basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

NOVEMBER 2021

MARKING GUIDELINES

MARKS: 150

This marking guideline consists of 11 pages.

SECTION A

QUESTION 1: CLIMATE AND WEATHER

1.1 1.1.1 B (1)

1.1.2 D (1)

1.1.3 B (1)

1.1.4 C (1)

1.1.5 C (1)

1.1.6 A (1)

1.1.7 D (1)

1.1.8 A (1) (8 x 1) (8)

1.2 1.2.1 terrestrial (1)

1.2.2 night (1)

1.2.3 katabatic (1)

1.2.4 B (1)

1.2.5 frost (1)

1.2.6 thermal belt (accept inversion layer) (1)

1.2.7 night (1) (7 x 1) (7)

1.3 1.3.1 **GIVE ONE PIECE OF EVIDENCE FOR S HEM**

Date /January indicates summer (1)
Mozambique (1)
Madagascar (1)
Beira (in Mozambique) (1)
South-westerly movement (1)
Clockwise circulation symbol (1)
Located over the South Indian Ocean (1)
Mozambique channel (1)
Tropical Cyclone (Eloise) (1)
Map of Southern Africa (1)
[ANY ONE] (1 x 1) (1)

1.3.2 **STATE TWO WEATHER CONDITIONS IN THE INFOGRAPHIC**

Heavy rainfall / Rainfall of 250mm in 24 hours (1)
Wind speeds up to 140-160 km/hr (1)
(2 x 1) (2)

1.3.3 **GIVE ONE REASON FOR DECREASE IN WIND SPEED**

Increased frictional drag (2)
System moves over land (2)
Decrease in latent heat (2)
Decrease in moisture levels (2)
[**ANY ONE**] (1 x 2) (2)

1.3.4 **ACCOUNT FOR INCREASE IN WIND SPEED**

Movement over the warm Mozambique channel (2)
Less friction over Warm Mozambique channel/ ocean (2)
High temperatures/warm ocean results in increased evaporation (2)
Increased condensation results in the release of latent heat (2)
Latent heat drives the system and increases the wind speed (2)
[ANY TWO] (2 x 2) (4)

1.3.5 **THREE STRATEGIES TO REDUCE IMPACT**

PRECAUTIONARY MEASURES AND MANAGEMENT STRATEGIES
Early warning systems put in place (2)
Sandbags to reduce flooding (2)
Reinforcing existing infrastructure (2)
Awareness and education programmes (2)
Evacuation protocols and drills (2)
Stocking up of emergency supplies and necessities (2)
Identify high lying areas to evacuate people (2)
Build above flood lines/ coastal zoning (2)
Tracking the movement of the tropical cyclone
Good forecasting/ Use of media to update regularly (2)
Improve accessibility to evacuate people (2)
Move people to higher ground (2)
Development of good rescue and emergency services (2)
Storage/ provision of clean water and food supplies (2)
Rescue personnel, police, medical personnel on standby (2)
Maintain coastal vegetation to act as a buffer against storm surges (2)
Request National and international aid if necessary (2)

[ANY THREE- ACCEPT EXAMPLES] (3 x 2) (6)

1.4 1.4.1 IDENTIFY LOW PRESSURE A

Thermal low (1)
Accept heat low (1) (1 x 1)
(1)

1.4.2 GIVE A REASON FOR THE FORMATION

High temperatures (2)
Rising warm air creates low pressure system (2)
[ANY ONE] (1 x 2) (2)

1.4.3 GIVE EVIDENCE FOR RIDGING

Elongation of isobars (2)
Bending of the isobars towards the low-pressure (2)
Outward extension/bulge of isobars away from the high pressure centre (2)
[**ANY ONE**] (1 x 2) (2)

1.4.4 WHY DOES RIDGING RESULT IN ONSHORE WINDS

Anticlockwise circulation (from the high pressure) (2)
Ridge extends towards the land (low pressure) (2)
Elongation of isobars occurs towards the coastline (2)
[ANY TWO] **(**2 x 2) (4)

1.4.5 DESCRIBE WEATHER CONDITIONS AT PE

Results in SSE winds (anti-clockwise circulation from the high pressure) (2)
Increase in wind speeds/strong /gale force winds (2)
Precipitation in the form of rainfall (2)
Possibility of drizzle (2)
Overcast conditions (increase in cloud cover) (2)
Increasing humidity (small difference between air temperature and dew point temperature) (2)
Decrease in air temperature (as air advects onto the land) (2)
[ANY THREE] (3 x 2) (6)

1.5 1.5.1 NAME TWO PRESSURE SYSTEMS TO SET UP BERG WINDS

Kalahari High (1)
Coastal low (1) Accept Mid-latitude cyclone (1)
(2 x 1)
(2)

1.5.2 DETERMINE HIGHEST TEMP

Accept in the range 43.9°C to 44,1 °C (1) (1 x 1)
(1)

1.5.3 WHAT ROLE DID THE ESCARPMENT PLAY IN INCREASING THE TEMP

The escarpment has a greater vertical height (elevation) (2)
Greater frictional drag as air moves down the escarpment (increases temperature) (2)
Air has a greater vertical descent down the escarpment (1200m-0m) and heats up more (2)
Increased heating (DALR at 1°C/100m) due to vertical distance of the escarpment (2)
[ANY TWO] (2 x 2) (4)

1.5.4 PARAGRAPH EXPLAIN THE IMPACT OF BERG WIND ON PHYSICAL ENVIRO

Plants (Natural vegetation / Pasture) dry out due to the hot dry winds (2)
Reduction of biodiversity (fauna and flora) within the natural environment (2)
Declining ecosystems will disrupt food chains and food web networks (2)
Higher evaporation reduces soil moisture content (2)
Increased loss of moisture in soil will accelerate soil erosion (2)

The land is left bare and vulnerable and accelerates soil erosion reducing soil fertility (2)
Higher levels of carbon dioxide will increase atmospheric pollution (2)
Water from shallow pools, small non-perennial water bodies can evaporate (2)
Natural vegetation is destroyed by veld fires (2)
Loss of habitat/damage to ecosystems due to veldfires (2)
Increase in carbon dioxide as a result of veldfires impacts negatively on physical environment (2)
Ash of veldfires act as fertilisers for the development and growth of new vegetation (2)
Veldfires can promote seed germination (2)
[ANY FOUR] (4 x 2) (8)

[60]

QUESTION 2: GEOMORPHOLOGY

2.1 2.1.1 B (1)

2.1.2 C (1)

2.1.3 D (1)

2.1.4 C (1)

2.1.5 C (1)

2.1.6 D (1)

2.1.7 B (1)

2.1.8 B (1) (8 x 1) (8)

2.2 2.2.1 X (1)

2.2.2 Y (1)

2.2.3 X (1)

2.2.4 Y (1)

2.2.5 X (1)

2.2.6 X (1)

2.2.7 X (1) (7 x 1) (7)

2.3 2.3.1 **A** Trellis (1)
B Dendritic (1) (2 x 1) (2)

2.3.2 DIFFERENTIATE
A Alternate layers of hard and soft rock/ folded rock structure (2)
B Rock that is uniformly resistant to erosion (2) (2 x 2) (4)

2.3.3 WHY ARE TRIBUTARIES OF MAIN STREAM PARALLEL
The streams flow in relation to the folds of the rock (2)
The streams flow over softer rock of the syncline (valley) (2)
Interfluves are parallel (2)
[ANY ONE] (1 x 2) (2)

2.3.4 3rd (order) (2) (1 x 2) (2)

2.3.5 Higher (1) (1 x 1) (1)

2.3.6 DESCRIBE THE RELATIONSHIP
(a) The low rainfall will result in a lower drainage density (2)
(b) The steep gradient will result in a higher drainage density (2)
(2 x 2) (4)

2.4.1 Deposition (1) (1 x 1) (1)

2.4.2 Gentle/ flat/ level (2) (1 x 2) (2)

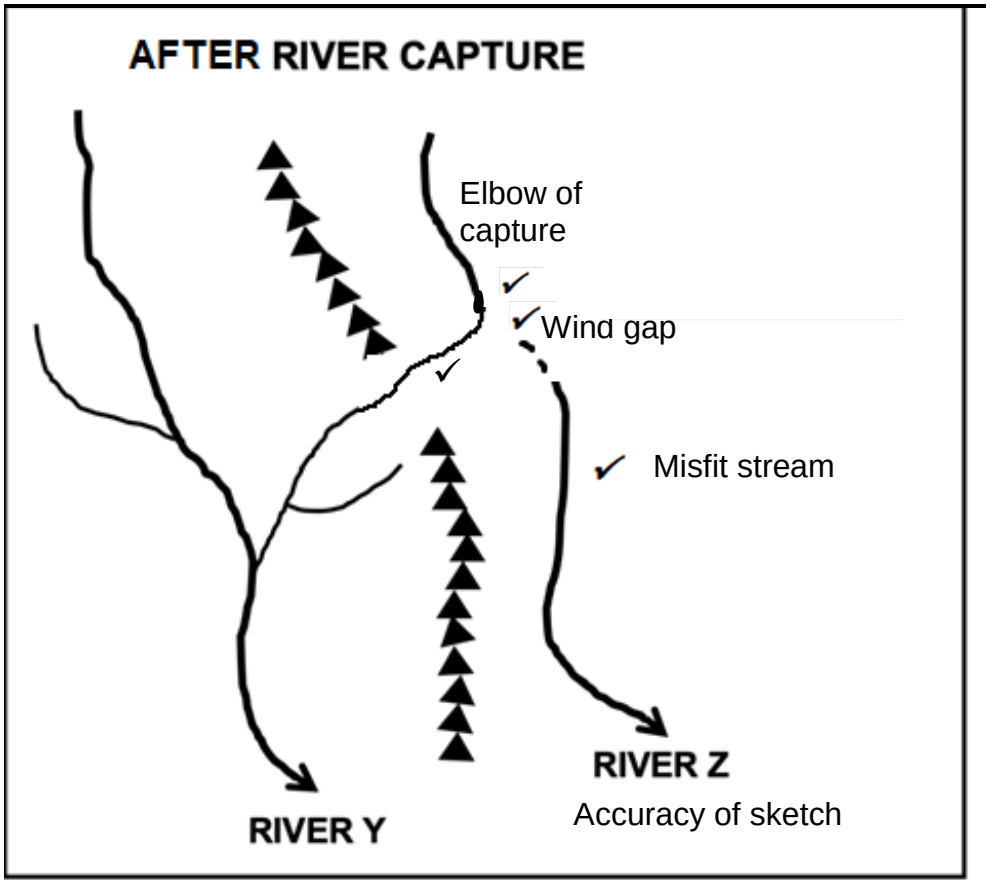
2.4.3 GIVE TWO REASONS FOR WIDE FLOODPLAIN AT X
Increased deposition of silt/alluvium/sand on the floodplain (2)
River is shallow resulting in more deposition (2)
Many tributaries deposit sediment (2)
The gentle slope reduces the velocity of the river and the amount of sediment carried (2)
Regular flooding in the area (2)
[ANY TWO] (2 x 2) (4)

2.4.4 PARAGRAPH EXPLAIN PHYSICAL IMACT OF FLOODING ON FLOODPLAIN
The deposition of silt increases the width of the floodplain (2)
The deposition of fertile soil materials improves the nature and amount of vegetation available on the floodplain (2)
Deposition of alluvium increases the quality of the soil (2)
Levees form on the floodplain as flooding occurs (2)
Create wetlands which are habitats for living organisms (2)
Increases soil moisture content that supports vegetation/ improves biodiversity (2)
Allows floodwaters to spread out and excess water is stored (2)
Continuous flooding purifies water/increase water quality (2)
The water table rises resulting in marshes and vlei's/ wetlands on the floodplain (2)
The waterlogged soils reduce access to parts of the floodplain (2)
The level of infiltration along the floodplain increases the saturation level of soil (2)
The biodiversity of the floodplain alters to adapt to the changing conditions (2)
Continuous flooding or submergence negatively impacts on the natural vegetation/floodplain (2)
[ANY FOUR] (4 x 2) (8)

2.5 2.5.1 When a more energetic river captures the headwaters of a less energetic river (2)
DEFINE
[CONCEPT] (1 x 2) (2)

2.5.2 A steeper gradient (on the one side of the watershed) (2)
STATE ONE CONDITION
More rainfall (on one side of the watershed) (2)
Less resistant/softer rock (on the one side of the watershed) (2)
[ANY ONE] (1 x 2) (2)

2.5.3



Marks allocated as follows:
- Accuracy of sketch- any one of two tributaries can be used (1)
- Wind gap (1)
- Elbow of capture (1)
- Misfit stream (1) (1 + 3) (4)

2.5.4 River **Y** (1) (1 x 1) (1)

2.5.5 River **Y** has an increased volume of water (2) (1 x 2) (2)
REASON

2.5.6 EXPLAIN THE IMPACT OF THE CHANGE IN THE CAPTOR STREAM

Increased vertical erosion due to the increased volume of water in river **Y** (2)
The active erosion of the river cuts into the valley forming terraces (2)
The softer rock in the valley erodes faster resulting in layers/terraces (2)
New valleys form in a valley due to increased river discharge (2)
Terraces form due to recurrent rejuvenation in several valleys (2)
Meanders will become incised/entrenched (2)
A knickpoint can develop along the profile of the river (2)
Increased flooding because of greater volume of water (2)
Increased velocity of water in the river channel because of greater volume of water (2)
The captor stream will be able to carry a greater load/less deposition (2)

[ANY TWO] (2 x 2) (4)

[60]

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 3.1.1 Limpopo (1) (1 x 1) (1)

3.1.2 A (1) (1 x 1) (1)

3.1.3 C (1) (1 x 1) (1)

3.1.4 **Area = Length (L) x Breadth (B)**

Area = [2 cm x 100] x [1.6 (1) cm x 100] [Range: Breadth (1,5 – 1,7 cm]
= 200 (1) m x 160 (1) m [Range: 150m – 170m]
= 32 000 m ² (1) [Range: 30 000 m² – 34 000 m²]
(4 x 1) (4)

3.1.5 WHY FEATURE IS LARGER ON ORTHOPHO TO
The scale of the orthophoto map is (5 times) larger than the scale of the topographic map (1)
(Accept) The scale of the topographic map is (5 times) smaller than the scale of the orthophoto map (1)
[ANY ONE] (1 x 1) (1)

3.1.6 190° (Range: 189 ° - 191°) (1) (1 x 1) (1)

3.1.7 **MB = TB + MD**

MB = 190° + 17°10'
= 207°10′ (1) (Range: 206°10′- 208°10′)
(1 x 1) (1)

3.2 3.2.1 (a) Winter (1) (1 x 1) (1)

TYPE OF RIVER
(b) Non-perennial rivers (1)
Accept Periodic (1)
[ANY ONE] (1 x 1) (1)

STATE ONE STRATEGY
(c) Perennial water (2)
Accept dams (2)
Reservoirs (2)
[ANY ONE] (1 x 2) (2)

3.2.2 **WIND DIRECTIO N**
The orientation of the landing strip (2)
Planes take off and land according to the prevailing wind directions (2)
[ANY ONE] (1 x 2) (2)

3.2.3 D (1) (1 x 1) (1)

3.2.4 B (1) (1 x 1) (1)

3.2.5 B (1) (1 x 1) (1)

3.2.6 West north west / North west/ (1) (1 x 1) (1)

3.2.7 Tributaries join the main river at acute angles (2) (1 x 2) (2)
HOW TRIBUTARIES IDENTIFY DIRECTION

3.3 3.3.1 Vector (1) (1 x 1) (1)

3.3.2 A (1) (1 x 1) (1)

3.3.3 A wall (black line) was used to demarcate the area around the rivers (2)
GIVE EVIDENCE TO DEMARCATE
No buildings in the demarcated area (2)
No human activity/ no development (2)
No cultivation visible (2)
[ANY ONE] (1 x 2) (2)

3.3.4 Rivers (1) Accept Drainage (1)
IDENTIFY LAYERS
Roads (1) Accept Infrastructure (1)
Buildings (1) Accept Land-use (1)
Contour lines (1) Accept Relief/Topography (1)
Rock/soil structure (1) Accept Geology (1)
[ANY TWO] (2 x 1) (2)

3.3.5 To determine the level of drainage/waterlogging (2)
WHY WAS IT IMPORTANT TO UTILISE THE LAYERS
To assess the possibility of flooding (2)
To determine the accessibility of the landing strip (2)
To determine the availability of open spaces (2)
To determine the nature of the gradient (2)
To determine the nature of the soil (2)
To determine the (stability of the) geological structure of the underlying rock (2)
[ANY ONE] (1 x 2) (2)
[30]

TOTAL: 150