EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
DATE	NOVEMBER 2025
SUBJECT	GEOGRAPHY
PAPER	1
MARK TOTAL	150
DURATION (HOURS)	3
NUMBER OF PAGES	19

SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE

SUID-AFRIKAANSE KOMPREHENSIEWE ASSESSERINGSINSTITUUT

INSTRUCTIONS AND INFORMATION

1. This question paper consists of **THREE** questions.

   SECTION A:
   QUESTION 1: CLIMATE AND WEATHER (60 MARKS)
   QUESTION 2: GEOMORPHOLOGY (60 MARKS)

   SECTION B:
   QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES (30 MARKS)

2. Answer **ALL THREE** questions.

3. Leave a line between subsections of questions answered.

4. Start **EACH** question at the top of a **NEW** page.

5. Number the answers correctly according to the numbering system used in this question paper.

6. Answer questions in **FULL SENTENCES**, except where you have to state, name, identify or list. Write in full sentences when answering paragraph questions.

7. Units of measurement **MUST** be indicated in your final answer, e.g. 1040 hPa, 35 ºC, 60 km.

8. You may use a non-programmable calculator.

9. You may **NOT** use a scale ruler.

10. Write neatly and legibly, in **BLUE** ink only.

11. Draw diagrams and label them fully, if asked to do so.

SECTION B: ADDITIONAL INSTRUCTIONS AND INFORMATION

12. Extracts from a 1:50 000 topographical map **3319AD CERES** and a 1:10 000 orthophoto map **3319 AD 12 CERES**, that forms of a part of the mapped area, are provided.

13. The position of features on the topographical map are indicated by alphabetical letters such as **G, H, J …** etc. and numbers **1, 2, 3 …** etc. on the orthophoto map if applicable.

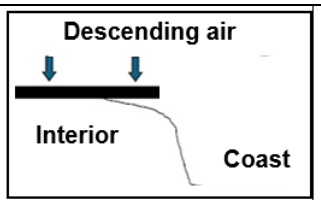
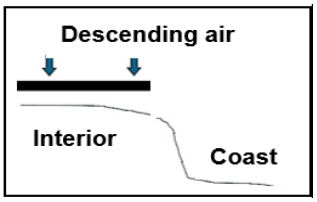
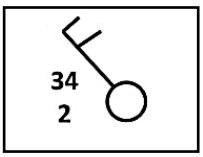
14. Show all calculations. Marks are allocated for the calculations/steps and **NOT** full marks for the correct answer only. The correct substitution should be indicated for the stated formula.

15. Return the topographical map and orthophoto map to the invigilator at the end of the examination session.

SECTION A

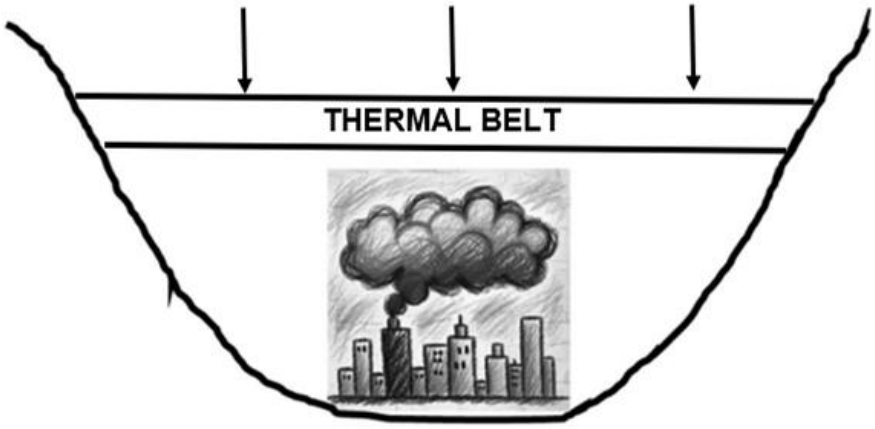
QUESTION 1: CLIMATE AND WEATHER

1.1 Choose the correct option from **COLUMN B** that matches the statement/diagram in **COLUMN A**. Write only the letter (**Y** or **Z**) next to the question numbers (1.1.1 to 1.1.7) in the ANSWER BOOK, for example 1.1.8 Y.

COLUMN A		COLUMN B	
1.1.1	Berg winds are most common in… in South Africa.	**Y** **Z**	Summer Winter
1.1.2	A … cell/weather system needs to be present for berg wind conditions to occur.	**Y** **Z**	Kalahari high pressure and a coastal low pressure Kalahari high pressure and the South Atlantic high pressure
1.1.3	The cross section represents the position of the Kalahari high pressure when berg winds occur.	**Y** **Z**	  *[Source: Examiner's own sketch]*
1.1.4	The wind that blows down the escarpment … as it sinks.	**Y** **Z**	heats adiabatically cools adiabatically
1.1.5	The weather station model represents berg wind conditions. The humidity level at the station is ...  *[Source: Examiner's own sketch]*	**Y** **Z**	high. low.
1.1.6	The reason for the lack of cloud cover at the station in QUESTION 1.1.5 is that … as the air sinks.	**Y** **Z**	the moisture evaporates condensation takes place
1.1.7	The conditions indicated in the weather station model in QUESTION 1.1.5 are terminated (end) when a …	**Y** **Z**	warm front moves over the area. cold front moves over the area.

(7x1) **(7)**

1.2 Refer to the diagram below that represents a valley climate in South Africa.



[Source adapted from: https://www.earthreminder.com/pollution-drawings/]

Choose the correct option from inside the box below that correctly completes the sentences given. Write only the word/phrase next to the question numbers (1.2.1 to 1.2.8) in the ANSWER BOOK, e.g. 1.2.9 diurnal.

Intensity of the high pressure, day, visibility, night, anabatic, smog, frost pocket, katabatic, descending air in a high-pressure cell

1.2.1 The thermal belt develops at …

1.2.2 The height of the thermal belt is affected by …

1.2.3 ... is the combination of fog and pollutants like smoke and dust.

1.2.4 The pollution trapped below the thermal belt disperses/spreads out during the …

1.2.5 The arrows above the thermal belt represent …

1.2.6 … winds move up the slopes during the day.

1.2.7 The increase in pollution levels below the thermal belt affects …

1.2.8 The temperatures on the valley floor may drop below 0°C in winter forming a … (8x1) **(8)**

1.3 Refer to the weather-related newspaper report below on a mid-latitude cyclone.

'WE LOST EVERYTHING': MORE COLD FRONTS ON THE WAY TO THE CAPE OF STORMS

[Source: Motorists queue after snowfall during a cold front near Ceres on July 8, 2024. Image: Reuters/Esa Alexander]

Penelope Mthyiane was left with little more than one of her grandchildren's school shoes after fierce winds tore off the roof of their four-bedroom Wendy house. Mthyiane is one of thousands of people left homeless by thunderstorms, destructive winds, heavy rain and snow that has, since Thursday and particularly the weekend, caused widespread disruption and damage across the Western Cape.

The SA Weather Service has warned a series of "significant cold fronts" are still on the way. The town of Ceres received 123 mm, Elgin/Grabouw 84 mm, Observatory 47 mm and Stellenbosch 68mm of rain between Sunday and Monday. Bredell said a series of cold fronts was expected to make landfall this week, with the next on Tuesday when between 10 and 20 mm of rain is expected over the western parts, and between 40 mm and 60 mm over the south-western mountains of the province.

[Source: Adapted from https://www.timeslive.co.za/news/south-africa/2024-07-08]

1.3.1 State the amount of rainfall that the town of Ceres received between the Sunday and Monday. (1x1) (1)

1.3.2 Identify the source of the severe weather that occurred in the Western Cape by quoting from the article. (1x1) (1)

1.3.3 Draw the symbol that is used on a synoptic weather map that represents the source that you identified in QUESTION 1.3.2. (1x1) (1)

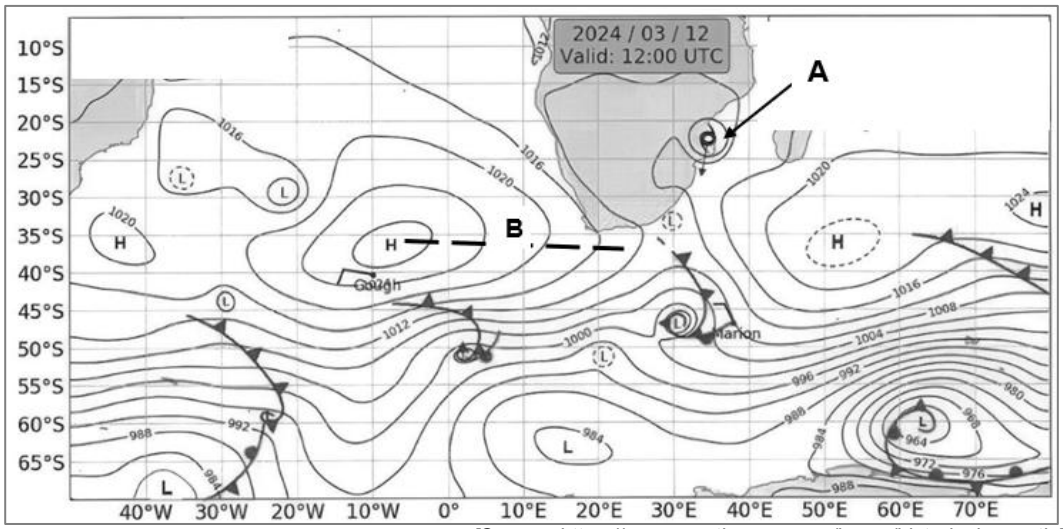
1.3.4 The source of the severe weather mentioned in the article forms part of a mid-latitude cyclone. Explain why mid-latitude cyclones mainly affect South Africa during winter months. (2x2) (4)

1.3.5 In a paragraph of **8 to 10 lines**, advise the authorities on precautionary measures that can be taken to minimise the effects of the weather associated with the passage of a series of mid-latitude cyclones. (4x2) (8)

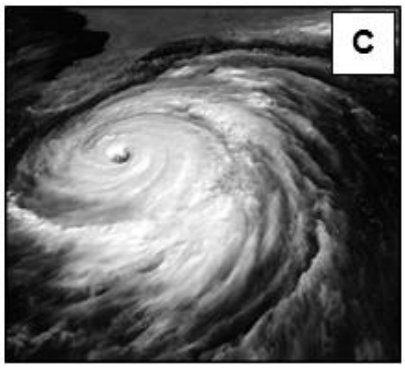
(15)

1.4 Refer to the information below based on a tropical cyclone.

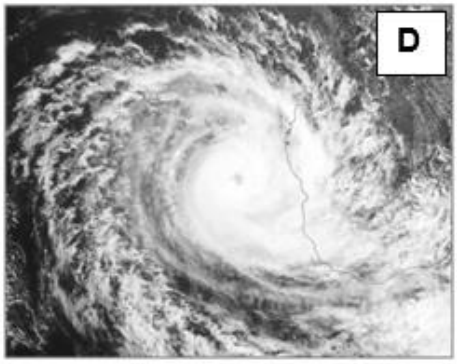
SYNOPTIC WEATHER MAP FOR SOUTHERN AFRICA 12 MARCH 2024



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



[Source: https://courses.lumenlearning.com/suny-geophysical/chapter/cyclones]



[Source: https://www.rmets.org/metmatters/very-long life-tropical-cyclone]

1.4.1 Identify the weather system at **A** on the synoptic weather map. (1x1) (1)

1.4.2 These systems need Coriolis force to make the (westerly/easterly) winds spiral towards a LP. (1x1) (1)

1.4.3 a) Which satellite image (**C** or **D**) represents system **A?** (1x1) (1)

b) Explain your answer to QUESTION 1.4.3 a) (1x2) (2)

c) Name the cloud type responsible for the heavy precipitation brought by system **A**. (1x1) (1)

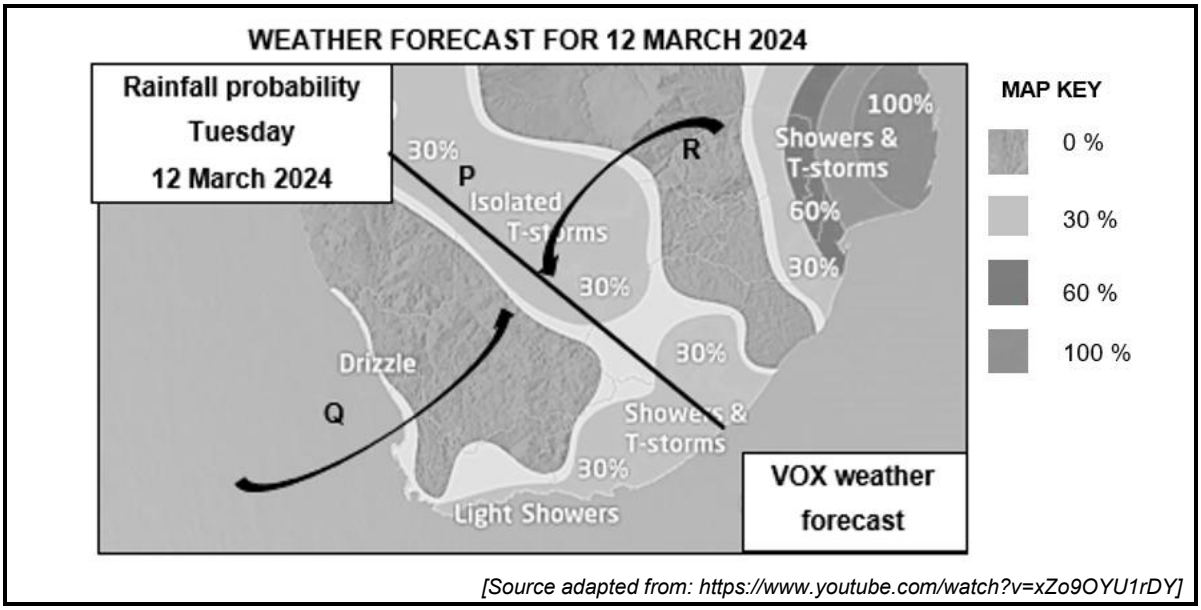
1.4.4 **A** is associated with very strong winds. Give a reason why the strongest winds are found in the forward left-hand quadrant of such a system. (1x1) (1)

1.4.5 Explain why **A** will die out as it moves further west. (2x2) (4)

1.4.6 Describe the conditions the coastal areas will experience for the duration of system **A.** (2x2) (4)

(15)

1.5 Refer to the weather forecast for 12 March 2024 below, as well as to the synoptic weather map at **QUESTION 1.4.**



[Source adapted from: https://www.youtube.com/watch?v=xZo9OYU1rDY]

Refer to the synoptic weather map.

1.5.1 State the term used for the elongated shape of the South Atlantic high-pressure cell along the line labelled **B** on the synoptic weather map. (1x1) (1)

1.5.2 Describe the air flow within the South Atlantic high pressure by referring to the:

i) direction (1x1) (1)

ii) rotation of the winds (1x1) (1)

1.5.3 The air flow described in QUESTION 1.5.2 is often associated with the occurrence of the Cape South Easterly winds. Explain the impact that these winds may have on the inhabitants of Cape Town. Refer to the weather forecast. (2x2) (4)

1.5.4 a) "The weather forecast predicated that line thunderstorms would occur over the interior on 12 March." Give ONE piece of evidence to prove that this statement is true. (1x1) (1)

b) State the term used for the line labelled **P** along which thunderstorms develop. (1x1) (1)

c) Explain how the winds at **Q** and **R** result in thunderstorms over the interior of South Africa. (3x2) (6)

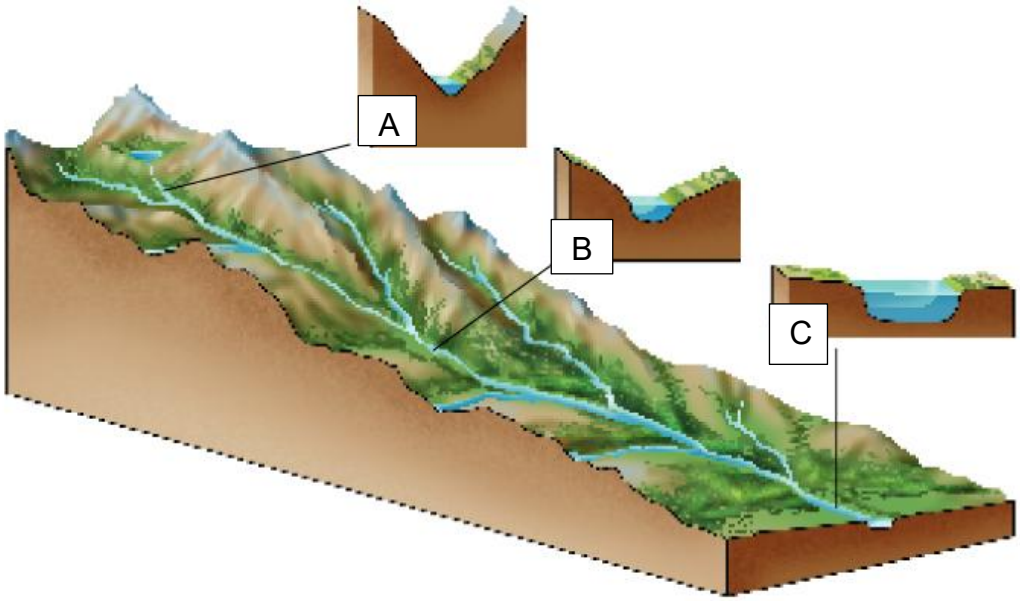
(15)

TOTAL QUESTION 1: [60]

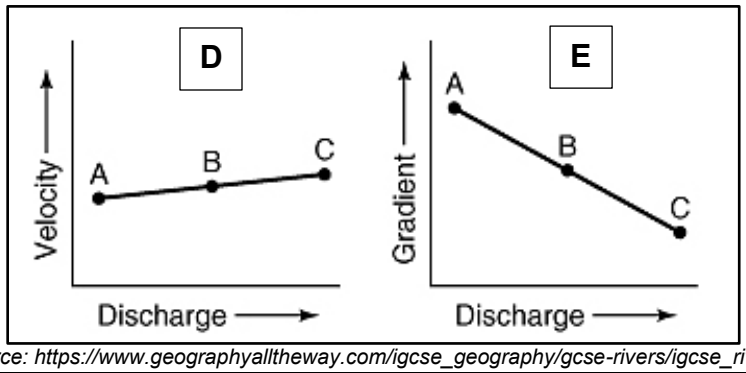
QUESTION 2: GEOMORPHOLOGY

2.1 Refer to the information below. Choose the correct word/phrase from the box that best fits each statement. Write only the letter next to the question numbers (2.1.1 to 2.1.8) in the ANSWER BOOK, for example 2.1.9 upper course.

CROSS PROFILES OF A RIVER VALLEY



CHANGES IN RIVER FLOW WITH DISTANCE FROM THE SOURCE



[Source: https://www.geographyalltheway.com/igcse_geography/gcse-rivers/igcse_river_long_profile.htm.]

Narrow, lower, proportional, source, inversely proportional, turbulent flow, plains tract (course), wide, middle, mouth

2.1.1 Place where rivers begin.

2.1.2 Course/stage (section) of the river at **B**.

2.1.3 Course/stage (section) of the river at **C**, closest to the mouth.

2.1.4 Shape of the river valley at **A**.

2.1.5 Discharge is largest.

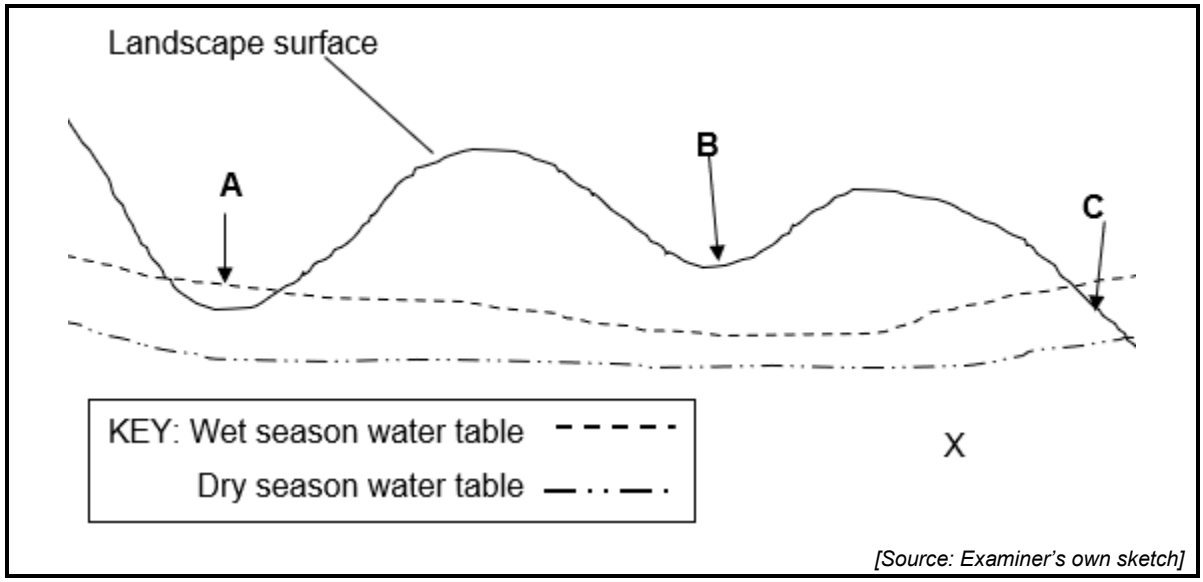
2.1.6 Relationship between velocity and discharge in **D**.

2.1.7 Relationship between gradient and discharge in **E**.

2.1.8 Upper course (8x1) **(8)**

2.2 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question numbers (2.2.1 to 2.2.7) in the ANSWER BOOK, for example 2.2.8 C.

Refer to the diagram showing different flow types of rivers (**A** to **C**) below to answer QUESTIONS 2.2.1 to 2.2.3.



[Source: Examiner's own sketch]

2.2.1 The river at **A** is an/a … river.

A periodic
B episodic
C permanent
D exotic (1x1) (1)

2.2.2 The river at **B** receives baseflow …

A throughout the year.
B during the rainfall season.
C only after heavy rainfall.
D never. (1x1) (1)

2.2.3 Refer to the zone at **X**. Which statement is NOT true?

A Fills up as water infiltrates into the soil and rock.

B Consists of rocks that are permeable.

C Is known as the zone of permanent saturation.

D Receives water directly from runoff. (1x1) (1)

2.2.4 The … is a measurement of the total length of channels in a drainage basin per unit area.

A drainage density

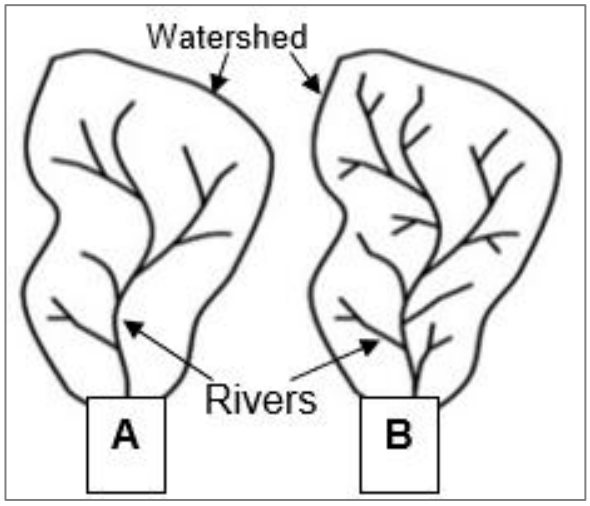
B stream order

C distribution

D drainage pattern (1x1) (1)

Refer to the diagram below to answer QUESTIONS 2.2.5 to 2.2.7.

The drainage basins **A** and **B** receive equal amounts of rainfall.



[Source: https://www.youtube.com/watch?app=desktop&v=4yhlbJY6y1o]

2.2.5 The drainage density of the river at **A** is … the drainage density of the river at **B**.

A lower than

B the same as

C higher than

D 10 times higher than (1x1) (1)

2.2.6 The drainage basin at **A** has … and … than the river at **B**.

i. more infiltration
ii. more runoff
iii. less infiltration
iv. less runoff

A i and ii

B i and iv

C ii and iii

D iii and iv (1x1) (1)

2.2.7 The drainage density at **B** would be typical of a/an …

A landscape with a gentle gradient.

B region that receives soft, continuous rainfall throughout the year.

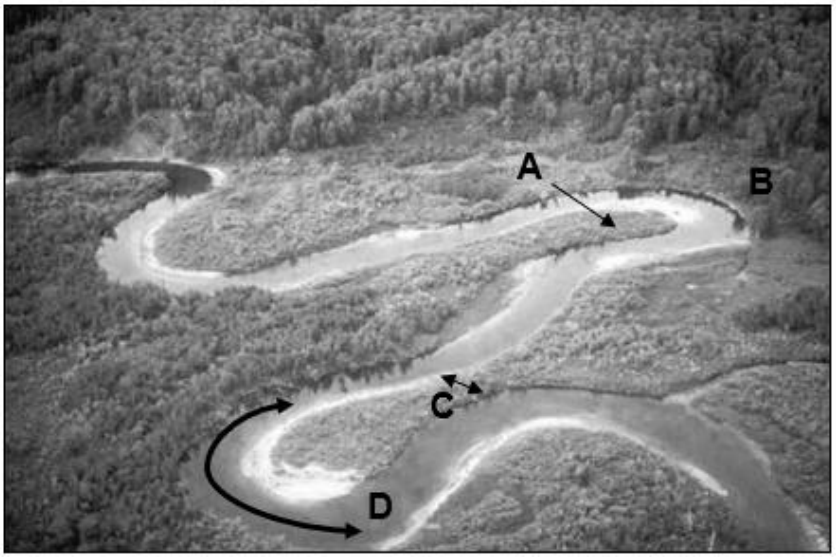
C landscape with a steep slope.

D area with dense vegetation cover. (1x1) (1)

(7x1) **(7)**

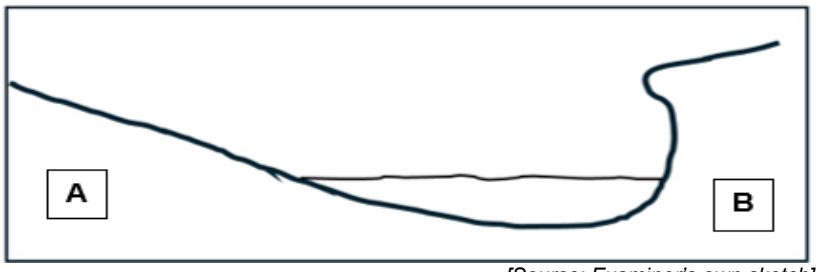
2.3 Refer to the photograph and cross section of fluvial landforms in a river valley.

PHOTOGRAPH OF FLUVIAL LANDFORMS



[Source: https://www.google.com/search-meandering rivers]

CROSS SECTION OF THE FLUVIAL LANDFORM



[Source: Examiner's own sketch]

2.3.1 Identify the fluvial landforms in the photograph. (1x1) (1)

2.3.2 How does gradient lead to the formation of these fluvial landforms? (QUESTION 2.3.1) (1x2) (2)

2.3.3 Choose the correct word between brackets:
The fluvial landform **A-B** has an (even/uneven) cross profile. (1x1) (1)

2.3.4 Redraw the cross section in your ANSWER BOOK. Label the slope at **A** and the slope at **B**. (2x1) (2)

2.3.5 Name the landform at **C**. (1x1) (1)

2.3.6 Describe what would happen at **C** over time. (2x2) (4)

2.3.7 Use the photograph to explain what would happen to the section of river, marked **D**, if flooding took place in the valley. (2x2) (4)

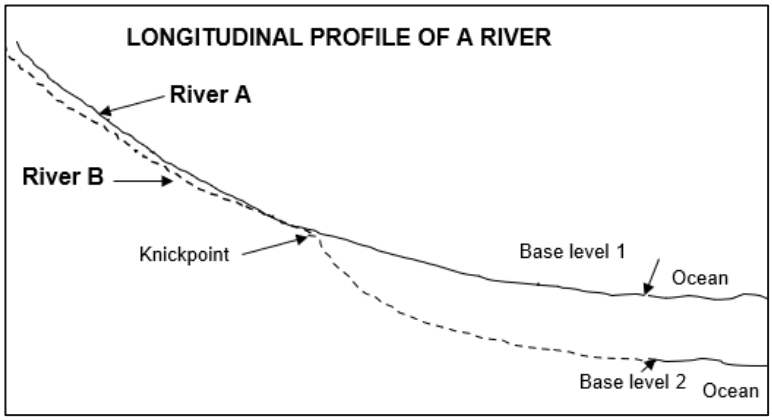
(15)

2.4 Refer to the information on river rejuvenation below, and a longitudinal profile of a river.

WHAT IS RIVER REJUVENATION?

Rivers that have a smooth profile are said to be in balance with the environment. However, if something changes this equilibrium, the river will then vertically wear away its channel. This process is known as river rejuvenation.

[Source: https://www.twinkl.co.za/teaching-wiki/erosion]



[Source: Examiner's own sketch]

2.4.1 Describe what *river rejuvenation* is. (1x1) (1)

2.4.2 Which river profile (**A** or **B)** in the sketch represents a graded river? (1x1) (1)

2.4.3 What is the reason for the change in equilibrium, as indicated on the longitudinal profile? (1x1) (1)

2.4.4 Discuss TWO ways, other than your answer to QUESTION 2.4.3, in which a river can be rejuvenated. (2x2) (4)

2.4.5 In a paragraph of **8-10** lines, explain the changes in the fluvial processes AND channel shape of the river, downstream of the knickpoint, after rejuvenation has taken place. (4x2) (8)

(15)

2.5 Refer to the article below on a catchment area and river management.

> In Johannesburg, South Africa, a private organisation will support the revitalisation of the Upper Jukskei River catchment area, decreasing flooding, improving urban heat management, enhancing water security, supporting livelihoods, expanding green areas, and protecting biodiversity. In Johannesburg, alien invasive species in river systems threaten the city's water security, increase flood risks and affect local biodiversity. Communities along the Jukskei also grapple with rising temperatures and the urban heat island effect, particularly in poorer parts with limited adaptive capacity.
>
> *[Source: Adapted from https://www.iisd.org/suncasa/johannesburg]*

2.5.1 Define the term *river management*. (1x2) (2)

2.5.2 What is meant by the phrase 'enhancing water security'? (1x2) (2)

2.5.3 State ONE effect, mentioned in the article, that the alien invasive species have on the Jukskei River system. (1x1) (1)

2.5.4 Discuss the effect of the Jukskei River on the urban heat island in its immediate surroundings. (2x2) (4)

2.5.5 Explain how proper river management can protect the biodiversity of the catchment area and the drainage basin itself. (3x2) (6)

(15)

TOTAL QUESTION 2: [60]

TOTAL SECTION A: [120]

SECTION B

Refer to the 1:50 000 topographical map extract from 3319AD CERES as well as the orthophoto map 3319 AD 12 CERES which represents part of the topographical map area.

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 The latitude and longitude of the topographical map is …

i. 33°S
ii. 33°E
iii. 19°E
iv. 19°S

A i and ii

B i and iii

C ii and iii

D ii and iv (1x1) (1)

3.1.2 The bearing from spot height 531 in block **B3** to trigonometrical station (∆) 234 in block **B4** on the topographical map is …

A 92°.

B 272°.

C 85°.

D 181°. (1x1) (1)

3.1.3 a) Calculate the gradient from spot height 474 to the point marked **1** along the road on the orthophoto map. The map distance from the spot height to point **1** is 9,1 cm.
FORMULA: Height difference/Distance

OR

Vertical Interval/Horizontal Equivalent

SHOW ALL CALCULATIONS. (4x1) (4)

b) Are these two points intervisible? (QUESTION 3.1.3 a) (1x1) (1)

3.1.4 Calculate the area of the orchards in the block marked **2** on the orthophoto map in km². The length of the orchards is 0,55 km.

SHOW ALL CALCULATIONS
Formula: Area = Length x Breadth (3x1) (3)

(10)

3.2 MAP INTERPRETATION

Refer to the addendum indicating the position of Ceres, the information about Ceres, as well as to the topographical map.

3.2.1 Ceres receives rainfall ...

A during summer.

B in springtime.

C during winter.

D throughout the year. (1x1) (1)

3.2.2 The nocturnal wind direction at **F** in block **A2** on the topographical map is …

A south east.

B south west.

C north east.

D north west. (1x1) (1)

3.2.3 The main function of the dam at **G** in block **C4** and **C5** on the topographical map is to …

i. store water for domestic use.
ii. control the flow of water in the river during times of heavy rainfall.
iii. store water for irrigation purposes.
iv. serve as a tourist destination.

A i and ii

B i and iii

C ii and iii

D ii and iv (1x1) (1)

3.2.4 Refer to the built-up area at **3** on the orthophoto map.

a) What effect do the large buildings have on the temperature of the specific area? (1x1) (1)

b) Explain how the roads in the built-up area cause changes in temperature. (1x2) (2)

3.2.5 Refer to the river system demarcated at **H** in block **C3, C4, D3 & D4** on the topographical map.

a) Identify the drainage pattern of the river system. (1x1) (1)

b) Describe the:

i) gradient (evident on the map) and
ii) rock type that led to the development of the drainage pattern (QUESTION 3.2.5 a). (2x1) (2)

c) The river in the demarcated area generally flows in a/an (eastward/westward) direction. (1x1) (1)

d) Determine the stream order of the river at **J**. (1x1) (1)

e) Predict what would happen to the stream order at **J** during an extended drought. (1x1) (1)

(12)

3.3 GEOGRAPHIC INFORMATION SYSTEMS

3.3.1 Refer to the warehouse of Bon Chretien (now known as Ceres Fruit Growers) at **K** in block **C2** on the topographical map as well as the Google Earth Street View image of Bon Chretien Rd below.

[Source: Google Earth]

a) Choose the correct words between brackets:
The warehouse on the topographical map is represented in i) (raster/vector) format as a ii) (polygon/point) feature. (2x1) (2)

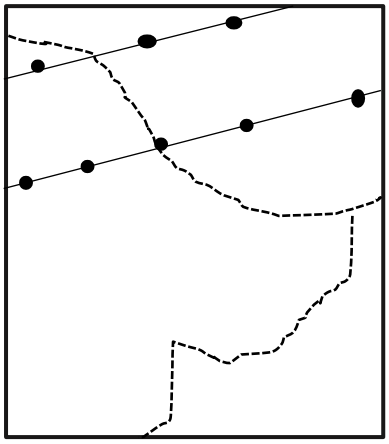
b) State whether the image would be considered primary or secondary data. (1x1) (1)

c) Explain your answer to QUESTION 3.3.1 b). (1x1) (1)

3.3.2 a) Define the term *data layer*. (1x2) (2)

b) Refer to block **A4** on the topographical map as well as the block below representing block **A4**.

4



A

Redraw the block in your ANSWER BOOK. Draw (in the correct position) and label the polygon man-made feature that forms part of the drainage layer in the block. (2x1) (2)

(8)

TOTAL QUESTION 3: [30]

TOTAL SECTION B: [30]

GRAND TOTAL: [150]

ROUGH WORK

TAKE NOTE: ANY WORK DONE ON THIS PAGE WILL NOT BE MARKED.

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