GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

JUNE EXAMINATION
GRADE 12

2026

MARKING GUIDELINES

GEOGRAPHY

(PAPER 1)

21 pages

PRINCIPLES FOR MARKING GEOGRAPHY – JUNE 2026

The following marking principles are developed to standardise marking processes.

MARKING

- ALL answers MUST be marked, irrespective of whether they are 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: **X**
  - 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.

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 the answer is 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.

TOTALLING AND TRANSFERRING OF MARKS

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

MODERATION

Marking on each level of moderation is done in the same way as the initial marking. All guidelines for marking must be adhered to.

If a mark for a subquestion is changed after moderation, the moderator must strike through the marker's mark and write down the new mark, ~~12~~ 16.

The total for the question must be recalculated, and similarly be struck off and the new total to be written down, ~~26~~ 36.

EXAMPLE FOR MARKING

QUESTION 1 22

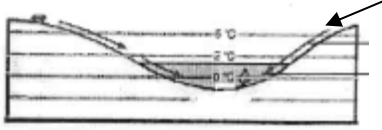
1.1 1.1.1 A (South Atlantic High) ✓
1.1.2 B (Kalahari High) ✓
1.1.3 B (South Indian) X 2

1.2 1.2.1 Melting snow ✓
1.2.2 Mouth X
1.2.3 Third order ✓ 2

1.3 1.3.1 Katabatic X

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. √√
Air flows downslope ✓✓



6

1.4 1.4.1 Shape of front concave X
Steep gradient of front ✓

1.4.2 Warm air undercuts the cold air X ✓✓

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. 5

1.5 1.5.1 (a) A river that only flows all year-round X
(b) The river channel is wide X ✓✓ ✓✓
(c) Regularity of rainfall and the soil type over which the streams flow. ✓ X

1.5.2 Gauteng and the Eastern Cape

1.5.3 The cost of food production will increase at 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 in electricity prices. Costs will increase the price of electricity during production. There will be less clean water to generate hydroelectricity. M 7

SECTION A: CLIMATE, WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1 1.1.1 A (1)/West to east

1.1.2 A (1)/Rapid upliftment of air at the cold front

1.1.3 D (1)/Cumulonimbus

1.1.4 C (1)/It will change from north-westerly to south-westerly.

1.1.5 C (1)/warm sector

1.1.6 B (1)/The cold air behind the cold front will arrive.

1.1.7 B (1)/The cold front overtakes the warm front.

(7 x 1) (7)

1.2 1.2.1 Z (1)/26,5° C

1.2.2 Y (1)/clockwise

1.2.3 Y (1)/eye

1.2.4 Y (1)/condensation

1.2.5 Y (1)/over land

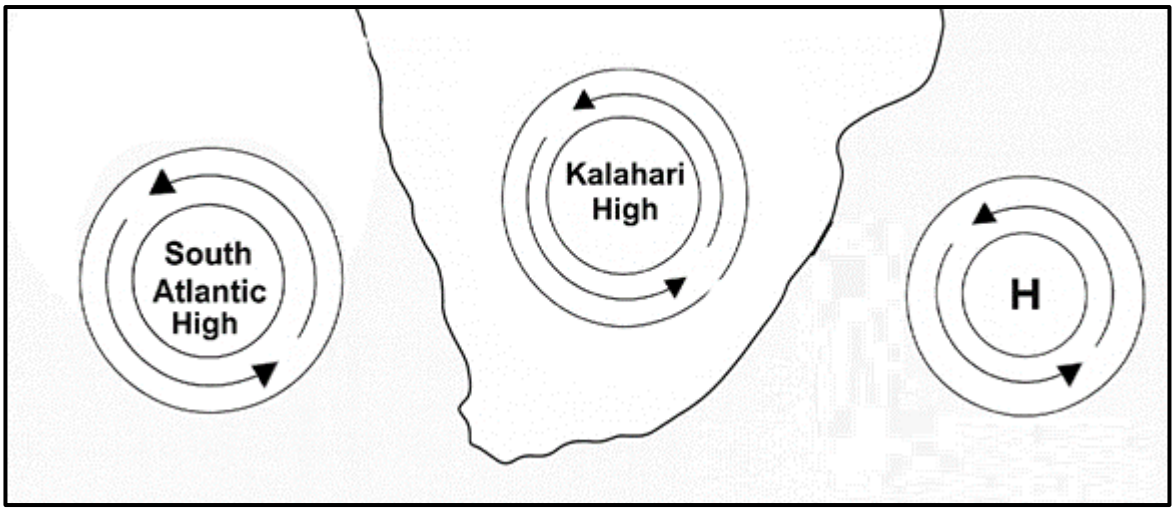
1.2.6 Y (1)/eye wall

1.2.7 Y (1)/storm surges

1.2.8 Z (1)/east to west

(8 x 1) (8)

1.3 Refer to the sketch showing high pressure systems.



[Adapted from https://www.theanswer.co.za/wp-content/uploads]

1.3.1 Name the high-pressure system located to the east of South Africa.

South Indian High-Pressure/Anticyclone. (1) (1 x 1) (1)

1.3.2 Discuss how the high-pressure system mentioned in QUESTION 1.3.1 contributes to summer rainfall in the eastern parts of South Africa.

The South Indian high-pressure system pushes moist air inland during summer. (2)
Onshore winds from the Indian Ocean carry moisture. (2)
This moisture condenses over the eastern escarpment, causing rainfall. (2)
[ANY TWO] (2 x 2) (4)

1.3.3 When the Kalahari High-Pressure system dominates the interior of South Africa during winter, residents of Bloemfontein describe the typical weather as days starting with cold mornings which then warms up in the afternoon, with dry air.

(a) Explain why the temperature increases from morning to afternoon.

(Terrestrial) radiation at night leads to cold mornings and insolation during the day leads to warm afternoons. (2) (1 x 2) (2)

(b) Why is the weather condition in Bloemfontein described as 'dry'?

Descending air/anticyclonic circulation in KHP (DALR). (2)
Inversion layer is dominant over the interior. (2)
Reduced precipitation. (2)
Moisture is prevented from entering the interior. (2)
Condensation does not occur. (2)
Cloud formation is limited. (2)
[ANY TWO] (2 x 2) (4)

1.3.4 Discuss the negative environmental impacts that may be caused by the dominant Kalahari High-Pressure system in winter.

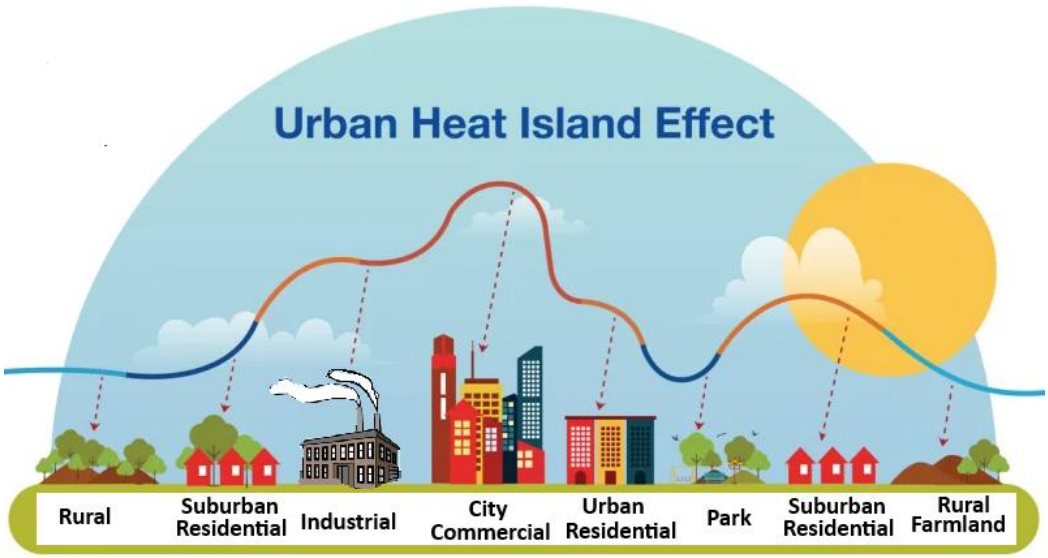
Decreased rainfall decreases soil moisture. (2)
Extreme temperature variation can lead to veld fires (berg winds). (2)
Formation of frost which may destroy natural vegetation (2)
Inversion layer can trap pollutants. (2)
Loss of natural habitat. (2)
Disruption of food chains. (2)
Disrupts biodiversity. (2)
[ANY TWO] (2 x 2) (4)

[15]

1.4 Refer to the infographic on the urban heat island effect.

MOST CITIES RECEIVE MORE RAINFALL THAN THE SURROUNDING RURAL AREAS

The urban heat island effect is relatively well-known. What few people know is that the urban heat island has a counterpart with important consequences: urban development increases the amount of rainfall in an urban area as compared to the surrounding rural area. This could have wide-ranging implications, the most serious of which is flash flooding in densely built urban areas which damages infrastructure.



[https://www.google.com/search?q=urban+heat+island+effect+diagram]

1.4.1 Define the term *urban heat island*.

An urban area that is significantly warmer than its surrounding rural areas. (2) [CONCEPT] (1 x 2) (2)

1.4.2 Describe ONE human activity evident in the sketch that contributes to the urban heat island effect.

Industrial activity. (2)
Construction using artificial materials. (2)
Construction of tall buildings. (2)
Dense building construction. (2)
Removal of vegetation. (2)
[ANY ONE] (1 x 2) (2)

1.4.3 Identify the natural hazard caused by increased rainfall, as mentioned in the article.

Flash flooding. (1) (1 x 1) (1)

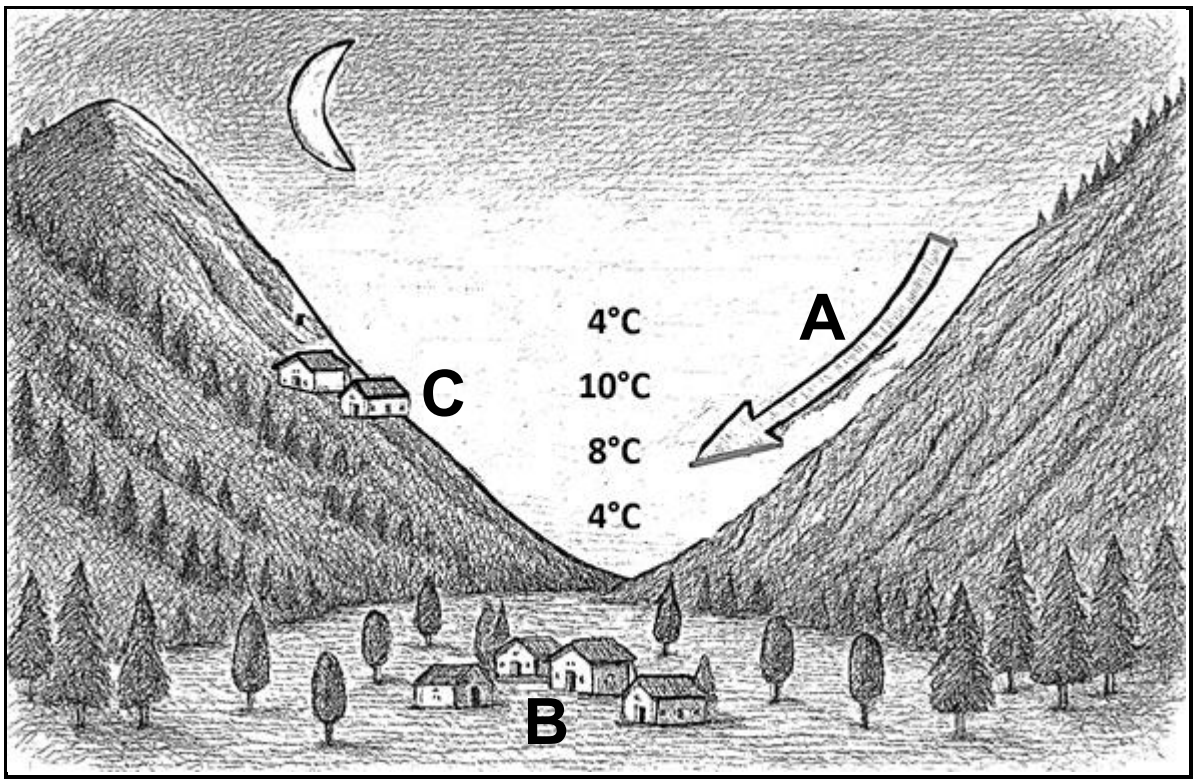
1.4.4 Explain why there is a rainfall difference between rural and urban areas.

More condensation/hygroscopic nuclei in urban areas leads to increased condensation. (2)
Increased convection in urban areas results in more cloud formation. (2)
OR
Less condensation/hygroscopic nuclei in rural areas leads to decreased condensation. (2)
Less convection in rural areas results in less cloud formation. (2)
[ANY ONE] (1 x 2) (2)

1.4.5 In a paragraph of approximately EIGHT lines, discuss natural materials and methods which can be used to reduce the urban heat island effect.

Planting trees along roads. (2)
Creating green spaces (accept examples). (2)
Planting vegetation in unoccupied spaces (accept examples). (2)
Use natural materials for construction (accept examples). (2)
Install water features (accept examples). (2)
Installation/promotion of rooftop gardens. (2)
[ANY FOUR] (4 x 2) (8)
[15]

1.5 Refer to the sketch of atmospheric conditions in a valley at night.



[Adapted from http://www.heidorn.info/keith/weather/elements/inversion.htm]

1.5.1 Identify the wind at **A**.

Katabatic (wind) (1) (1 x 1) (1)

1.5.2 Define the term *temperature inversion*.

A temperature inversion is when air temperature increases with height (altitude). [CONCEPT] (2) (1 x 2) (2)

1.5.3 Explain how temperature inversion occurs in a valley.

At night, the valley slopes cool rapidly due to (terrestrial) radiation. (2)
This cool, denser air, flows down the valley slopes and settles at the bottom/valley floor. (2)
Warmer air in the valley is displaced upwards by the cold dense air. (2)
Warmer air stays above the cool air, resulting in an inversion layer (where temperature increases with altitude). (2)
[ANY TWO] (2 x 2) (4)

1.5.4 Explain how the wind mentioned in QUESTION 1.5.1, will negatively impact a farming community located on the valley floor at **B**.

Contributes to the development of frost pockets. (2)
Crops may be damaged because of the cold temperature. (2)
The cold temperature limits the type of crops that can be cultivated. (2)
Leads to dangerous road conditions because of fog. (2)
Intense winds can damage infrastructure (accept examples). (2)
Decreased temperature increases energy consumption. (2)
[ANY TWO] (2 x 2) (4)

1.5.5 Discuss how temperature inversion in valleys can have a negative effect on the health of people living at **C** on the slope of the valley**.**

The inversion layer traps pollutants and smoke, worsening respiratory issues (accept examples). (2)
Pollutants trapped by the inversion layer can increase the risk of heart attacks. (2)
Smog trapped by the inversion layer can cause irritation of the eyes, nose and throat. (2)
[ANY TWO] (2 x 2) (4)
[15]
[60]

QUESTION 2: GEOMORPHOLOGY

2.1 2.1.1 B (1)/uniform rocks

2.1.2 C (1)/Centrifugal

2.1.3 D (1)/Rectangular

2.1.4 A (1)/i and iii

2.1.5 C (1)/3

2.1.6 C (1)/ii and iii

2.1.7 A (1)/permanent; sparse

(7 x 1) (7)

2.2 2.2.1 Y (1)/vertical erosion

2.2.2 Y (1)/rapid OR Z (1)/waterfall

2.2.3 Z (1)/gorge

2.2.4 Y (1)/Antecedent

2.2.5 Z (1)/captor

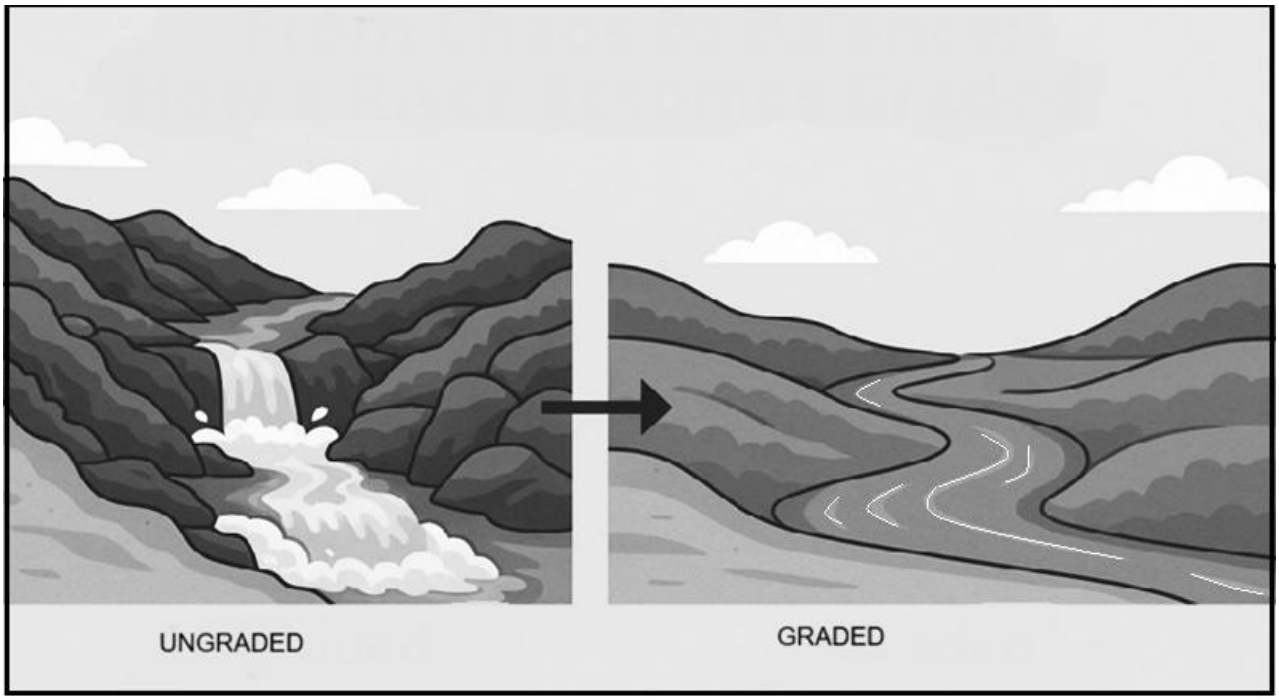
2.2.6 Y (1)/oxbow lake

2.2.7 Z (1)

2.2.8 Z (1)

(8 x 1) (8)

2.3 Refer to the diagram below and answer the questions that follow.



[Adapted from https://worldrivers.net/wp-content/uploads/2020/08/ChatGPT-Image-Apr-15-2025-08_55_19-PM-1024x683.jpg]

2.3.1 What is river grading?

This is the balance/equilibrium between (the rate of) erosion and (the rate of) deposition.(2) [CONCEPT] (1 x 2) (2)

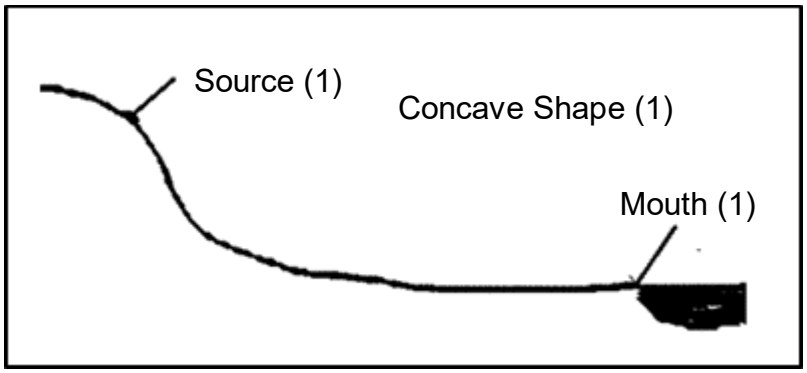
2.3.2 Describe TWO characteristics of an ungraded river.

Uneven river bed (1)
More erosion (1)
Turbulent flow (1)
Temporary erosion base is evident (accept waterfalls, rapids, lakes) (1)
[ANY TWO] (2 x 1) (2)

2.3.3 Name the fluvial landforms visible in the diagram associated with the ungraded river profile.

Waterfall (1)
Rapids (1) (2 x 1) (2)

2.3.4 Draw a labelled longitudinal profile of a graded river. (3 x 1) (3)



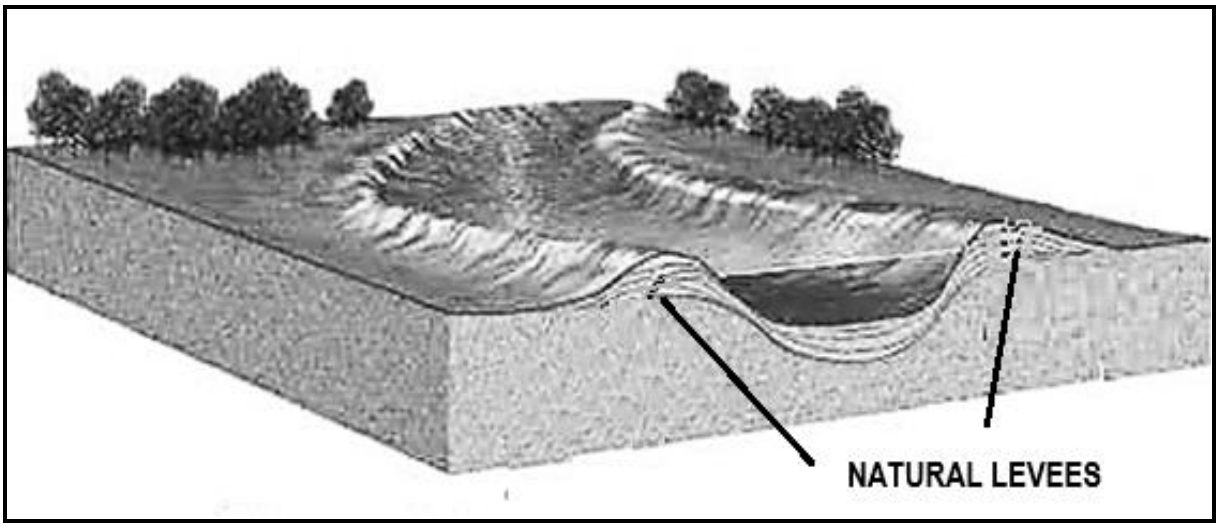
Marks to be awarded for:
Source (1)
Mouth (1)
Concave shape (1)

2.3.5 Explain how a river achieves and maintains a graded longitudinal profile.

Downward/Vertical erosion dominates in the upper course causing a steep valley slope. (2)
Headward erosion removes temporary base levels of erosion in the upper course. (2)
Downward/Vertical erosion removes temporary base levels (waterfall) in the upper course. (2)
Eroded material is then transported downstream. (2)
Discharge of the river increases in the middle course causing lateral erosion. (2)
Gradient in the middle course becomes less steep. (2)
Deposition dominates in the lower course because the gradient is gentle.(2)
Deposited materials fill up lakes and dams. (2)
The river profile will now develop a smooth concave shape from upper to lower course.(2)
Equilibrium between erosion and deposition will maintain (result in) a graded profile. (2)
[Any THREE] (3 x 2) (6)

[15]

2.4 Study the sketch below on natural levees.



[Source: https://esomake.co.ke/images/secondary/geography/natural-levees-076.jpg]

2.4.1 What are natural levees?

Natural embankments (raised river banks) which are formed when a river floods (repeatedly) and deposits material on the river banks. (2) [CONCEPT] (1 x 2) (2)

2.4.2 In which fluvial course are natural levees found?

Lower course (1) (1 x 1) (1)

2.4.3 Which fluvial process results in the formation of natural levees?

Deposition (2) (1 x 2) (2)

2.4.4 Describe the size and texture of materials which form natural levees.

Size: Large particles (2)
Texture: Particles are coarse (2)
(Must refer to both size and texture) (2 x 2) (4)

2.4.5 Discuss the physical impact that the development of natural levees has on the river channel and floodplain.

<u>River channel:</u>
Discharge/volume increases (2)
More water is confined in the river channel (2)
Velocity increases (2)
Carrying capacity of the water increases (2)
Deeper river channel (2)

<u>Floodplain:</u>
Deposition of silt/alluvium on the floodplain decreases (2)
Flooding on the floodplain decreases (2)
[Any THREE. Must refer to both the channel and floodplain.] (3 x 2) (6)
[15]

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

BLOUBANKSPRUIT: AN ECOLOGICAL DISASTER

Sewage spilling into streams and rivers from dysfunctional pump houses in Krugersdorp is causing serious problems for residents and businesses. A tour along the Bloubankspruit, from Munsieville to Muldersdrift on January 18 revealed a full-scale crisis in the making.

A pump station in Munsieville, looked after by a lone security guard, has not been in operation for months. The controls are now used as shelves for boxes, and even a pair of old boots. Just behind the pump houses in the veld, the stream of sewage meanders its way to the Bloubankspruit which flows from Krugersdorp, through Coronation Park, the Krugersdorp CBD, through Munsieville, and past the all-but-defunct Percy Stewart Wastewater Treatment Plant, from there making its way through Oaktree and to Muldersdrift

The banks of this horrid stream are, in places, between six and eight metres high, and if the stench is not enough to convince you that this is no ordinary tranquil stream, the unnatural colour of the "water" certainly will. There are no signs of life are to be seen anywhere around the stream. None of the birdlife that is normally associated with a place like this can be observed, just the smell, the eerie coloured water, and the stench.

The sewage situation along the Bloubankspruit is more than just an inconvenience for businesses along the flow of the spruit. It is an impending disaster if nothing is done to stop it. In addition to the many people who make their living from businesses along the spruit, the ecological damage to the area is significant.

[Source: https://www.citizen.co.za/krugersdorp-news/news-headlines/local-news/2024/01/26/sewage-spill-a-crisis-in-the-making/]

2.5.1 What is the main source of pollution of the Bloubankspruit?

Sewage spilling into streams and rivers from dysfunctional pump houses in Krugersdorp (1) (1 x 1) (1)

2.5.2 Quote TWO phrases from the extract that proves that pollution of the Bloubank is an ecological disaster.

No signs of life are to be spied anywhere around the stream.(1)
None of the birdlife that is normally associated with a place like this can be observed, just the smell, the eerie coloured water, and the stench. (1) (2 x 1) (2)

2.5.3 Account for the ecological disaster in the Bloubankspruit.

Dysfunctional pump houses in Krugersdorp (2)
Defunct Percy Stewart Wastewater Treatment Plant (2)
Ageing sewers are overwhelmed and failing under stress (2)
Decades of neglect (2)
Growing populations puts a strain on infrastructure (2)
Frequent infrastructure failures (Can give examples such as line breaks, pump failures, and overflows) (2)
The release of raw and under-treated sewage into the spruit (2)
Misuse of funds (2)
Corruption (2)
[Any TWO] (2 x 2) (4)

2.5.4 In a paragraph of approximately EIGHT lines, suggest measures that the local municipality and the local community can implement to avert this ecological disaster in the Bloubankspruit.

Robust water quality monitoring (2)
Awareness campaigns (2)
Legal action to address non-compliance issues (2)
Regular maintenance of septic systems to prevent leaks that can contaminate water sources. (2)
Any cracked or broken pipes must be replaced promptly to prevent sewage seepage. (2)
Improve wastewater treatment (2)
Regulate stormwater control, sewer maintenance and environmental health inspections. (2)
Avoid disposing of inappropriate materials in sewers and stormwater drains. (2)
Ensure that stormwater does not enter wastewater sewers. (2)
Mobilise regular clean-up campaigns by local communities. (2)
Ensure that water service functions are staffed with appropriately qualified and experienced personnel. (2)
Municipality must take responsibility through the polluter-pay-principle. (2)
Create buffer zones to prevent development. (2)
[Any FOUR] (Must refer to both municipality and community) (4 x 2) (8)

[15]
[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON HARRISMITH



Coordinates: 28°17'0″S 29°08'0″E

Harrismith is a town in the Free State province of South Africa, well-known as a **major** crossroads for national trade routes (situated on the N3 highway between Johannesburg and Durban) and serves as a gateway to the Drakensberg mountains. The town is known for its scenic beauty, rich history, and outdoor activities. The Wilge River is a tributary of the Vaal River in central South Africa. This river has its source approximately 50 km northeast of Harrismith.

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

ENGLISH	AFRIKAANS
River	Rivier
Island	Eiland
Landing Strip	Landingstrook
Digging	Uitgrawing
Mainstream	Hoofstroom
Canal	Kanaal

3.1 MAP SKILLS AND CALCULATIONS

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 (3.1.1 to 3.1.2) in the ANSWER BOOK.

Refer to the topographic map and orthophoto map.

3.1.1 **B (1)/Free State** (1 x 1) (1)

3.1.2 **A (1) 5 m** (1 x 1) (1)

Refer to the topographic map.

3.1.3 Calculate the distance between trigonometrical station 299 in block **C2** to spot height 1983 in block **B5** on the topographic map.

Formula: **Distance = Map Distance x Scale**

9,9 (1) cm x 0,5 (accept 9,8 cm to 10 cm)
4950 m (1) (accept 4900 m to 5000 m)
4,95 km (1) (accept 4,9 km to 5 km) (2 x 1) (2)

3.1.4 (a) Calculate the present magnetic declination (2026) on the topographic map.

Use the following information
Annual change = 16' W.

Difference in years: 2026 - 2018 = 8 (1) years
Total Change: 8 x 16' = 2° 08' (1)
Magnetic Declination 2026: 22° 36' + (1) 2° 08'
= 24° 44' West of True North (1) (4 x 1) (4)

(b) Calculate the present magnetic bearing (2026) from spot height **1672** in block **D4** to spot height **1668** in block **E4** on the topographic map.

Use the following information
True bearing = 218º

Formula: **MB = TB + MD**
Magnetic Bearing: 218 ° + 24° 44'
242°44' (1) (1 x 1) (1)

(c) Discuss the importance of calculating the present magnetic bearing to aviation (flying).

It is the most accurate direction (1)
They will not get lost (1)
(Any ONE) (1 x 1) (1)
[10]

3.2 MAP INTERPRETATION

3.2.1 Refer to area **F** and **G** on the topographic map.

(a) Which area (**F** or **G)** will experience lower average temperatures?

G (1) (1 x 1) (1)

(b) Provide evidence from the topographic map for your answer in QUESTION 3.2.1(a)

G has natural forest vegetation which cools temperatures via absorption and transpiration (2)
G is located in a steep valley where cold katabatic winds replace warm night air (2)
[ANY ONE] (1 x 2) (2)

3.2.2 Refer to both the topographic map and orthophoto map.

(a) Identify river **6** in block **B2** on the orthophoto map.

Wilge river(1) (1 x 1) (1)

(b) In which general direction does the river identified in QUESTION 3.2.1(a) flow?

North west (1) (1 x 1) (1)

(c) Provide evidence from the topographic map to justify your answer in QUESTION 3.2.2(b).

Tributaries join the river from a south easterly direction (1)
The river enters the map at an altitude of 1603 m and flows northwards to 1602 m (1)
[ANY ONE] (1 x 1) (1)

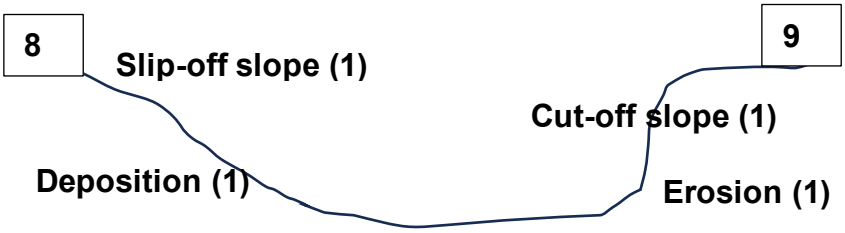
3.2.3 (a) Identify the fluvial feature **12** in block **D4** on the orthophoto map.

Meander (loop) (1) (1 x 1) (1)

(b) Identify the fluvial course of the river where feature 12 (answer to QUESTION 3.2.3(a) is located.

Middle course (1) (1 x 1) (1)

(c) Draw a labelled cross section through line **8** to **9** in blocks **C2** and **C3** on the orthophoto map indicating the main fluvial processes and slopes



Marks will be allocated for the following:
Erosion (1)
Deposition (1)
Slip-off slope (1)
Cut-off slope (1)

. (4 x 1) (4)
[12]

3.3 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

3.3.1 Define the concept *data layering*.

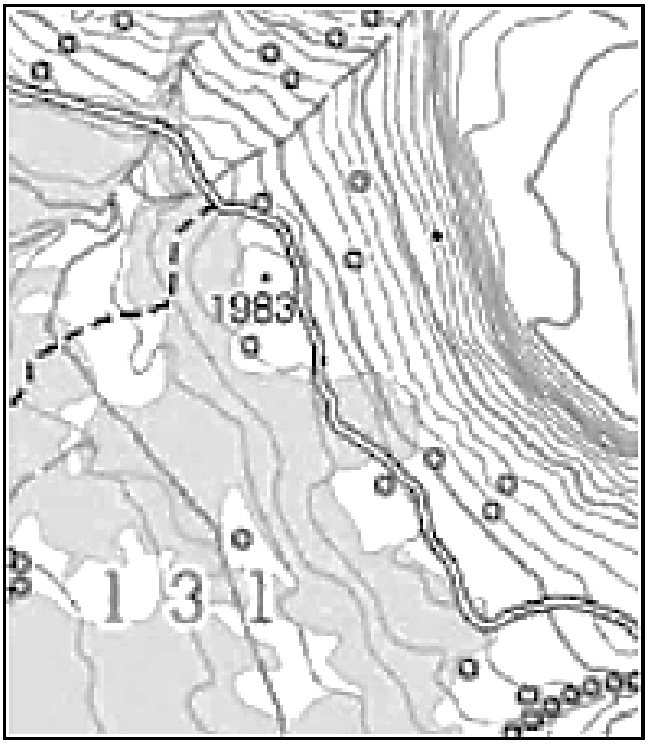
Refers to when different spatial data layers are superimposed on each other to form an integrated image. (CONCEPT) (1 x 2) (2)

3.3.2 (Data manipulation/data standardisation) involves the process of converting data to a common format that can be easily read and understood globally.

Data Standardisation (1) (1 x 1) (1)

Use the following extract from block **B5** on the topographic map to answer QUESTION 3.3.3 and 3.3.4.

3.3.3 Refer to the vector data in the extract and identify ONE example of natural line data and ONE example of a man-made point data.



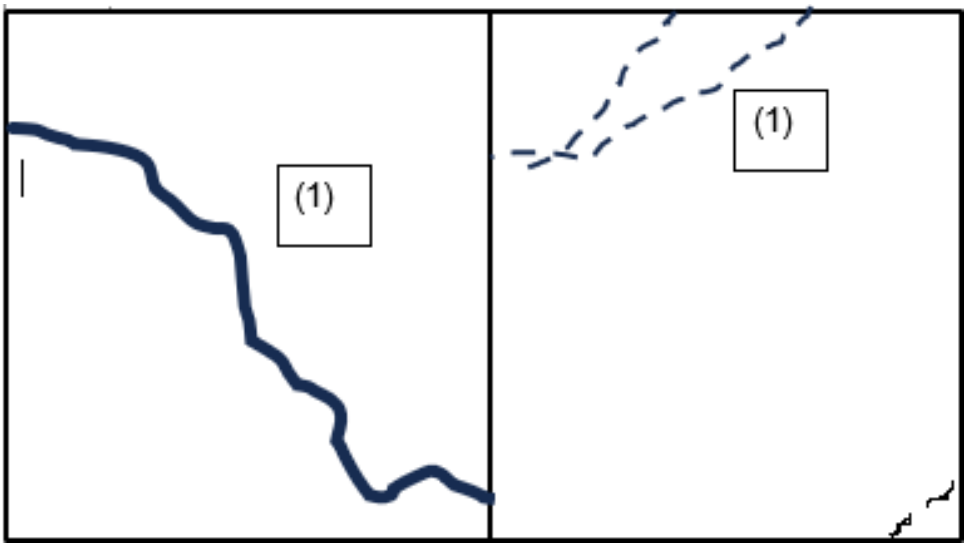
Natural Line: Row of trees (1) / Non-perennial river (1) [Any ONE]

Man-made point: Spot Height 1983 (1) (2 x 1) (2)

3.3.4 Draw TWO adjacent blocks as seen below in your ANSWER BOOK. Using the concept of paper GIS, draw the following in the two adjacent blocks:

(a) Infrastructure data layer

(b) Drainage data layer (2 x 1) (2)



Correct indication of other road as infrastructure layer (1)
Correct indication of non-perennial river as drainage layer (1)

(c) Why are data standardisation and data manipulation important when performing data layering?

Transforms data into a uniform format **and improves accuracy (1)**

(1 x 1) (1)
[8]

TOTAL SECTION B: 30

TOTAL 150