Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2012

GEOGRAPHY P1 MEMORANDUM

MARKS: 300

This memorandum consists of 15 pages.

SECTION A: PHYSICAL GEOGRAPHY: CLIMATE AND WEATHER, FLUVIAL PROCESSES AND STRUCTURAL LANDFORMS

QUESTION 1

1.1 1.1.1 3 √√
1.1.2 4 √√
1.1.3 1 √√
1.1.4 2 √√
1.1.5 5 √√ (5 x 2) (10)

1.2 1.2.1 Turbulent flow √√
1.2.2 Undergraded √√
1.2.3 Buttes √√
1.2.4 Saltation √√
1.2.5 Antecedent drainage √√ (5 x 2) (10)

1.3 1.3.1
- Cloud cover: clear √√
- Wind direction: SSW/S √√
- Wind speed: 20 knots √√
- Air temperature: 19 °C √√
- Dew point: 3°C √√ (Any 2 x 2) (4)

1.3.2 Mid-latitude cyclone / wave cyclone / extra tropical cyclone / frontal depression √√ (Any 1 x 2) (2)

1.3.3 Mature stage √√ (1 x 2) (2)

1.3.4
- Distinct low pressure centre with distinctive cold and warm fronts.√√
- Warm sector depression √√ (Any 1 x 2) (2)

1.3.5
- The Continental High pressure cell is well developed and is associated with subsiding and diverging air. √√
- Results in low temperatures, clear skies and dry conditions. √√
- Smog and mist are often trapped over the interior. √√
- Moist air from the east coast is prevented from reaching the plateau, thus dry winter conditions prevail. √√ (Any 2 x 2) (4)

1.3.6 The cold front brings winter rainfall to the South Western Cape and this is ideal for vineyards and deciduous fruit cultivation. √√
Heavy downpours associated with the approaching cold fronts cause serious floods that damage crops and property. √√
When the cold front approaches it may result in the formation of snow on the Cape Fold Mountains. √√
Snow damage crops and livestock are killed and send icy cold air over the interior. √√
Snow falls over the mountains attract tourists thus boosting the economy. √√
During frontal storms strong winds and high seas occur posing a hazard to the shipping industry. √√

The fishing industry suffers loses as a result of the strong winds and high seas. √√
Extensive rain that lasts for weeks can make flooding worse and leads to deaths in the worst affected areas. √√
Flooding can lead to health hazards in poorer areas e.g. cholera or typhoid. √√ (Any 6 x 2) (12)

1.4 1.4.1
- It faces the sun. √√
- Thermal belt √√
- It is warmer. √√ (Any 1 x 2) (2)

1.4.2
- Frost forms at the bottom of the valley as cold air sinks. √√
- Frost damages plants and crops. √√
- Farmers will plant frost-resistant crops at the bottom of the valley. √√ (Any 1 x 2) (2)

1.4.3 **Cultivated land**
- On the north-facing slope receive more direct sun and more sun in winter. √√
- Winter sun promotes the growth and ripening of winter crops e.g. cultivated land. √√
- Soil is hot and drier but the rivers provide water for irrigation. √√ (Any 1 x 2 = 2)

Trees
- Trees on the south-facing slope receive less direct sun and less sun during winter. √√
- Soil is cool and damp so trees grow well. √√ (Any 1 x 2 = 2) (4)

1.4.4 Clear, calm cold winter night √√
- Top of mountain cools (lose heat) because of terrestrial radiation. √√
- Cold air sinks to the bottom of the valley. √√
- Air at the bottom of the valley is warmer and rises to replace sinking cold air. √√
- Air is now warmer in the middle of the valley called thermal belt. √√ (Any 3 x 2) (6)

1.5 1.5.1 The volume of water that flows past a point at a certain time. √√
The amount of water that flows in a river over time. √√ (Any 1 x 2) (2)

1.5.2

	a	b
Infiltration	less infiltration √	more infiltration √
Runoff	more runoff √	less runoff √

1.5.2 (2 x 2) (4)

1.5.3 (a) Long lagtime is **b** √√ (2)
(b) High discharge peak is **a.** √√ (2)

1.5.4
- Urban areas have less vegetation. √√
- Concrete and tar surfaces in urban areas prevent infiltration. √√
- Rivers are confined to canals. √√ (Any 2 x 2) (4)

1.6 1.6.1 **HUMAN ACTIVITIES**

Pollution such as chemicals from farming, mining and industry, and sewage and rubbish from informal settlements. √√
Planting alien vegetation clogs up rivers and other water resources and reduces water supply for indigenous plants. √√
Irrigation and building of dams lowers the water table, dries up rivers, change the flow characteristics of rivers and delays runoff. √√
Removing vegetation reduces infiltration and increases runoff, soil erosion occurs and more silt goes into rivers. √√
Construction of roads, railway lines and settlements damage wetlands. √√
Poor farming practices e.g. overgrazing causes soil erosion clogs rivers and changes their course. √√
Urbanisation creates artificial surfaces that results in greater runoff, flash floods and increase river discharge. √√
Commercial forestry uses too much water. √√
Energy generation at coal power stations uses a lot of water. √√
(Any 3 x 2 = 6)

MANAGEMENT

Clear alien plants. √√
Do not build settlements on flood plains. √√
Do an environmental impact assessment before building dams. √√
Preserve indigenous forests to protect ground water √√
Use renewable energy sources. √√
(Accept other reasonable answers.) (Any 3 x 2 = 6) (12)

1.7 1.7.1 Cuesta √√ (1 x 2) (2)

1.7.2
- Contain rock layers of different resistance that erode at different rates. √√
- Rock layers are tilted at an angle by folding or warping. √√
- Gentle dip slope and steep scarp slope √√
- Asymmetrical in appearance (profile) √√ (Any 2 x 2) (4)

1.7.3 A. crest √ – has a convex slope √
B. scarp / cliff / free-face √ – steep slope √
C. tallus slope – where debris collects √ (3 x 2) (6)

1.7.4 No. √
Soil tends to be too shallow. √ (1 + 1) (2)

[100]

QUESTION 2

2.1	2.1.1	D √√		
	2.1.2	F √√		
	2.1.3	C √√		
	2.1.4	I √√		
	2.1.5	H √√	(5 x 2)	(10)
2.2	2.2.1	A √√		
	2.2.2	B √√		
	2.2.3	D √√		
	2.2.4	E √√		
	2.2.5	C √√	(5 x 2)	(10)
2.3	2.3.1	4 √	(1 x 1)	(1)
	2.3.2	• Moisture from the warm Indian Ocean. √√ • Coriolus force, therefore develops at 5° – 30° south of the equator. √√	(Any 1 x 2)	(2)
	2.3.3	• Damage to infrastructure, roads, railway lines, bridges, homes etc. due to strong winds, heavy rainfall and floods. √√ • Vegetation and crops washed away or damaged that effects food supply. √√ • Loss of employment and poverty increases. √√ • Destruction of agricultural land and crops lead to food shortages. √√ • Insurance companies suffer heavy losses because large amounts of money being paid out. √√	(Any 2 x 2)	(4)
	2.3.4	Westward / east to west √√ Away from the equator. √√	(Any 1 x 2)	(2)
	2.3.5	Encounters land surfaces – there is less moisture. √√ Friction with land decreases windspeed. √√	(Any 1 x 1)	(2)
2.4	2.4.1	Line thunderstorms √√	(1 x 2)	(2)
	2.4.2	Warm moist air from the Indian Ocean √ meets cold dry air from the Atlantic Ocean in the interior of the country. √	(2 x 1)	(2)

2.4.3 They bring large amount of rainfall to the interior that enables farmers to grow crops e.g. maize and people to have fresh water. √√
The latent heat energy released during condensation and electric energy from lightning transfer energy in the atmosphere. √√
Lightning can cause veld fires and even kill people. √√
Lightning returns nitrates to the soil and some plants needs nitrates to grow. √√
Hailstorms can damage property. √√
Hailstorms can damage crops that decrease yields that affect the food supply. √√
Large amounts of rainfall causes floods. √√
Outbreak of diseases like cholera and typhoid because of floods. √√

(Accept other reasonable answers.) (Any 6 x 2) (12)

2.5 2.5.1 Urban heat island effect characterised by warm city centres surrounded by cooler suburban or rural areas. √√ (1 x 2) (2)

2.5.2 At night √
Early morning √ (Any 1 x 1) (1)

2.5.3
- Artificial surfaces e.g. tar and concrete absorbs heat. √√
- Glass windows and concrete walls of buildings supply large area to reflect heat. √√
- Many sources of artificial heat in cities e.g. factories, car engines etc. √√
- Pollution and carbon dioxide traps in the heat. √√
- Less evaporation because of fewer water surfaces to carry heat away. √√
- Tall buildings reflect the sun's rays between the buildings. √√

(Accept other reasonable answers.) (Any 2 x 2) (4)

2.5.4 During the week. √√
There is more traffic. √√
There are more human and industrial activities. √√ (Any 2 x 2) (4)

2.5.5
- By planting plants and establishing green belts. √√
- Creating water ponds for evaporation. √√
- Design buildings with heat-reflecting surfaces. √√

(Accept others.) (Any 1 x 2) (2)

2.6 2.6.1 (a) B or C √
(b) E √
(c) C √ (3 x 1) (3)

2.6.2 Dam √
Waterfall √
Resistant band of rock √ (Any 1 x 1) (1)

2.6.3 Steep gradient. √√
Deep and narrow cross profile with steep sides. √√ (2 x 2) (4)

2.6.4  √√ (1 x 2) (2)

2.2 2.7.1 Waterfall √√ (1 x 2) (2)

2.7.2 A. misfit stream / beheaded stream √
B. windgap √
C. elbow √
D. pirate stream / captor stream √ (4 x 1) (4)

2.7.3 Undergraded because it loses energy. √√ (1 x 2) (2)

2.7.4 Change in base level √√
The captor river gains new energy √√
And vertical eroding power √√ (Any 2 x 2) (4)

2.8 2.8.1 D / pediment √√ (1 x 2) (2)

2.8.2 Knickpoint √√
A sharp change in gradient √√
A point where the tallus slope and pediment meets. √√ (Any 1 x 2) (2)

2.8.3 (a) Soil creep √
(b) Rockfalls √ (2 x 1) (2)

2.8.4 **NATURAL FACTORS**

- Steep slopes √√
- Heavy rains √√
- Water-saturated soil √√
- Poor vegetation cover / bare slopes √√
- Earthquakes √√ (Any 3 x 2 = 6)

HUMAN ACTIVITIES

- Clearing of vegetation from slopes / deforestation. √√
- Building on steep slopes √√
- Cutting roads which weaken natural rock structures √√
- Wearing footpaths down slope √√
- Overstocking on steep slopes in dry areas results in soil erosion. √√
- Diggings – quarries and mines √√ (Any 3 x 2 = 6) (12)

SECTION B: PEOPLE AND PLACES, PEOPLE AND THEIR NEEDS, WATER AND FOOD SECURITY

QUESTION 3

3.1 3.1.1 A (urban profile) √√
3.1.2 G (situation) √√
3.1.3 D (centripetal forces) √√
3.1.4 I (metropolis) √√
3.1.5 B (urban expansion) √√ (5 x 2) (10)

3.2 3.2.1 Greenfield sites √√
3.2.2 Gross Domestic Product √√
3.2.3 Decentralisation √√
3.2.4 Balance of trade √√
3.2.5 Protectionism √√ (5 x 2) (10)

3.3 3.3.1 P – nucleated / village / cluster √
Q – dispersed / isolated / farmstead √ (2 x 1) (2)

3.3.2
- Farmers live and work in isolation. √√
- Security problem caused by living alone / crime. √√
- No pooling of resources. √√
- No exchange of ideas. √√ (Any 2 x 2) (4)

3.3.3 Linear / ribbon √ (1 x 1) (1)

3.3.4 Maximum use of agricultural land. √√
Involving the growing of a variety of crops in a small area / space. √√ (Any 1 x 2) (2)

3.3.5
- Water from river for irrigation of crops. √√
- Fertile soil on flood plain. √√
- Good infrastructure – roads, rail etc. √√
- Flat land / gentle slope for use of machinery. √√ (Any 2 x 2) (4)

3.3.6
- Damage to crops and farmland. √√
- Accumulation of soil and rocks in river will impede the flow and supply of water to farmland. √√
- Will lower the water table. √√
- Flash flooding – farms will be flooded. √√ (Any 1 x 2) (2)

3.4 3.4.1 Semi-circular shape √ (1 x 1) (1)

3.4.2
- Near harbour for import and export. √√
- Has good transport network – road and rail. √√
- Large city serve as ready market. √√
- Water supply from nearby river. √√
- Labour supply from residential area is located close by. √√

(Any 2 x 2) (4)

3.4.3
- Buildings are in a state of disrepair. √√
- With industries moving out houses has become derelict. √√
- Vandalism and graffiti is a major problem. √√
- Owners do not renovate or maintain the buildings. √√
- Is an area of mix land use e.g. industrial, residential and wholesalers. √√
- Attracts a lot of low income immigrants. √√
- Associated with twilight activities e.g. drugs, crime, etc. √√

(Any 1 x 2) (2)

3.4.4 Urban boundary has moved – 1970 to 1990 √√
Establishment of satellite towns √√ (Any 1 x 2) (2)

3.4.5 A zone on the boundary of an urban settlement set aside for vegetation, gardens, woodland, etc. √√ (1 x 2) (2)

3.4.6
- The CBD is centrally located. √√
- Transport routes converge on the CBD. √√ (Any 1 x 2) (2)

3.4.7 **PROBLEMS**

Traffic and pedestrian congestion. √√
Air and noise pollution √√
High land values and prices resulted in intensive use of space. √√
Overcrowding – people and cars √√
Increase in crime rate and urban decay. √√ (Any 3 x 2 = 6)

SOLUTIONS

Decentralise businesses and industries away from city centre. √√
Establishment of new towns / satellite towns. √√
Establishment of green belts. √√
Encourage the use of public transport – setting of low tariffs. √√
Construction of road by-passes to divert traffic away from city centre. √√
Synchronised robots to ensure easy flow of traffic. √√
Introduce underground transport e.g. tube trains. √√
Stagger working hours to avoid overcrowding and congestion. √√
Make shopping hours more flexible e.g. Sundays and public holidays. √√
Organise lift clubs to avoid too many vehicles converging on city centre. √√
Construct multi-storey and underground parking garages. √√
More visible policing. √√ (Any 3 x 2 = 6) (12)

3.5 3.5.1 A – Gauteng / PWV √
C – PE/ Uitenhage / Nelson Mandela Metropole √ (2 x 1) (2)

3.5.2 **A. Gauteng**

Rich in raw materials and minerals √√
Good power supply √√
Good water supply √√
Skilled and unskilled labour √√
Access to local and international markets √√
Good transport infrastructure √√ (Any 1 x 2 = 2)

C. PE/Uitenhage

Easily accessible because of harbours – PE and Coega √√
Skilled and unskilled labour √√
Access to large markets √√
Sufficient water supply to the area √√
Raw materials are found locally √√
Known for the assembly of cars – car parts imported √√
Good railway and road infrastructure √√ (Any 1 x 2 = 2) (4)

3.5.3 B. Richards Bay SDI / Durban ID initiative √√
D. Saldanha Bay SDI √√ (2 x 2) (4)

3.5.4
- Health risk associated with locating people close to a chemical plant or refinery. √√
- Families are separated as a consequence of migrant labour system. √√
- Poverty levels rise as a result of the closure of economic activities. √√
- Forced the removal of people from their homes. √√
- Globalisation caused the customs and traditions of people to become lost. √√
- Rural-urban migration led to economic decline in rural areas as schools and shops close and agricultural production decreases. √√
- Services in urban areas under severe strain due to the influx of migrant workers and rural inhabitants. √√ (Any 2 x 2) (4)

3.6 3.6.1 **REASONS FOR DEVELOPMENT**

Relative poverty and lack of money √√
Lack of skills and education √√
High unemployment levels √√
Migration of rural women into urban areas √√
A slump in the economy has caused job losses in the formal sector forcing workers to seek casual work √√
Mechanisation of farming operations and climatic hazards caused unskilled rural dwellers to search for jobs in the informal sector in urban areas. √√
Large companies sub-contract to informal sector to avoid regulations related to job security. √√

During apartheid Blacks were not permitted to trade in urban areas and were only granted licences for hawking and peddling which restricted traders to townships. √√
Immigrants are not able to find legal employment and enter informal sector to survive. √√ (Any 3 x 2 = 6)

CHALLENGES / PROBLEMS

The informal sector does not provide a permanent solution to unemployment. √√
Retailing and personal services that the informal sector provides are not a sustainable means of generating money. √√
Many informal traders sell products that are not sustainable resources. √√
Traders are frequently harassed by local authorities because their activities are illegal. √√
Hawkers do not have access to proper trading facilities therefore they are forced to trade on bare pavements and are exposed to elements of the weather. √√
Do not have skills and education to enter formal economy. √√
Banks are reluctant to grant loans hence making it difficult to expand their trade into formal businesses. √√
Traders borrow money from money lenders that charge high interest rates therefore they are always in debt. √√
Local markets are small and the high cost of the transport of goods to larger distant markets makes it difficult to enter such markets. √√
(Any 3 x 2 = 6) (12)

3.7 3.7.1 Global trade / globalisation / international trade √√ (1 x 2) (2)

3.7.2 **Northern hemisphere**
More export of goods and services to and less imports from the Southern hemisphere. √√

Southern hemisphere
More imports of goods and services from and less exports to Northern hemisphere. √√ (Any 1 x 2) (2)

3.7.3
- The Southern hemisphere exports mainly primary goods like minerals and agricultural products at low prices. √√
- Southern hemisphere imports mainly manufactured goods and exchange services at high prices from the North. √√
- Countries in the south are agricultural, poor and developing and countries in the north are industrialised, rich and developed. √√
- Not enough skilled workers to produce these products. √√
- Low productivity of workers. √√
- Factories do not have the facilities to produce products of a high technological quality e.g. machinery. √√
- Southern countries are small and have a small local market √√ therefore not economically viable to manufacture certain products locally. √√ (Any 1 x 2) (2)

3.7.4
- Results in an unfavourable trade balance. √√
- Foreign capital flows out of the country. √√
- Economic growth is slowed down. √√
- Workers are retrenched √√
- Standard of living decrease √√
- Sell products at low prices due to competition with world markets. √√
- Surplus products sold locally at low prices. √√ (Any 2 x 2) (4)

3.7.5
- Results in a favourable trade balance. √√
- Foreign capital flows into the country. √√
- Economic growth is stimulated. √√
- Jobs are created. √√
- Standard of living increase. √√ (Any 2 x 2) (4)

[100]

QUESTION 4

4.1
4.1.1 True √√
4.1.2 False √√
4.1.3 False √√
4.1.4 True √√
4.1.5 False √√ (5 x 2) (10)

4.2.1 Orange-Fish River project √√
4.2.2 Vaal Dam √√
4.2.3 Lesotho √√
4.2.4 Western Cape Province √√
4.2.5 Sterfontein Dam √√ (5 x 2) (10)

4.3
4.3.1 Depopulation – occurs when there is a marked decline in the population of an area. √√
Rural-urban migration – the movement of people from rural areas in order to settle in urban areas. √√ (2 x 2) (4)

4.3.2 (a) 50 √
(b) 32 √
(c) 40 √ (3 x 1) (3)

4.3.3 12 (40 – 28) √√ (1 x 2) (2)

4.3.4 Urban √√ (1 x 2) (2)

4.3.5 **IMPACT ON RURAL AREAS**

Schools / shops close down due to declining numbers. √√
Elderly and young are left behind to work on farms. √√
Ageing of population. √√
Agricultural activities decline – food security becomes a threat. √√
Services decline because it is unable to be sustained because of low threshold population. √√
Buildings and farms are abandoned giving rise to ghost settlements.√√
Family units are broken when parents leave children with grandparents. √√
Brain drain as skilled labour leaves and slows the economic growth of the area. √√ (Any 3 x 2 = 6)

MEASURES

Better / upgrade health facilities and facilities close to where people live in rural areas. √√
Education and training facilities e.g. schools and colleges in the area would mean that rural people need not to move to improve their level of education and skills levels. √√
Better employment opportunities and better wages. √√
Rural development schemes will help create employment in rural areas. √√
Provide access to clean water and sanitation facilities to disadvantaged and poor rural communities. √√
Provide better living conditions to encourage people to remain in rural areas. √√
(Accept others.) (Any 3 x 2 = 6) (12)

4.4 4.4.1 A √
C √ (2 x 1) (2)

4.4.2 It is the area for which the central place town provides functions and services. √√ (1 x 2) (2)

4.4.3 They have more goods and services to offer. √√
They are accessible to their surrounding areas. √√ (2 x 2) (4)

4.4.4 High order functions √√ (1 x 2) (2)

4.4.5
- Large shopping complexes √
- Specialised shops administrative offices √
- Political functions √
- Social functions √
- Financial services √
- Health services transport services √
- Electrical goods and services √ (Any 2 x 1) (2)

4.4.6 B. Transport / cross roads √
D. Coastal tourist area √
E. Harbour / gateway settlement √ (3 x 1) (3)

4.4.7 It is low-order functions. √√
Have a small sphere of influence. √√ (Any 1 x 2) (2)

4.5 4.5.1
- Agricultural practices √√
- Informal business activities √√ (Any 1 x 2) (2)

4.5.2
- Capital to buy seeds, fertilisers and equipment. √
- Infrastructure e.g. roads, electricity, etc. √
- Health care √
- Education and training √ (Any 2 x 1) (2)

4.5.3 When a country or individuals do not have enough food to sustain themselves. √√ (1 x 2) (2)

4.5.4 Due to inaccessibility of land the rural poor cannot farm. √√
This can lead to food insecurity. √√ (2 x 2) (4)

4.5.5 Yes. √√
Both rural and urban poor have food insecurities because of economic, social and physical factors. √√ (2 x 2) (4)

4.5.6 **FACTORS**

Floods wash away fertile top soil. √√
Drought leads to the spread of desert conditions and destroy grazing land. √√
Shortage of arable land because of dense population. √√
Farming practices like monoculture destroy arable land. √√
Replacement of subsistence farming with cash crops. √√
Foreign competition therefore products are sold at low prices to world markets. √√
Wars and conflict force people to flee and remaining rural population is unable to sustain the production of food. √√
Poor infrastructure – major markets in towns and cities are inaccessible to rural areas. √√
Lack of funds for agricultural research because of poverty. √√
Lack of capital (money) to invest in supplies and machinery. √√
Outbreaks of diseases. √√
Land degradation and soil infertility. √√ (Any 3 x 2 = 6)

MEASURES

Plan and monitor to make sure production meets demand. √√
Import certain food if necessary. √√
Help people to set up farms in a sustainable manner √√
Provide skills and training to improve farming methods √√
Offer incentives to produce higher yields. √√
Researches the use of genetically modified crops to increase food supplies. √√
Conservation farming √√ (Any 3 x 2 = 6) (12)

4.6 4.6.1 Demand for water is increasing. √√
From 1993 the demand was estimated to increase by 57% in 2010. √√ (2 x 2) (4)

4.6.2 Irrigation / agriculture √ (1 x 1) (1)

4.6.3 Industry by 143% √√
Municipal use by 122% √√ (Any 1 x 2) (2)

4.6.4 Stock watering – 13% √
Nature conservation – 17% √
Urban use – 19% √
Power generation – 19% √ (Any 2 x 1) (2)

4.6.5 Primary sector / mining, farming, forestry √ (1 x 1) (1)

4.6.6
- Promote a culture of not wasting by using water saving techniques. √√
- Use drip irrigation instead of spray irrigation to increase the production per hectare. √√
- Mix the fertilisers with the water fed to plants to prevent the pollution of groundwater supplies. √√
- Maintain irrigation equipment to prevent wasting of water. √√
- Switch to crops with higher yields per unit of water consumed. √√
- Switch to crop varieties which use less water. √√
- Use treated water from urban areas for irrigation on farms. √√

(Any 2 x 2) (4)

[100]

TOTAL: 300