



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

JUNE 2016

**GEOGRAPHY P1
MEMORANDUM**

MARKS: 225

This memorandum consists of 10 pages.

SECTION A: PHYSICAL GEOGRAPHY: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1

- 1.1 1.1.1 Isobars ✓
- 1.1.2 1020 hectopascals / millibars ✓
- 1.1.3 South Atlantic High / St Helena High ✓
- 1.1.4 South west ✓
- 1.1.5 Coastal low ✓
- 1.1.6 Berg winds ✓
- 1.1.7 Winter ✓
- 1.1.8 The westerly wind belt ✓ (8 x 1) (8)
- 1.2 1.2.1 Interfluve ✓
- 1.2.2 Source ✓
- 1.2.3 Mouth ✓
- 1.2.4 Drainage basin ✓
- 1.2.5 Watershed ✓
- 1.2.6 Confluence ✓
- 1.2.7 Upper course ✓ (7 x 1) (7)
- 1.3 1.3.1 A Cumulus clouds ✓ (1 x 1) (1)
B Any Cirrus clouds ✓ (1 x 1) (1)
- 1.3.2 Increase of air movement in one of the air masses (westerly or polar winds) ✓
Disturbance in the westerly wind belt ✓
Shape of coastal lines ✓
Mountain ranges ✓
Contrasts between sea- and land temperatures ✓
(Any TWO) (2 x 1) (2)
- 1.3.3 Air is warmer in **X**, therefore have to rise higher to cool-off and reach freezing point. ✓✓
- OR**
- Air is colder/cooler at **Y**, therefore reaching freezing point at a lower height than at **X**, where the temperature is warmer. ✓✓
(Any ONE) (1 x 2) (2)

- 1.3.4 **Cumulonimbus** clouds are formed when cold dense air causes a rapid uplift of warmer lighter air. ✓✓
Nimbostratus clouds forms when warm air moves /rises very slowly over colder denser air ✓✓ (2 x 2) (4)
- 1.3.5 Cold air holds less moisture than warm air ✓✓
 As the system moves in a easterly direction, the dew point temperature will increase around the warm front ✓✓ and decrease around the cold front ✓✓
 (Any TWO) (2 x 2) (4)
- 1.4 1.4.1 Sub-tropical high ✓ (1 x 1) (1)
- 1.4.2 **A** moves over cold waters, therefore heavy and dense, and forces the warmer air of **B**, which originates in warm waters, to rise. ✓✓ (1 x 2) (2)
- 1.4.3 (a) Cumulonimbus ✓ (1 x 1) (1)
- (b) Convection rain ✓ / Thunderstorms ✓ / Heavy Rainfall ✓
 (Any ONE) (1 x 1) (1)
- (c) D ✓
 Line thunderstorms develop to the east of the moisture front due to uplift from colder air from the west. ✓✓ (1 + 2) (3)
- (d) **Negative impact**
 Heavy rainfall will cause flooding ✓✓
 Lightning may cause veldfires destroying crops ✓✓
 Lightning may strike animals and cause death ✓✓
 Can cause soil erosion which will influence productivity of the soil in the long run ✓✓
Positive impact
 Rainfall will fill dams for irrigation purposes ✓✓
 After flooding the soil will be naturally fertilised due to silt deposits ✓✓
 Ground water will be revived ✓✓
 (Any FOUR) (4 x 2) (8)
- 1.5 1.5.1 A Windgap ✓
- B Elbow of capture ✓ (2 x 1) (2)
- 1.5.2 Dry river channel ✓
 River gravel can be found ✓
 (Any ONE) (1 x 2) (2)
- 1.5.3 Will cause incised/entrenched meanders. ✓✓ (1 x 2) (2)

- 1.5.4 **X** is more energetic and flows over less resistant rocks. ✓✓
X flows from a steeper gradient, causing headward erosion in the watershed. ✓✓
X has more volume of water due to higher rainfall in the catchment area ✓✓
[NOTE: Candidates may also refer to Y and suggest reasons why it was possible to capture Y]
(Any TWO) (2 x 2) (4)
- 1.5.5 Less water will be available, so farmers have to channel water from elsewhere. ✓✓
 Farming will become more expensive as new infrastructure have to be constructed. ✓✓
 Productivity will decrease as water become less. ✓✓
 Industries will have to transport more water at higher costs, therefore increasing the selling price of products. ✓✓
(Any THREE) (3 x 2) (6)
- 1.6 1.6.1 **P** Cross profile ✓
Q Longitudinal profile ✓ (2 x 1) (2)
- 1.6.2 3 ✓ (1 x 1) (1)
- 1.6.3 (a) **R** Downward/Headward erosion ✓ (1)
T Deposition ✓ (1 + 1) (2)
- (b) **R** Turbulent ✓
T Laminar ✓ (1 + 1) (2)
- 1.6.4 Fast flowing energetic rivers will cut into the landscape in the upper course ✓✓
 Downward erosion dominant ✓✓
 During the middle course the river starts to meander as lateral erosion dominates and this makes the area wider and more open ✓✓
 All knickpoints like waterfalls, will be eroded away through headward and backward erosion ✓✓
 In the lower course the river will deposit sediments, making the area more level. ✓✓
(Any FOUR) (4 x 2) (8)

[75]

QUESTION 2

- 2.1 2.1.1 Heat island ✓
- 2.1.2 3,3 °C ✓
- 2.1.3 Buildings ✓ / Commercial activities ✓ (**Any ONE**)
- 2.1.4 X ✓
- 2.1.5 Y ✓
- 2.1.6 Greenwalls, roofs and parkland ✓
Green areas / Plants ✓
(**Any ONE**)
- 2.1.7 Convection currents ✓ (7 x 1) (7)
- 2.2 2.2.1 B ✓
- 2.2.2 F ✓
- 2.2.3 E ✓
- 2.2.4 A ✓
- 2.2.5 D ✓
- 2.2.6 A ✓
- 2.2.7 B ✓
- 2.2.8 D ✓ (8 x 1) (8)
- 2.3 2.3.1 4 ✓ (1 x 1) (1)
- 2.3.2 July ✓
August ✓
September ✓
(**Any ONE**) (1 x 1) (1)
- 2.3.3 West Northwest ✓
The direction is driven by the tropical easterlies ✓✓ (1 + 2) (3)
- 2.3.4 Coriolis force is a prerequisite for the development of tropical cyclones and in the area on the map, the coriolis force is zero or below 5 degrees. ✓✓ (1 x 2) (2)

2.3.5 **San Juan**

- The storm will be in its initial or immature stage ✓✓
- Only light rain and drizzle occur now ✓✓
- The area being influenced by the storm is still small ✓✓

Miami

- Storm will have developed into its mature stage ✓✓
- Gale force winds and heavy rainfall occur ✓✓
- Storm causing huge waves, which may damage the harbour region ✓✓
- Low lying areas in Miami will flood due to amount of rainfall ✓✓
- Area that is being influenced is at its maximum, approximately 500 km from the eye (centre) ✓✓

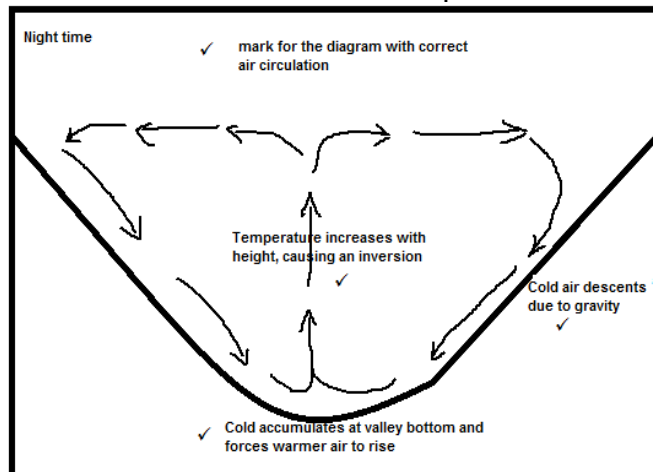
Developed and developing nations

- San Juan is a developing country and therefore the majority of building structures and infrastructure will be in a poorer condition than those of Miami ✓✓
- The warning systems of Miami will be more efficient and quicker than those of San Juan causing more life losses at San Juan ✓✓
- San Juan has poorer security and emergency services to deal with the effects of the tropical cyclone ✓✓
- Miami has more financial assistance from the USA government to deal with the effects of the tropical cyclone, while San Juan will have to rely mostly on international assistance ✓✓

(NOTE – First argument about the stages of development must NOT be mixed with the second argument of level of development of the countries.)

(Any FOUR – Accept other relevant responses) (4 x 2)

- 2.4 2.4.1 Microclimate is the climate in a small area that is different from the area surrounding it. ✓
(CONCEPT) (1 x 1) (1)
- 2.4.2 Northern Hemisphere ✓
South facing slope has the highest average temperature ✓✓ (1 + 2) (3)
- 2.4.3 Katabatic winds ✓ / Gravitational winds ✓ / Mountain breeze ✓
(Any ONE) (1 x 1) (1)
- 2.4.4 Apples trees are more frost resistant than peach trees. ✓✓ (1 x 2) (2)
- 2.4.5



(4)

			(4 x 1)	
2.4.6		Upslope or anabatic winds blows up the mountain ✓✓ This movement of air takes the polluted air away from the surface and higher up into the atmosphere, thus 'cleaning' the air ✓✓	(2 x 2)	(4)
2.5	2.5.1	A Oxbow lake ✓ B Meander scar ✓	(1 + 1)	(2)
	2.5.2	Recurring erosion at the undercut slope and deposition at the slip-off slope. ✓✓ Eventually the stream will cut through the neck of the meander and separate it from the stream. ✓✓	(2 x 2)	(4)
	2.5.3	Continuous overflowing of the river causing deposition of sediments or silt on the banks ✓✓	(1 x 2)	(2)
	2.5.4	Soil is fertile and produce high yields per hectare ✓✓ Enough water available, also for irrigation ✓✓ Area is level, so building of infrastructure like transport and electricity facilities is easy and cheaper ✓✓ Level area makes mechanisation easy ✓✓ Continuous deposition of sediments keeps the plain naturally fertile ✓✓ (Any FOUR)	(4 x 2)	(8)
2.6	2.6.1	When excess rain water, melted water or other sources of water flow over the earth's surface. ✓ (CONCEPT)	(1 x 1)	(1)
	2.6.2	Infiltration ✓	(1 x 1)	(1)
	2.6.3	Through flow ✓	(1 x 1)	(1)
	2.6.4	The area at C experiences heavier rainfall causing more runoff ✓✓ The slope at C is steeper. ✓✓ There are more building structures at C than at B . ✓✓ (Any TWO)	(2 x 2)	(4)
	2.6.5	More silt will be deposited in the river due to overgrazing. ✓✓ Run off from crop farming activities consists of pesticides which will kill aquatic life and make water toxic ✓✓ The process of eutrophication will increase which may cause a disturbance of the aquatic food chain ✓✓	(3 x 2)	(6)
				[75]

QUESTION 3

- 3.1 3.1.1 Rural hamlet ✓
- 3.1.2 Land redistribution ✓

- 3.1.3 Basic need philosophy ✓
- 3.1.4 Rural ✓
- 3.1.5 Push forces ✓
- 3.1.6 Site ✓
- 3.1.7 Dispersed ✓
- 3.1.8 Subsistence farming (8 x 1) (8)
- 3.2 3.2.1 D (Centripetal forces) ✓
- 3.2.2 G (Hierarchy) ✓
- 3.2.3 A (Sphere of influence) ✓
- 3.2.4 F (Range) ✓
- 3.2.5 H (Level of urbanisation) ✓
- 3.2.6 C (Urban sprawl) ✓
- 3.2.7 E (Urban decay) ✓ (7 x 1) (7)
- 3.3 3.3.1 Fertile soil ✓
Availability of fresh drinking water at the river ✓
Building material ✓
Pasturage ✓
(Any TWO) (2 x 1) (2)
- 3.3.2 A is dispersed ✓
B is nucleated ✓ (2 x 1) (2)
- 3.3.3 Large tracks of open fertile land ✓✓
Close proximity of roads ✓✓
Town market provide a market for products to be sold ✓✓
Raw materials can be sent for processing to the New Industry ✓✓
Flat land makes mechanisation easy ✓✓
(Any TWO) (2 x 2) (4)
- 3.3.4 **Advantages of nucleated rural settlement patterns**
Safe as community can protect each other ✓✓
Farmers need less capital as they are able to share implements ✓✓
All public services are in close proximity e.g. school, clinics, police stations, etc. ✓✓
- Disadvantages of nucleated rural settlement patterns**
All farmers have to agree on farming methods, no individual initiative ✓✓
Properties are fragmented or too small to use mechanisation extensively ✓✓
If soil erosion or other disasters occur, everyone will be affected ✓✓ (8)

(Any FOUR – Both advantages and disadvantages must be discussed. Accept other reasonable responses) (4 x 2)

- 3.4 3.4.1 Rural-urban migration ✓ (1 x 1) (2)
- 3.4.2 Droughts ✓
Floods ✓
Soil erosion ✓
Natural disasters like earthquakes, mass movement, etc. ✓
Heavy frost ✓
(Any ONE – Accept other answers) (1 x 1) (1)
- 3.4.3 Resources like fertile soil are not being used for the economy ✓✓
Lack of skilled labour as people moved away in search of employment ✓✓
Small businesses are forced to close down because of less buying power and farmers choosing to buy in bulk in bigger cities ✓✓
Ageing of the area as young people leave in search of a 'better' future ✓✓
Cycle of stagnation and decline continue in rural area ✓✓
(Any TWO) (2 x 2) (4)
- 3.4.4 During the present country side there is still a travelling distance between rural and urban settlements due to low population numbers in urban areas ✓✓
During the future country side, the urban areas has grown considerably and expanded, the border is now near to the rural areas ✓✓ (2 x 2) (4)
- 3.5 3.5.1 An increase of people living in urban areas rather than rural areas ✓
(CONCEPT) (1 x 1) (1)
- 3.5.2 Urban areas are depicted before urbanisation as being spacious, due to a lower concentration of people. After urbanisation they are depicted as being densely concentrated. ✓✓
(Any relevant answer related to the sketch.) (1 x 2) (2)

3.5.3	Fertile soil is being removed ✓✓ Natural habitats of species are being removed ✓✓ Biodiversity and ecosystems disturbed ✓✓ Increase of the heat island affect due to artificial production of heat ✓✓ Air pollution increase due to industrialisation ✓✓ Increase in general pollution e.g. water, noise and environmental problems occur. (Any TWO)	(2 x 2)	(4)
3.5.4	Greenbelts help with the controlling of the growth of built-up areas ✓✓ It forms borders and prevents neighbouring towns from merging ✓✓ It preserves the character of each town ✓✓ Provide open spaces and recreation areas to urban dwellers ✓✓ Increase biodiversity and aesthetic appeal ✓✓ Reduces the heat island affect ✓✓ (Any FOUR – Accept other reasonable responses)	(4 x 2)	(8)
3.6	3.6.1 Heavy industry ✓	(1 x 1)	(1)
	3.6.2 Large and heavy products can be found ✓ Large and heavy equipment are being used ✓ It's has high capital intensity ✓ Employs a large number of people ✓ Make use of bulk transport facilities like trains and cargo ships ✓ Produces excess air and noise pollution ✓	(2 x 1)	(2)
	3.6.3 It will cause acid rain and corrode building structures ✓✓ Smoke stick to buildings causing urban decay ✓✓	(2 x 2)	(4)
	3.6.4 Install filters on the chimneys, which catch most of the dust and pollutants before its released into the air ✓✓ Factories can switch from the use of coal to natural gas or other environmentally friendly energy generators ✓✓ Make the chimney stack higher than the inversion layer ✓✓ (Any TWO)	(2 x 2)	(4)
	3.6.5 Heavy industries cause air and noise pollution ✓✓ Space is restricted near to the CBD and heavy industries need space for expansion ✓✓ Land values are very high near the CBD ✓✓	(2 x 2)	(4)
			[75]
TOTAL:			225