basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

NOVEMBER 2023

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

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SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1 1.1.1 Z (1)

1.1.2 Y (1)

1.1.3 Y (1)

1.1.4 Y (1)

1.1.5 Y (1)

1.1.6 Z (1)

1.1.7 Z (1) (7 x 1) (7)

1.2 1.2.1 B (1)

1.2.2 C (1)

1.2.3 A (1)

1.2.4 C (1)

1.2.5 B (1)

1.2.6 C (1)

1.2.7 B (1)

1.2.8 A (1) (8 x 1) (8)

1.3	1.3.1	Mature (1)	(1 x 1)	(1)
	1.3.2 Reason for stage in 1.3.1	A well-developed cold front (2) Wide spread rainfall to Western Cape/ Affects the Southwestern Cape/made landfall (2) Well-developed cold sector and warm sector (2) Presence of the cumulonimbus cloud ahead of the cold front (2) Steep gradient (2) **[ANY ONE]**	(1 x 2)	(2)
	1.3.3 Why did rainfall spread CT-Knysna	Driven/steered by the Westerly winds (2) The mid-latitude cyclones move from west to east (2) **[ANY ONE]**	(1 x 2)	(2)
	1.3.4 Lowest and highest rainfall	Lowest -15 (1) mm Highest- 40 (1) mm	(2 x 1)	(2)
	1.3.5 Explain how a well-dev cold front result in heavy rainfall	Cold front (cold air) undercuts warm moist air (2) Resulting in rapid uplift of warm moist air (2) Rising air cools and condenses (2) (Extensive/great vertical extent) cumulonimbus clouds develop (2) **[ANY TWO- PROCESSES]**	(2 x 2)	(4)
	1.3.6 How will the heavy rainfall negatively affect the physical enviro around W Cape?	Will result in soil erosion (accept examples)(2) Biodiversity will be destroyed (2) Destruction of natural habitat (accept examples) (2) Destruction of natural vegetation (2) Loss of wildlife (2) Destruction of food chains /ecosystems/food webs (2) Will cause mass movements (accept examples) (2) Fertilisers washed into the rivers (causing eutrophication) (2) Will result in water pollution (accept examples) (2) Leaching of soil nutrients (2) (Low-lying) areas are flooded (2) Waterlogged conditions (saturation of soil) (2) **[ANY TWO]**	(2 x 2)	(4)
1.4	1.4.1 State ONE condition for TC dev	Presence of Coriolis force (1) Ocean surface temperature of at least 26,5 °C (1) Calm (surface) conditions for several days/less friction (1) Presence of low (air) pressure (1) Unstable atmospheric conditions (1) Evaporation from the sea surface / rising of warm moist air (1) Upper air divergence (1) Latent heat (1) **[ANY ONE]**	(1 x 1)	(1)

1.4.2 Southern (1) hemisphere (1 x 1) (1)

1.4.3 Give a reason for SH

Air circulation around the low- pressure cell is clockwise (2)
Forward (leading) left-hand quadrant/dangerous semi-circle is located on the south-west of the tropical cyclone (2)
[ANY ONE] (1 x 2) (2)

1.4.4 Cloud cover

A- has clear skies (1)
B- dense (cumulonimbus) cloud cover (1) (2 x 1) (2)

1.4.5 Explain why there is a difference in cloud cover at A and B

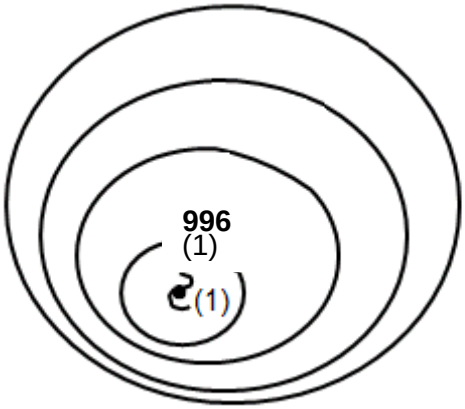
At **A** (eye) - air is descending (heating) results in no condensation (no formation of clouds) (2)
At **B** (eye wall) - air is rising (cooling) and results in condensation (the formation of clouds) (2) (2 x 2) (4)

INSTRUCTION FOR PART MARKING- MAXIMUM OF TWO
At **A** (eye) - air is descending (1)
At **B** (eye wall) - air is rising (1)

1.4.6 Why are strongest winds in forward left-hand quadrant ?

Combination of the forward movement and rotation of the system (2)
It has a steep pressure gradient (2)
[ANY ONE] (1 x 2) (2)

1.4.7 Sketch of a TC in its mature stage



INSTRUCTIONS FOR MARKING
(i) Pressure reading at centre of eye must not be more than 996 (range 950-996) (1)
(ii) 4 isobars indicating the correct spacing (1)
(iii) correct symbol showing the southern hemisphere (1)

(3 x 1) (3)

1.5 1.5.1 Kalahari high (1)
Coastal low (1) (2 x 1) (2)

1.5.2 B (1) (1 x 1) (1)

1.5.3 Reason for choice of sketch B
Air from the interior (KHPC) descends down the escarpment (2)
The air from the KHPC moves towards the low pressure (2)
Air is offshore towards the ocean (2)
[ANY ONE] (1 x 2) (2)

1.5.4 Explain why cloudless conditions found at X
Air descending the escarpment (is offshore) hence dry (2)
Descending air heats up resulting in no condensation (no formation of clouds) (2)
Descending air heats up and remaining moisture is evaporated (2)
[ANY ONE] (1 x 2) (2)

INSTRUCTION FOR PART MARKING
Descending air (heats up) (1)

1.5.5 PARAGRAPH
Explain how Negative impact of berg winds on natural vegetation and suggested strategies
IMPACT
A berg wind dries out the natural vegetation (2)
Berg winds increases the temperature of the area and makes it vulnerable to veld fires (2)
The veld fires destroy the natural vegetation (2)

STRATEGIES
Create firebreaks (2)
Ensure water accessibility (accept examples) (2)
Awareness of the negative impact of veld fires (2)
Availability of emergency services (2)
Build/maintain/monitor lookout towers/warning systems (accept examples) (2)
Education of the community (2)
Developing of wind breaks (2)
[ANY FOUR- MUST INCLUDE BOTH IMPACT AND STRATEGIES]
(4 x 2) (8)
[60]

QUESTION 2: GEOMORPHOLOGY

2.1 2.1.1 B (1)

2.1.2 G/E (1)

2.1.3 A (1)

2.1.4 C (1)

2.1.5 E (1)

2.1.6 H (1)

2.1.7 D (1)

2.1.8 F (1) (8 x 1) (8)

2.2 2.2.1 B (1)

2.2.2 C (1)

2.2.3 C (1)

2.2.4 A (1)

2.2.5 C (1)

2.2.6 C (1)

2.2.7 D (1) (7 x 1) (7)

2.3 2.3.1 A- rectangular(1)
B- dendritic (1) (2 x 1) (2)

2.3.2 Underlying rock structure and type in A

Rock structure
Jointed/faults (1)
Horizontally layered (1)
[ANY ONE]

Rock type
Igneous (1)
Sedimentary (1)
[ANY ONE] (1 + 1) (2)

2.3.3 Influence of underlying rock structure-A

Rivers flow in joints that have 90º bends (2)
Tributaries join main streams at 90° angles (2)
[ANY ONE] (1 x 2) (2)

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	2.3.4	High (1)	(1 x 1)	(1)
	2.3.5	4th (2) order	(1 x 2)	(2)
	2.3.6	The higher the stream order, the higher the drainage density (2)	(1 x 2)	(2)
	2.3.7 Explain how slope and permeability influence drainage density-B	The steeper slope (gradient) promotes run off (cuts more river channels) (2) Rocks with low permeability (impermeable) promote more run-off (less infiltration) (2)	(2 x 2)	(4)
2.4	2.4.1	A (1)	(1 x 1)	(1)
	2.4.2 Reason for more erosive power for river A.	It is flowing at a lower level (220m) (2) It has captured river B (2) River A erodes (headward) through the watershed (2) Steeper gradient to watershed (220-880m) (2) More volume of water at River A (2) **[ANY ONE]**	(1 x 2)	(2)
	2.4.3	C - Elbow of capture (1) D - Wind gap (1)	(2 x 1)	(2)
	2.4.4 Characteristic of feature D	It is a dry area (2) It has river gravels (2) It is located below the elbow of capture (2) It is located above the misfit stream (2) **[ANY ONE]**	(1 x 2)	(2)
	2.4.5 PARAGRAPH Describe changes to river E after river capture	Volume of water of the river decreases (2) Rivers velocity/speed decreases (2) River has less energy (2) River has less erosive ability (2) River will experience more deposition (2) The length of the river is shortened (2) Stream order will decrease (2) River will become non-perennial (accept episodic/periodic) (2) Width of the river is reduced (2) Size of the drainage basin decreases (2) **[ANY FOUR]**	(4 x 2)	(8)
2.5	2.5.1	(More than) 100 million litres (1) 20% of daily use (1) **[ANY ONE]**	(1 x 1)	(1)
	2.5.2 Two plans-extract-improve water security	Extract ground water (drilling boreholes) from aquifers (1) Alien clearing programmes (1) Catchment restoration and maintenance (1) **[ANY TWO]**	(2 x 1)	(2)

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2.5.3 Extract-challenges faced when implementing plans

Less availability of ground water due to alien plants (2)
Underfunding (2)
Inefficiencies (2)
[ANY TWO] (2 x 2) (4)

2.5.4 + impact-removal alien plants on (a) volume and (b) water table

(a) It will increase the volume of water in the dam (2)
(b) The water table will be higher (2) (2 x 2) (4)

2.5.5 Removal of alien plants to improve bio - diversity

There will be more water for the plants (2)
More water available for animal species (2)
More water will increase aquatic habitats (2)
More water will improve food supply for animal species (2)
[ANY TWO] (2 x 2) (4)
[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 3.1.1 C (1) (1 x 1) (1)

3.1.2 B (1) (1 x 1) (1)

3.1.3 D (1) (1 x 1) (1)

3.1.4 Area calculation

Formula: **Length x Breadth**

(0.9 cm x 500m) x (0.7 cm x 500m) (Given)
450 (1) m x 350 (1) m
157 500 m² (1) (3 x 1) (3)

3.1.5 Average gradient

Formula: **Vertical Interval (VI)**
Horizontal Equivalent (HE)

VI=1 567 m - 1 420 m = 147(1) m

$\frac{147}{950}$ (1) (For correct substitution)

1 : 6.46 OR 1: 6.5 (1) (3 x 1) (3)

3.1.6 Convex slope (1) (1 x 1) (1)

3.2 3.2.1 D (1) (1 x 1) (1)

3.2.2 Explain how katabatic winds influence on temp at G.

Cold wind drains down the valley slopes and accumulate at the valley floor decreasing the temperature (2) (1 x 2) (2)

INSTRUCTION FOR PART MARKING- MAXIMUM OF ONE
Cold wind drains down the valley slopes (1)

3.2.3 Pumpkin (1) (1 x 1) (1)

3.2.4 Climatological reason for choice

Frost pockets are found at the bottom of the valley (valley floor /G) (2)
Area where the temperatures are below freezing point /G (2)
Pumpkin can withstand temperatures below freezing point (2)
[ANY ONE] (1 x 2) (2)

3.2.5 South-westerly (1) (1 x 1) (1)

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3.2.6 Reason for direction of river flow
The highest point is to the north east/ spot height 1524 (2)
The V- shape contour lines point to areas of increasing heights to the north/ north-east (2)
The acute angles formed by the tributaries joining the main stream point in a south-westerly direction (2)
Dam wall on the southern side (2)
[ANY ONE] (1 x 2) (2)

3.2.7 LINKED
B5/H: upper (1)
C3: middle (1)
[ANY ONE] (1 x 1) (1)

3.2.8 Evidence for stage of river
Upper course:
Near the source (2)
Contours closely spaced (2)
Steep gradient (2)
V-shaped valleys (2)

Middle course
U shaped valley (2)
Contours far apart (2)
Gentle gradient (2)
River meanders (2)
[ANY ONE- LINKED TO 3.2.7] (1 x 2) (2)

3.1 3.3.1 B (1) (1 x 1) (1)

3.3.2 Explain how remote sensing- used to monitor environmental issues
To determine if the environmental issue is getting worse (accept examples) (2)
Images can be updated/monitored regularly (2)
Images can be analysed (2)
Determine possible causes (2)
Provide possible solutions (2)
[ANY ONE- PROCESSES] (1 x 2) (2)

3.3.3 Definition Raster data
A representation of geographical features using pixels /grid cells (2)
[CONCEPT] (1 x 2) (2)

3.3.4 Orthophoto map (1) (1 x 1) (1)

3.3.5 Why orthophoto map is more realistic?
It is an image which shows the real dam and water it contains (2)
Tone reflects the depth (2)
Texture indicates whether there is water in the dam (2)
[ANY ONE] (1 x 2) (2)

TOTAL SECTION B: 30
GRAND TOTAL: 150

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