MARKING GUIDELINES

EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
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PAPER	1
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SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE

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QUESTION 1: CLIMATE AND WEATHER

1.1.1 D
1.1.2 D
1.1.3 C
1.1.4 C
1.1.5 D
1.1.6 C
1.1.7 D
1.1.8 D (8x1) = **[8]**

1.2.1 C
1.2.2 A
1.2.3 B
1.2.4 A
1.2.5 B
1.2.6 B
1.2.7 A (7x1) = **[7]**

1.3.1 Kalahari High Pressure (Anticyclone)
Coastal low pressure (2x1) = (2)

1.3.2 At the coast (1x1) = (1)

1.3.3 Passing of a temperate cyclone (1x2) = (2)

1.3.4 <u>WARM</u>
- Air heats adiabatically (1°C/100m) as it sinks.
- Friction with the slope.

<u>DRY</u>
- As the air sinks the moisture evaporates.
- Air must rise and cool for condensation / no condensation when air sinks.

[**TWO** marks for WARM and **TWO** for DRY] (2x2) = (4)

1.3.5
- Heat stroke / heat exhaustion
- Dehydration
- Low productivity
- Unpleasantly hot conditions can restrict outdoor activities.
- Veld fires may kill/injure them if they reach town.

[ANY TWO] (2x1) = (2)

1.3.6
- People can stay indoors to reduce exposure to heat /engage in indoor activities.
- People can drink enough water to stay hydrated.
- Flexible working hours.
- Install air conditioners in buildings or open windows.
- Wear light, comfortable clothes to reduce discomfort.
- Stay in the shade when involved in outdoor activities.
- Warn people of risks of heat / veld fires. (2x2) = (4)
- Have teams ready to fight fires if they occur.

[ANY TWO]

[15]

1.4

1.4.1 Cold front (1x1) = (1)

1.4.2 (a) Winter (1x1) = (1)

(b) Cold front over land / Intense HP cells over oceans/Hogh pressure over the interior (1x1) = (1)

1.4.3 (a) Cumulonimbus and Cirrus (2x1) = (2)

(b) Warm moist unstable air in the warm sector is lifted up at the front. The cold front has a steep gradient causing rapid uplift / Forced convection at cold front. (2x2) = (4)

(c) Thunderstorms and rain / heavy rain (1x2) = (2)

1.4.4 NEGATIVE IMPACTS:
- Flooding of crops.
- Soil is washed away by heavy rainfall.
- Destruction of natural ecosystems.
- Loss of grazing for animals.
- Loss of agricultural land.
- Snow / low temperatures /flooding result in loss of livestock.

[ANY THREE] (3x2) = (6)

[15]

1.5

1.5.1 The direction that the slope faces. (1x2) = (2)

1.5.2 (a) Slope 1 (1x1) = (1)

(b) It is the north-facing slope that receives more direct sunlight in the Southern Hemisphere. (1x2) = (2)

1.5.3 (a) Katabatic / downslope wind / mountain wind. (1x1) = (1)

(b) Thermal belt / inversion layer. (*NOT JUST THE WORD INVERSION)* (1x1) = (1)

1.5.4 HOW RADIATION FOG DEVELOPS:

- A thick layer of cold air sinks to the base of the valley at night.
- If the dew point is above freezing point, the water vapour condenses to form droplets of water.
- Droplets are suspended in the air to form fog.

FOG SEEMS TO "LIFT" IN THE MORNING BECAUSE:

- Terrestrial radiation heats the air in contact with the slope causing it to evaporate. (4x2) = (8)
- It evaporates from the earth's surface upwards.

[MUST EXPLAIN <u>HOW</u> IT FORMS AND **<u>WHY</u>** IT SEEMS TO LIFT]

[15]

TOTAL QUESTION 1: [60]

QUESTION 2: GEOMORPHOLOGY

2.1.1 A

2.1.2 A

2.1.3 A

2.1.4 B

2.1.5 A

2.1.6 B

2.1.7 A (7X1) = **[7]**

2.2

2.2.1 **1**- Captor / pirate stream

2 - Captive / captured / pirated stream (2x1) = (2)

2.2.2 Steep (1x1) = (1)

2.2.3 River 1 (1x1) = (1)

2.2.4 Less resistant rocks with faults and joints. (1x1) = (1)

2.2.5 Headward erosion (1x1) = (1)

2.2.6 Wind gap (1x1) = (1)

2.2.7 It will not flow anymore / no water in river 2. (1x1) = (1)

(8x1) = **[8]**

2.3

2.3.1 The shape of the river from source to mouth.
Visual representation of the gradient down which the river flows.
[CONCEPT] (1x2) = (2)

2.3.2 (Smooth) Concave / steep at the top and gentle at the bottom. No temporary base levels. (1x1) = (1)

2.3.3 The steep slope gives the river enough energy to flow. (1x2) = (2)

2.3.4 MARKS ALLOCATED FOR:

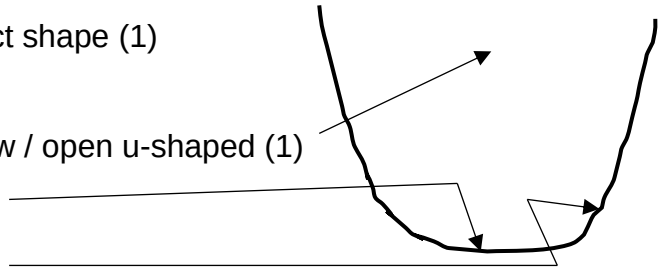
<u>DRAWING</u> – correct shape (1)

<u>ANNOTATIONS</u>:

Wider, more shallow / open u-shaped (1)

Vertical erosion (1)

Lateral erosion (1)



(4x1) = (4)

2.3.5
- Water slowed by dam wall causing sediments to be deposited in the dam.
- River downstream has more energy because the load is reduced.
- Will flow faster because of higher energy.
- River is rejuvenated therefore will have more erosive power.
- River has more energy causing more vertical erosion.
- Due to more vertical erosion the river will carve out the river bed deeper.

OR/BUT

- The river might have a smaller volume as some water is kept in the dam.
- This smaller volume will cause reduced energy.

(3x2) = (6)

- The river will have less energy therefore will erode less and deposit some load that was still left.

[ANY THREE]
[EITHER APPROACH CAN BE CREDITED]

[15]

2.4.1 Meander (1x1) = (1)

2.4.2 **P** – slip-off slope
Q – cut bank / river cliff (2x1) = (2)

2.4.3 At **P**
Load is deposited on the inner bank causing it to be gentle.
At **Q**
Lateral erosion on the outer bend causes it to be steep / to form a cliff.
Force of water and suspended material erodes outer bank which become undercut and it collapses forming a cliff.
[MUST EXPLAIN FOR **P** AND **Q**] (2x2) = (4)

2.4.4
- River receives additional energy and begins to erode vertically/downwards.
- The river maintains its meandering course and vertical erosion leads to entrenched / incised meanders or ingrown meanders.
- Meanders will become deeper / wider due to increased vertical/lateral erosion. (2x2) = (4)

[ANY TWO]

2.4.5 (a) Parallel (1x1) = (1)

(b) Long tributaries that flow parallel to each other over a long distance. (1x1) = (1)

(c)
- Rocks of similar hardness in an area with a very steep gradient.
- Formed in areas of uniform gradient.
- Rocks are massive igneous rocks or horizontal layers of sedimentary rock.

[ANY ONE] (1x2) = (2)

[15]

2.5

2.5.1 26% (1x1) = (1)

2.5.2 "used satellite imagery" (1x1) = (1)

2.5.3
- Farming
- Overgrazing
- Human settlements
- Mining

[ANY ONE] (1x1) = (1)

2.5.4
- Causes the roots of trees to die / removes underbrush which leaves soil exposed.
- Loose soil from the exposed area is eroded by wind or rain into the river.
- River silts up reducing the carrying capacity of the river.
- River becomes muddier and full of alluvium from eroded soil.
- River has a larger load to carry downstream which will reduce available energy to flow.
- More deposition of alluvium will take place because of the bigger load that is available to deposit.

[ANY TWO] (2x2) = (4)

2.5.5
- People will have a supply of clean water that is essential for human health.
- Clean water the is needed for agriculture / irrigation of crops / livestock.
- Industries needs water in production processes and for cooling purposes.
- People need the water from rivers for domestic use.
- Rivers and dams provide people with hydro-electricity.
- Fresh water sources supply people with food.
- Water sources are used for recreational activities, tourism, cultural activities.
- Wetlands that are protected trap and store water / regulate stream flow / filter and purify the water that flows through them / remove harmful bacteria from the water / reduce the acidity of the water.
- Flooding can be controlled.
- Sustainable development can be maintained – clean water is ensured.

[ANY FOUR] (4x2) = (8)

[15]

TOTAL QUESTION 2: [60]

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 Gentle (accept B) (1x1) = (1)

3.1.2 2530CA 17 (accept C) (1x1) = (1)

3.1.3 west-south-west / east-north-east (1x1) = (1)

3.1.4 Formula: Area = Length x Breadth
Length = 2.2 cm x 100 = 220 (√) m
Breadth = 0.8 (√) cm x 100 = 80 (√) m [Range: 0.7 cm – 0.9 cm]
[Range: 70 m – 90 m]
Area = 220 m x 80 m = 17600 m² (√) [Range: 15400 m² – 19800 m²] (4x1) = (4)

3.1.5 Mean annual change = 8' W
Yrs difference 2024-2019 = 5 yrs
Total difference 5 x 8' = 40 '(1)
19°37' + (1) 40' = 20°15' West of TN (1) (3x1) = (3)

[10]

3.2 MAP INTERPRETATION

3.2.1 B / (accept secondary road) (1x1) = (1)

3.2.2 A / marsh and vlei areas (1x1) = (1)

3.2.3 (a) Total length of stream per unit area of a drainage basin (1x2) = (2)

(b) The gradient is steeper therefore there is less infiltration and more run-off. (1x2) = (2)

(c) North-west (1x1) = (1)

3.2.4 (a) D / south east to north-west (1x2) = (2)

(b)
- Urban areas (C) are made of concrete / tar etc. and these retain heat.
- Less vegetation so less cooling affect.
- Activities in urban areas generate heat.

[ANY ONE (CONCEPT)] (1x2) = (2)

(c) Lower / reduce the temperature (1x1) = (1)

[12]

3.3 GEOGRAPHIC INFORMATION SYSTEMS

3.3.1 C (accept drainage) (1x1) = (1)

3.3.2 A point feature (1x1) = (1)

3.3.3 (a) Secondary data (1x1) = (1)

(b) Data was processed into a map (1x1) = (1)

3.3.4 (a) The detail and clarity with which a map shows the location and shape of geographical features. (1x2) = (2)

(b) The spatial resolution of the orthophoto map is higher because it is clearer / more pixelated.
OR
The spatial resolution of the extract is lower than the orthophoto map because it is less clear / less pixelated. (1x2) = (2)

[8]

TOTAL QUESTION 3: [30]

GRAND TOTAL: [150]

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