western Cape, especially from Monday to Wednesday afternoon.

The wind direction associated with the cold front will change from north-west to south-west as the front moves over the Western Cape.

[Adapted from [http://www.First cold front to hit Western Cape this weekend – 'heavy rainfall' to follow \(thesouthafrican.com\)](http://www.First cold front to hit Western Cape this weekend – 'heavy rainfall' to follow (thesouthafrican.com))]

- 1.3.1 In which season do the cold fronts mentioned in the extract influence the Western Cape? (1 x 1) (1)
- 1.3.2 Give evidence from the extract to support your answer to QUESTION 1.3.1. (1 x 1) (1)
- 1.3.3 Why do cold fronts have a greater impact on the Western Cape during this season (answer to QUESTION 1.3.1)? (1 x 2) (2)
- 1.3.4 The change in wind direction mentioned in the extract is known as (veering/backing) in the Southern Hemisphere. (1 x 1) (1)
- 1.3.5 Give a reason from the extract for your answer to QUESTION 1.3.4. (1 x 2) (2)
- 1.3.6 In a paragraph of approximately EIGHT lines, suggest positive and negative impacts of heavy rainfall associated with the cold fronts on the physical (natural) environment of the Western Cape. (4 x 2) (8)

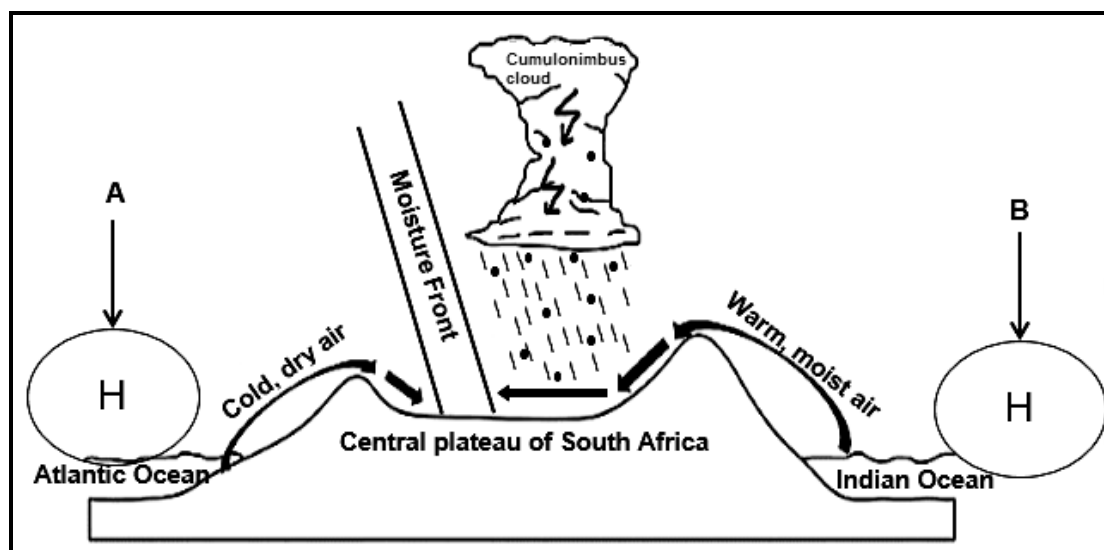
1.4 Refer to the infographic below on tropical cyclones.



- 1.4.1 What evidence indicates that the tropical cyclone developed in the Southern Hemisphere? (1 x 1) (1)
- 1.4.2 Give TWO reasons from the infographic to indicate that the tropical cyclone is in its mature stage. (2 x 1) (2)
- 1.4.3 How will the descending air at **A** influence the cloud cover in the eye? (1 x 2) (2)
- 1.4.4 Give a reason for your answer to QUESTION 1.4.3. (1 x 2) (2)
- 1.4.5 What is the relationship between the wind speed and air pressure as indicated on the graph?
- (a) Ahead of the eye (1 x 2) (2)
- (b) Within the eye (1 x 2) (2)
- 1.4.6 Why is area **B** on the sketch of the isobaric representation referred to as the leading left quadrant (dangerous semicircle)? (1 x 2) (2)
- 1.4.7 How does the leading left quadrant (dangerous semicircle) develop in tropical cyclones? (1 x 2) (2)



1.5 Refer to the sketch below on line thunderstorms.



[Source: Examiner's own sketch]

- |       |                                                                         |         |             |
|-------|-------------------------------------------------------------------------|---------|-------------|
| 1.5.1 | Identify high-pressure cells <b>A</b> and <b>B</b> .                    | (2 x 1) | (2)         |
| 1.5.2 | Which season is represented by the sketch?                              | (1 x 1) | (1)         |
| 1.5.3 | Give ONE reason from the sketch for your answer to QUESTION 1.5.2.      | (1 x 2) | (2)         |
| 1.5.4 | What is a <i>moisture front</i> ?                                       | (1 x 2) | (2)         |
| 1.5.5 | Name TWO forms of precipitation associated with a line thunderstorm.    | (2 x 1) | (2)         |
| 1.5.6 | Describe the processes involved in the formation of line thunderstorms. | (3 x 2) | (6)         |
|       |                                                                         |         | <b>[60]</b> |

**QUESTION 2: GEOMORPHOLOGY**

2.1 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 (2.1.1 to 2.1.8) in the ANSWER BOOK, e.g. 2.1.9 D.

2.1.1 A river and its tributaries is known as a ...

- A catchment.
- B drainage basin.
- C river system.
- D surface run-off.

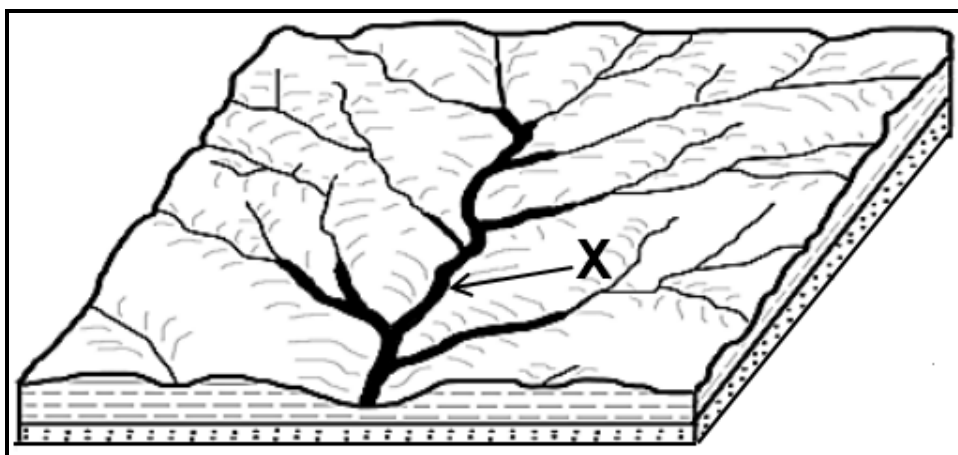
2.1.2 The high-lying area separating two drainage basins is a/an ...

- A watershed.
- B interfluve.
- C water table.
- D source.

2.1.3 Where two or more rivers join it is known as a/an ...

- A interfluve.
- B tributary.
- C main stream.
- D confluence.

Refer to the sketch below of the drainage basin to answer QUESTIONS 2.1.4 to 2.1.6.



[Source: Examiner's own sketch]

2.1.4 The sketch above represents a ... drainage pattern.

- A rectangular
- B dendritic
- C radial
- D parallel

2.1.5 The stream order at **X** is ... order.

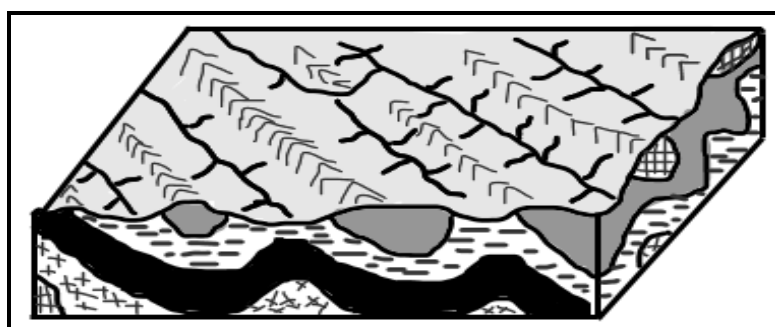
- A 1<sup>st</sup>
- B 2<sup>nd</sup>
- C 3<sup>rd</sup>
- D 4<sup>th</sup>

2.1.6 The drainage density of the drainage basin is high because it is influenced by the river flowing in areas of ... and ...

- (i) less vegetation
- (ii) high porosity
- (iii) high rainfall
- (iv) high permeability

- A (ii) and (iv)
- B (i) and (iii)
- C (i) and (ii)
- D (ii) and (iv)

Refer to the trellis drainage pattern below to answer QUESTIONS 2.1.7 and 2.1.8.



[Source: Examiner's own sketch]

2.1.7 The tributaries of a trellis drainage pattern ...

- A join the main stream at an acute angle.
- B join the main stream at right angles.
- C bends 90° along its course.
- D flows away from a central point.

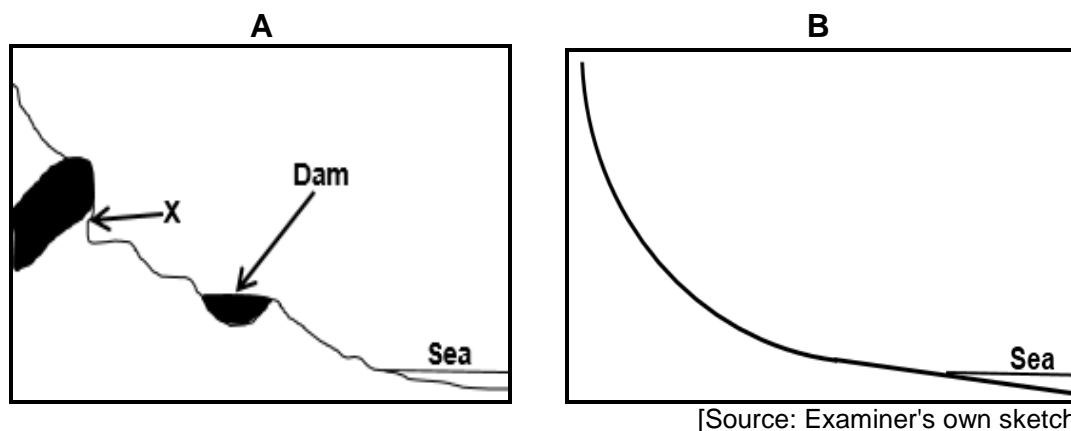
2.1.8 This drainage pattern is found in regions of ... and ...

- (i) inclined strata
- (ii) jointed igneous rocks
- (iii) uniform resistant rocks
- (iv) folded strata

- A (i) and (ii)
- B (iii) and (iv)
- C (i) and (iv)
- D (ii) and (iv)

(8 x 1) (8)

- 2.2 Refer to river profiles **A** and **B** below. Complete the statements in COLUMN A with the options in COLUMN B. Write down only **Y** or **Z** next to the question numbers (2.2.1 to 2.2.7) in the ANSWER BOOK, e.g. 2.2.8 Y.



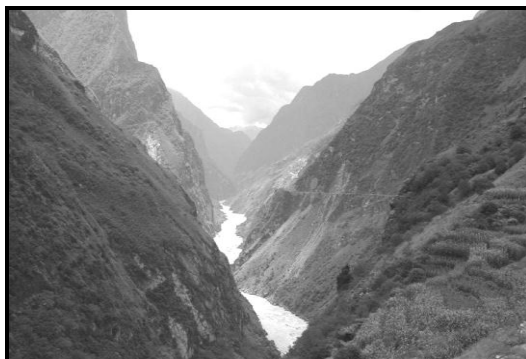
COLUMN A		COLUMN B	
2.2.1	Sketches <b>A</b> and <b>B</b> illustrate ... profiles of a river.	<b>Y</b>	cross
		<b>Z</b>	longitudinal
2.2.2	Temporary base levels of erosion are evident in sketch ...	<b>Y</b>	A
		<b>Z</b>	B
2.2.3	The profile of sketch <b>B</b> is ...	<b>Y</b>	graded
		<b>Z</b>	ungraded
2.2.4	The dominant process at <b>X</b> in sketch <b>A</b> is ... erosion.	<b>Y</b>	headward
		<b>Z</b>	lateral
2.2.5	The permanent base level of erosion is the ...	<b>Y</b>	dam
		<b>Z</b>	sea
2.2.6	In profile ..., there is an equilibrium between erosion and deposition.	<b>Y</b>	A
		<b>Z</b>	B
2.2.7	River profile <b>B</b> developed due to ...	<b>Y</b>	erosion of temporary base levels.
		<b>Z</b>	the lowering of the watershed.

(7 x 1)

(7)

- 2.3 Refer to the photograph of a valley below to answer QUESTIONS 2.3.1 and 2.3.2.

### VALLEY

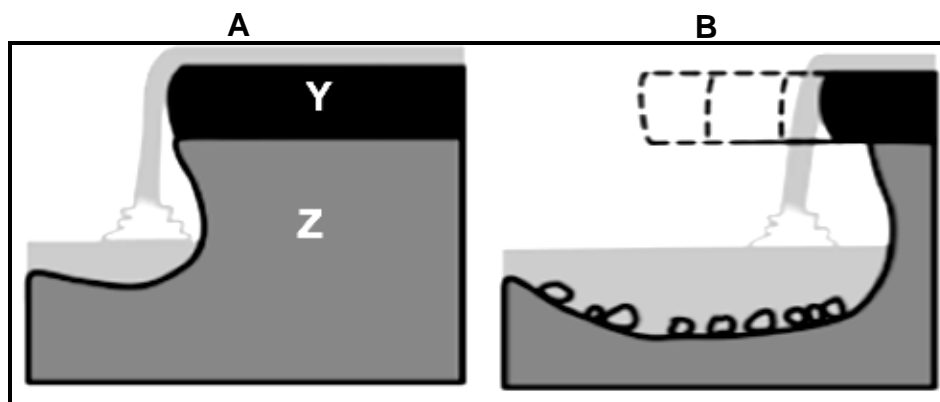


[Source: <https://www.gettyimages.ac/valleys>]

- 2.3.1 The valley in the photograph is generally found in the (upper/middle) course. (1 x 1) (1)
- 2.3.2 Identify TWO characteristics visible in the photograph to support your answer to QUESTION 2.3.1. (2 x 2) (4)

Refer to sketches **A** and **B** below of a waterfall to answer QUESTIONS 2.3.3 to 2.3.5.

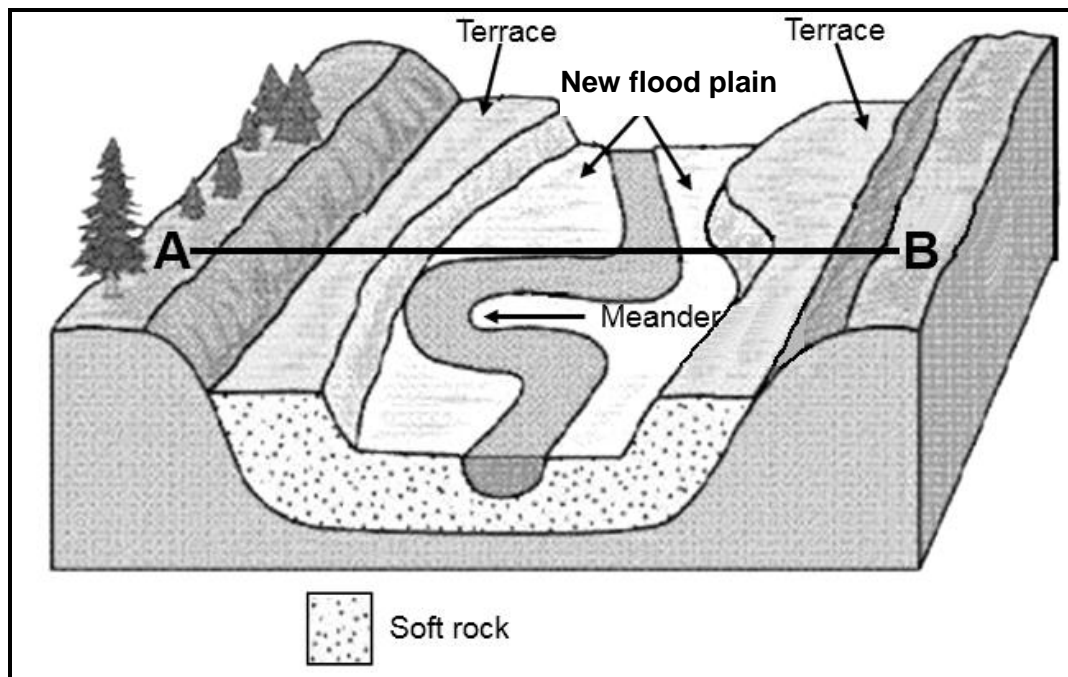
### WATERFALL



[Adapted from [www.internetgeography.net](http://www.internetgeography.net)]

- 2.3.3 What is a *waterfall*? (1 x 2) (2)
- 2.3.4 Match **Y** and **Z** in sketch **A** with the concepts resistant (hard) rock and less resistant (soft) rock. (2 x 1) (2)
- 2.3.5 How does erosion in sketch **B** cause the waterfall to retreat (move) upstream? (3 x 2) (6)

2.4 Refer to the sketch below on river rejuvenation.



[Adapted from [www.studyblue.com](http://www.studyblue.com)]

- 2.4.1 What is *river rejuvenation*? (1 x 2) (2)
- 2.4.2 State TWO possible causes of river rejuvenation. (2 x 1) (2)
- 2.4.3 Draw a labelled free-hand cross-section from **A** to **B** of the illustrated river rejuvenation.
- Marks will be allocated for:
- (a) Shape of the rejuvenated valley (1 x 1) (1)
- (b) Indication of the new flood plain (1 x 1) (1)
- (c) Indication of terraces (1 x 1) (1)
- 2.4.4 How did the river terraces (illustrated in the sketch) form? (2 x 2) (4)
- 2.4.5 Explain how the illustrated landscape will negatively impact on infrastructure development. (2 x 2) (4)

2.5 Refer to the extract below on catchment and river management.

**RIVER TURNS BLACK AFTER COAL MINE DAM COLLAPSES NEXT TO RURAL COMMUNITIES AND HLUHLUWE-IMFOLOZI GAME RESERVE**

By Tony Carie, 11 January 2022

Large volumes of potentially toxic coal mine effluent (waste) have spilled into rivers flowing through rural communities and the Hluhluwe-Imfolozi Game Reserve.

According to the US-based Union of Concerned Scientists, mining and coal-washing operations produce high water pollution which can also contain toxic heavy metals such as arsenic copper, lead and manganese.

When the slurry dam\* wall collapsed on 24 December, the residents of the affected communities were not warned about the potential hazards until two weeks later. Conservation managers in the neighbouring Hluhluwe-Imfolozi Game Reserve were also led to believe that the spill was under control, only to discover pitch-black water flowing through the reserve several days later.

By this stage, the black water had reached the confluence of the Black and White Imfolozi Rivers.

\*slurry dam – a dam that is used to store by-products of mining operations after separating the ore

[Adapted from [dailymaverick.co.za](http://dailymaverick.co.za)]

- |       |                                                                                                                                                                                                                                      |         |             |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------|
| 2.5.1 | What caused the river to change its colour to black?                                                                                                                                                                                 | (1 x 1) | (1)         |
| 2.5.2 | State TWO toxic heavy metals in the extract that could be found in polluted mine water.                                                                                                                                              | (2 x 1) | (2)         |
| 2.5.3 | Quote ONE phrase from the extract that indicates that the mining company did NOT disclose (make known) the pollution of the river.                                                                                                   | (1 x 2) | (2)         |
| 2.5.4 | What could have been the negative economic impact of non-disclosure (answer to QUESTION 2.5.3) on the community?                                                                                                                     | (1 x 2) | (2)         |
| 2.5.5 | In a paragraph of approximately EIGHT lines, describe the environmental importance of managing the Imfolozi drainage basin AND suggest measures that the local municipality could implement to maintain the future quality of water. | (4 x 2) | (8)         |
|       |                                                                                                                                                                                                                                      |         | <b>[60]</b> |

**TOTAL SECTION A: 120**

**SECTION B****QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES****GENERAL INFORMATION ON ZEERUST**

Coordinates: 25°32'S; 26°05'E

Zeerust is a commercial town situated in the North West. It is situated in the Marico Valley, approximately 1 294 metres above sea level.

The town is 240 kilometres north-west of Johannesburg. It lies along the N4, the main road link between South Africa and Botswana.

The climate in this area is characterised by short cold and dry winters and long warm to hot summers. Rain is frequent during the summer months.

Two rivers flow through Zeerust: the Klein-Marico and the Karee Spruit. In Zeerust, there is a natural spring at the Marico Oog.

[Source: <https://en.wikipedia.org/wiki/Zeerust>]

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

**ENGLISH**

Grave  
River  
Rifle Range

**AFRIKAANS**

Graf  
Rivier  
Skietbaan



## 3.1 MAP SKILLS AND CALCULATIONS

3.1.1 The grid reference of spot height 1315 in block **B4** on the topographic map is ...

- A 25°07'07"S; 26°31'26"E.
  - B 25°31'26"S; 26°07'07"E.
  - C 26°07'07"S; 25°31'26"E.
  - D 26°31'07"S; 25°07'26"E.
- (1 x 1) (1)

3.1.2 The straight-line distance from **1** in block **A1** to Kopfonteinnek on the orthophoto map is ... kilometres (km).

- A 4,0
  - B 0,4
  - C 104,0
  - D 100,4
- (1 x 1) (1)

Refer to the topographic map.

3.1.3 Calculate the average gradient from spot height 1463 at **F** in block **A2** to the benchmark at **G** in block **C2**.

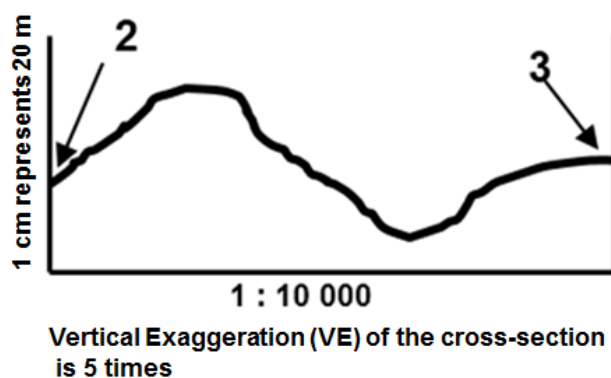
Use the following information:

Horizontal Equivalent (HE) is 3 000 m.

Formula:  $\frac{\text{Vertical Interval (VI)}}{\text{Horizontal Equivalent (HE)}}$  (3 x 1) (3)

3.1.4 Use topographic map evidence and your answer to QUESTION 3.1.3 and give TWO reasons why it will be difficult to construct a road between **F** and **G**. (2 x 1) (2)

Refer to the rough cross-section below, which represents the area from **2** in block **A2** to **3** in block **A3** on the orthophoto map.



- 3.1.5 (a) Convert the Vertical Scale (VS) on the cross-section to a ratio scale. (2 x 1) (2)
- (b) What does the Vertical Exaggeration (VE) of 5 times mean? (1 x 1) (1)

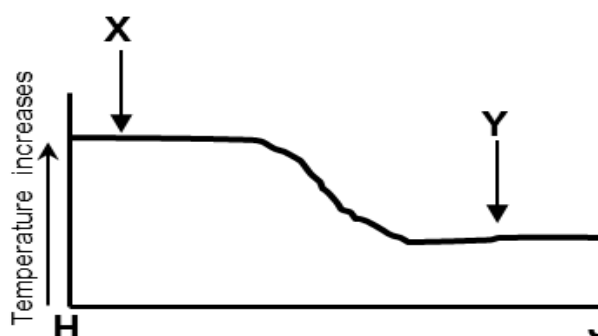
## 3.2 MAP INTERPRETATION

3.2.1 The ... in block **E2** on the topographic map is an indication that seasonal rainfall occurs in the area.

- A row of trees
- B perennial river
- C non-perennial river
- D cultivated land

(1 x 1) (1)

Refer to the graph below indicating the average temperature of the area from **H** in block **C1** to **J** in block **C4** on the topographic map.

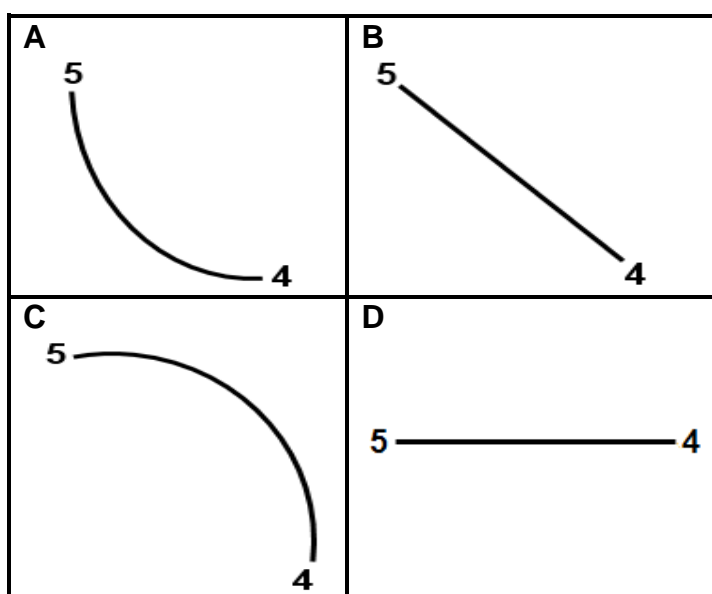


3.2.2 Identify the human-made feature that was responsible for the higher temperatures recorded at **X**. (1 x 1) (1)

3.2.3 Explain your answer to QUESTION 3.2.2. (1 x 2) (2)

3.2.4 Identify a natural feature that resulted in lower temperatures at **Y**. (1 x 1) (1)

3.2.5 Which sketch below represents the slope from **4** in block **C1** to **5** in block **B1** on the orthophoto map?



(1 x 1) (1)

Refer to the orthophoto map.

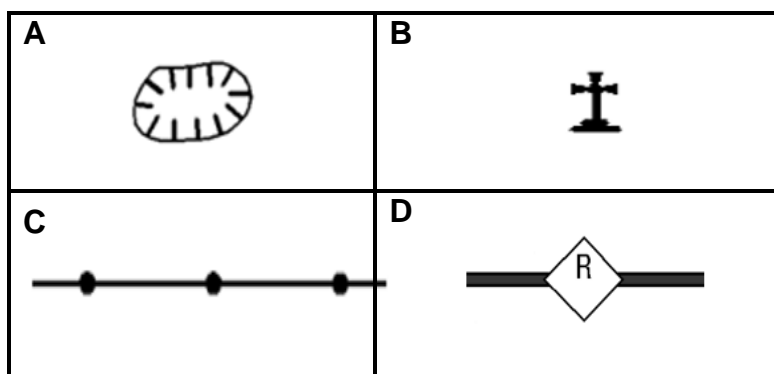
- 3.2.6 How did the topography (relief) of the area favour the location of the rifle range? (1 x 2) (2)

Refer to the topographic map.

- 3.2.7 Describe TWO factors on the topographic map that limited pollution of the Klein-Maricopoort Dam. (2 x 2) (4)

### 3.3 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

- 3.3.1 Which ONE of the following is a standardised point symbol found on topographic maps?

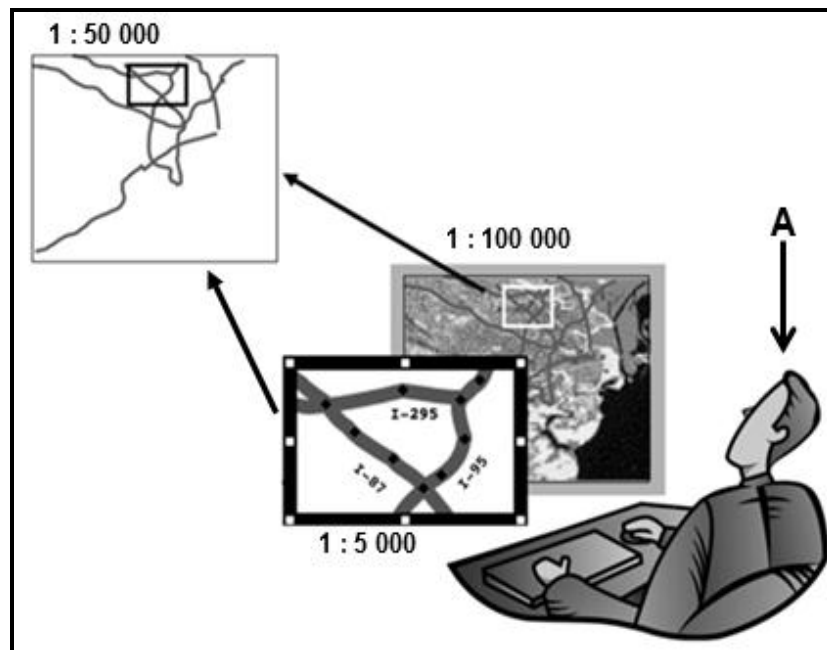


(1 x 1) (1)

- 3.3.2 Identify the alphanumeric block on the topographic map in which the point symbol (answer to QUESTION 3.3.1) is located. (1 x 1) (1)

- 3.3.3 Give ONE attribute data of the point symbol (answer to QUESTION 3.3.1) evident on the topographic map. (1 x 1) (1)

Refer to the sketch below.



[Source: <https://www.directionsmag.com/article/3396>]

- 3.3.4 Identify the GIS component at **A**. (1 x 1) (1)
- 3.3.5 Give ONE reason why the GIS component (answer to QUESTION 3.3.4) is important. (1 x 2) (2)
- 3.3.6 Data integration is illustrated in the sketch.  
Give ONE reason to support the statement. (1 x 2) (2)

**TOTAL SECTION B: 30**  
**GRAND TOTAL: 150**



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## **SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS**

**GEOGRAPHY P1**

**2023**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 11 pages.**

**MARKING PRINCIPLES FOR GEOGRAPHY- NSC NOVEMBER 2022 AND NSC/SC JUNE 2023**

The following marking principles have been developed to standardise marking in all provinces.

**MARKING**

- ALL questions **MUST** be marked, irrespective of whether it is correct or incorrect
- Where the maximum marks have been allocated for a particular question, place an **M** over the remainder of the text to indicate the maximum marks have been achieved.
- A clear, neat tick must be used: ✓
  - If ONE mark is allocated, ONE tick must be used: ✓
  - If TWO marks are allocated, TWO ticks must be used: ✓✓
  - The tick must be placed at the FACT that a mark is being allocated for
  - Ticks must be kept SMALL, as various layers of moderation may take place
- Incorrect answers must be marked with a clear, neat cross: ✕
  - Use MORE than one cross across a paragraph/discussion style questions to indicate that all facts have been considered
  - Do NOT draw a line through an incorrect answer
  - Do NOT underline the incorrect facts

For the following action words, ONE word answers are acceptable: **list, name, state, identify**

For the following action words, a FULL sentence must be written: **describe, explain, evaluate, analyse, suggest, differentiate, distinguish, define, discuss, why, how**

The following action words need to be read within its context to determine whether a ONE- word answer or FULL sentence is required: **provide, what, tabulate and give**

**NOTE THE FOLLOWING**

- If the numbering is incorrect or left out, as long as the sequence of answers to questions is followed candidates can be credited
- Spelling errors if recognisable, award the marks provided the meaning is correct.
- Be sensitive to the sense of an answer, which may be stated in a different way
- In questions where a letter is the accepted response, but the learner writes the actual answer- award marks.
- There will be additional guidelines for the marking of certain questions.

**TOTALLING AND TRANSFERRING OF MARKS**

- Each sub-question must be totalled
  - Questions in Section A has five sub-sections, therefore five sub-totals per question required. Section B has three sub-sections and three sub-totals.
  - Sub-section totals to be written in the right-hand margin at the end of the sub-section and underlined
  - Sub-totals must be written legibly
  - Leave room to write in moderated marks on different levels
- Total sub-totals and transfer total to top left-hand margin next to question number
- Transfer total to cover of answer book

30

## QUESTION 1

- 1.1.1 A (South Atlantic High) (1) ✓  
 1.1.2 B (Kalahari High) (1) ✓  
 1.1.3 B (South Indian) (1) ✗

2

- 1.2.1 Melting snow ✓  
 1.2.2 Mouth ✗  
 1.2.3 Third order ✓

2

- 1.3.1 Katabatic ✗  
 1.3.2 1 occurs during the day while 2 occurs at night ✓✓  
 1.3.3 Cold air rolls down into the valley and forms an inversion ✓✓

6

- 1.4.1 Shape of front concave ✗  
 Steep gradient of front ✓  
 1.4.2 Warm air undercuts the cold air ✗  
 1.4.3 Air behind the cold front is colder than the air in front. Cold air moves faster than warm air ahead of it. Cold front catches up with the warm front. ✓✓✓

7

- 1.5.1 (a) A river that only flows all year round ✗  
 (b) The river channel is wide ✗  
 (c) Regularity of rainfall and the soil type over which the streams flow. ✓✓✓

- 1.5.2 Gauteng and the Eastern Cape ✗

- 1.5.3 The cost of food production will increase as it is costly to buy purified water. Farmers will have to buy more chemicals to purify water. Chemicals cost a lot and this will increase production costs. It will be costly to purify water for use in electricity generation. These costs will be included in electricity prices. Costs will increase the price of electricity during production. M There will be less clean water to generate hydro- electricity.

13

**SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY****QUESTION 1: CLIMATE AND WEATHER**

1.1 1.1.1 D (1)

1.1.2 B (1)

1.1.3 A (1)

1.1.4 C (1)

1.1.5 B (1)

1.1.6 A (1)

1.1.7 B (1)

1.1.8 B (1)

(8 x 1) (8)

1.2 1.2.1 Z (1)

1.2.2 Y (1)

1.2.3 Y (1)

1.2.4 Z (1)

1.2.5 Z (1)

1.2.6 Y (1)

1.2.7 Z (1)

(7 x 1) (7)



1.3	1.3.1	Winter (1)	(1 x 1)	(1)
	1.3.2	(10/12/13) June /Date (1)		
	EVIDENCE FROM EXTRACT	Cold fronts in the interior of Western/Eastern Cape (1)		
		High amounts of rainfall (1)		
		Significant drop in temperature (1)		
		<b>[ANY ONE]</b>	(1 x 1)	(1)
	1.3.3	<b>Northward movement</b> of the high pressure belts (anticyclones)/ITCZ (2)		
	WHY A GREATER IMPACT		(1 x 2)	(2)
	1.3.4	Backing (1)	(1 x 1)	(1)
	1.3.5	(The wind direction associated with the cold front will) <b>change from north-west to south-west</b> as the front moves over the Western Cape (2)		
	REASON		(1 x 2)	(2)
	1.3.6	<b>Positive:</b>		
	SUGGEST POSITIVE AND NEGATIVE IMPACTS OF HEAVY RAINFALL ON PHYSICAL (NATURAL) ENVIRONMENT	Brings much needed moisture to the soil (2)		
		Revival of biodiversity/ecosystem/habitat (2)		
		Water available for wildlife (2)		
		Water available for growth of natural vegetation (2)		
		Water allows for more grazing land/veld (2)		
		Fill up (by infiltration) natural aquifers/springs/groundwater (2)		
		Fill up (via surface runoff) rivers (2)		
		<b>Negative:</b>		
		(Low-lying) areas are flooded (2)		
		Soil erosion will increase (2)		
		Destruction of biodiversity/ecosystem/habitat (2)		
		Damage to natural vegetation (2)		
		Loss of wildlife (2)		
		Increase salination of rivers (2)		
		Saturation of soil (waterlogged conditions) (2)		
		Rock falls/mass movements on steeper slopes (2)		
		<b>[ANY FOUR, RESPONSES MUST REFER TO BOTH POSITIVES AND NEGATIVES]</b>	(4 x 2)	(8)
1.4	1.4.1	Clockwise movement of air (1)		
	EVIDENCE FOR SH	Position of the leading left quadrant (1)		
		Wind direction shown by the symbol of the eye (1)		
		<b>[ANY ONE]</b>	(1 x 1)	(1)
	1.4.2	Pressure in the centre is significantly below 1000 hPa (1)		
	TWO REASON FOR MATURE STAGE	Well-developed eye (1)		
		The area covered by the tropical cyclone is large (450km- 950km) (1)		
		The leading left quadrant (dangerous semicircle) is visible (1)		
		Isobars are closely spaced/pressure gradient is very steep (1)		
		<b>[ANY TWO]</b>	(2 x 1)	(2)

1.4.3 INFLU ON CLOUD COVER	There will be no cloud cover/clear skies (2)	(1 x 2)	(2)
1.4.4 REASON FOR ANSWER	Descending air heats up resulting in no condensation (2) Adiabatic heating reduces moisture/becomes dry (2) <b>[ANY ONE]</b>	(1 x 2)	(2)
1.4.5 RELATION SHIP-WIND SPEED AND AIR PRESSURE	(a) Air pressure decrease and wind speed increases (2) (b) Both air pressure and wind speed decreases (2)	(2 x 2)	(4)
1.4.6 WHY ISOBARIC REPRESENTATION REFERRED TO LEFT HAND QUADRANT	It experiences the most intense weather conditions (accept examples of severe weather conditions) (2)	(1 x 2)	(2)
1.4.7 HOW LEFT HAND QUADRANT DEVELOPS	When the forward movement combines with the rotation of the system (2)	(1 x 2)	(2)
1.5.1	<b>A</b> South Atlantic (1) <b>B</b> South Indian (1)	(2 x 1)	(2)
1.5.2	Summer (1)	(1 x 1)	(1)
1.5.3 GIVE REASON FOR SUMMER	Line thunderstorms (heavy rainfall) occur in the interior (2) Cumulonimbus clouds/lightning/hail (2) Moisture front developed (2) Air from the east/west reaches the interior (2) <b>[ANY ONE]</b>	(1 x 2)	(2)
1.5.4 WHAT IS A MOISTURE FRONT	The boundary (dry line) between <b>two air masses</b> of <b>different moisture content</b> (2) <b>[CONCEPT]</b>	(1 x 2)	(2)
<b>INSTRUCTION FOR PART MARKING</b>			
	The boundary (dry line) between <b>two air masses</b> (1)		
1.5.5	(Heavy) Rainfall (1) Hail (1) Thunderstorms (1) <b>[ANY TWO]</b>	(2 x 1)	(2)
1.5.6 DESCRIBE THE FORMATION OF LINE THUNDER STORM	Convergence of warm moist air and cold dry air (2) Moisture front develops (2) Cold dry air undercuts warm moist air (2) Warm moist air rises (2) Condensation occurs in the eastern side of the moisture front (2) Cumulonimbus clouds develops (2) <b>[ANY THREE]</b>	(3 x 2)	(6) <b>[60]</b>

**QUESTION 2 - GEOMORPHOLOGY**

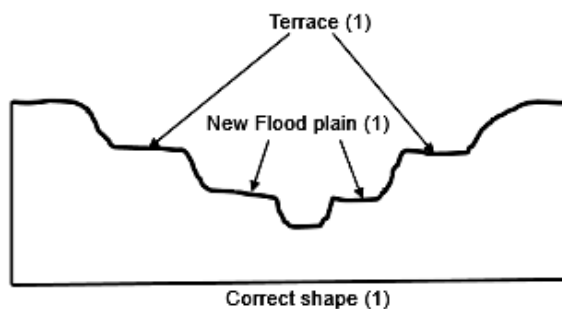
	2.1.1	C (1)		
	2.1.2	A (1)		
	2.1.3	D (1)		
	2.1.4	B (1)		
	2.1.5	C (1)		
	2.1.6	B (1)		
	2.1.7	B (1)		
	2.1.8	C (1)	(8 x 1)	(8)
2.2	2.2.1	Z (1)		
	2.2.2	Y (1)		
	2.2.3	Y (1)		
	2.2.4	Y (1)		
	2.2.5	Z (1)		
	2.2.6	Z (1)		
	2.2.7	Y (1)	(7 x 1)	(7)
2.3	2.3.1	Upper (1)	(1 x 1)	(1)
	2.3.2	Deep valleys (2)		
	IDENTIFY CHARACTERISTICS OF VALLEY IN UPPER COURSE	Narrow/V-shaped valley (2)		
		Steep slopes (2)		
		Gorge (2)		
		Interlocking spurs (2)		
		Vertical erosion is dominant (2)		
		<b>[ANY TWO]</b>	(2 x 2)	(4)
	2.3.3	A body of water's/river falling over hard rock/steep slope/vertical cliff (2)		
	WHAT IS A WATER FALL	<b>[CONCEPT]</b>		
			(1 x 2)	(2)
		<b>INSTRUCTION FOR PART MARKING</b>		
		A body of water's/river falling over (1)		
	2.3.4	Y- resistant/hard rock (1)		
		Z- less resistant/ soft rock (1)	(2 x 1)	(2)

- 2.3.5 The softer rock (Z) is eroded leaving the hard rock (Y) exposed (2)  
 HOW DOES EROSION CAUSE RETREAT OF WATER FALL  
 Erosion/undercutting of less resistant/soft rock occurs (2)  
 Erosion/undercutting will create a plunge pool (2)  
 The resistant/hard rock (Y) is not supported by the soft rock (Z) and overhang (2)  
 The overhanging resistant/hard rock collapses (2)  
**[ANY THREE]** (3 x 2) (6)

- 2.4 2.4.1 A process where a river **regains energy** (and begins to erode vertically/downwards again) (2)  
 WHAT IS REJUVENATION  
**[CONCEPT]** (1 x 2) (2)

- 2.4.2 Change in gradient (1) **OR**  
 (Accept Isostatic uplift (1) and/or Drop in sea level (1))  
 STATE TWO CAUSES OF REJUVENATION  
Increase in the volume of water (1) **OR**  
 (Accept Increase in rainfall (1) and/or River capture (1))  
 Joining of a faster tributary (1)  
**[ANY TWO]** (2 x 1) (2)

2.4.3  
CROSS-SECTION OF REJUVENATED VALLEY



**Mark distribution**

- Mark for correct shape of cross section (1)  
 Mark for indicating new flood plain on cross-section (1)  
 Mark for indicating ANY ONE Terrace on cross-section (1) (3 x 1) (3)

- 2.4.4 A rejuvenated river cuts into the valley floor (2)  
 FORMATION OF RIVER TERRACES  
 Downcutting creates a new flood plain (2)  
 A step forms between the old and new flood plains (2)  
**[ANY TWO]** (2 x 2) (4)

- 2.4.5 Steepness of slopes will hamper construction of roads/railway lines (2)  
 EXPLAIN HOW LANDSCAPE NEGATIVELY IMPACTED INFRASTRUCTURE DEVELOPMENT  
 Softness of the underlying rocks causes instability to roads/ railway construction (2)  
 Terraces make it costly to build bridges (2)  
 Wide flood plain makes it difficult to build bridges (2)  
**[ANY TWO]** (2 x 2) (4)

**INSTRUCTION FOR PART MARKING- MAXIMUM OF TWO**

- Steepness of slopes (1)  
 Softness of the underlying rocks (1)  
 Terraces (1)  
 Wide flood plain(1)

2.5	2.5.1	Coal mine waste have spilled into rivers (1) Polluted mine waste burst from a slurry dam (1) <b>[ANY ONE]</b>	(1 x 1)	(1)
	2.5.2	Arsenic copper (1) Lead (1) Manganese (1) <b>[ANY TWO]</b>	(2 x 1)	(2)
	2.5.3	"the residents of the affected communities were <b>not warned</b> about the potential hazards until two weeks later" (2) "Conservation managers in the neighboring Hluhluwe – Imfolozi Game Reserves were also made to believe that the spill was <b>under control</b> " (2) <b>[ANY ONE]</b>	(1 x 2)	(2)
	2.5.4	Eco-tourism affected (2) Businesses in the community negatively affected (2) Agricultural activities negatively affected (2) Future investments in the communities limited (2) Contamination of agricultural products (2) Increase in medical bills (2) (Water) purification is expensive (2) <b>[ANY ONE]</b>	(1 x 2)	(2)
	2.5.5	<b>IMPORTANCE:</b> To ensure the availability of water (2) To maintain water quality (2) To preserve aquatic life (2) To ensure that the ecosystem remains healthy (2) To preserve biodiversity/ecosystem/habitat (2) <b>MEASURES:</b> Continuous monitoring of the dam (2) Regular maintenance of the dam (2) Frequent testing of water quality (2) Impose fines to companies which do not comply (with regulation) (2) Create buffer zone around slurry dam (2) Educate community on the precautionary measures (2) Awareness campaigns for people (bill boards, no dumping site signs) (2) Implement policy/legislation (2) Conserve natural vegetation in the drainage basins (2) Regulate or control extraction of groundwater (2) Promote sustainable farming methods upstream (2) <b>[ANY FOUR, RESPONSES MUST INCLUDE BOTH THE IMPORTANCE AND MEASURES]</b>	(4 x 2)	(8) <b>[60]</b>

**TOTAL SECTION A: 120**

**SECTION B****QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES**

3.1	3.1.1	B (1)	(1 x 1)	(1)
	3.1.2	D (1)	(1 x 1)	(1)
	3.1.3	VI = 1463 - 1183.3 = 279.7 (1) m  $\frac{VI = 279.7}{HE = 3000}$ (1) for correct substitution  Gradient = 1: 10.72 (1)	(3 x 1)	(3)
	3.1.4	The gradient is steep (1) There are a number of valleys/ivers (1) There are a number of spurs (1) There is an excavation close by (1) <b>[ANY TWO]</b>	(2 x 1)	(2)
	3.1.5	(a) 1: 20 x 100 = 2000 (1) 1: 2000 (1)  (b) The cross-section (of the topographic map) has been vertically exaggerated by 5 times/The cross-section is 5 times larger (1)	(2 x 1)	(2)
			(1 x 1)	(1)
3.2	3.2.1	C (1)	(1 x 1)	(1)
	3.2.2	Built-up areas (1) Road (1) <b>[ANY ONE]</b>	(1 x 1)	(1)
	3.2.3	More heat is generated (accept examples) (2) The built-up area absorbs more heat (accept examples) (2) Multiple reflections (2) Storm water drainage (2) <b>[ANY ONE]</b>	(1 x 2)	(2)
	3.2.4	Woodlands/trees (1) Rivers/ water (1) Open spaces (1) <b>[ANY ONE]</b>	(1 x 1)	(1)
	3.2.5	C (1)	(1 x 1)	(1)
	3.2.6	Gentle slope (flat land) (2) Surrounding high-lying area creates safety (2) Surrounding high-lying area will buffer the noise (2) <b>[ANY ONE]</b>	(1 x 2)	(2)

3.2.7 DESCRIBE TWO FACTORS- LIMITING POLLUTION- KLEIN- MARICO POORTDAM	The settlement is away from the dam (2)			
	The woodland forms a buffer (2)			
	Most tributaries feeding the dam have their origin in high-lying areas with no human activities (2)			
	[ANY TWO]		(2 x 2)	(4)
3.3	3.3.1	B (1)	(1 x 1)	(1)
	3.3.2	C3 (1)	(1 x 1)	(1)
3.3.3 GIVE ONE ATTRIBUTE DATA	Name of the monument (1)			
	The date of birth and death of Diederich Coetzee (1)			
	Height of the monument above sea level (1)			
	[ANY ONE]		(1 x 1)	(1)
	3.3.4	Personnel/ people/ user (1)	(1 x 1)	(1)
3.3.5 ONE REASON FOR IMPORTANC E OF GIS COMPONEN ET	Manipulate the data (2)			
	Input of data (2)			
	Use appropriate GIS methods (2)			
	Make information more accessible to users (2)			
	Make information more understandable for users (2)			
	Acquires the soft and hardware to be used (2)			
	Acquire/collect data (2)			
		[ANY ONE]	(1 x 2)	(2)
3.3.6 REASON FOR DATA INTEGRATIO N IN ILLUSTRA TION	Different maps were <b>integrated</b> into one map (2)		(1 x 2)	(2)
TOTAL SECTION B:			30	
GRAND TOTAL:			150	