NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY EXAMINATION – MARCH 2017

GEOGRAPHY: PAPER I

MARKING GUIDELINES

Time: 3 hours 300 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

SECTION A GEOGRAPHICAL ISSUES

QUESTION 1 GEOGRAPHICAL CASE STUDY: THE GEOGRAPHY OF DROUGHT IN SOUTH AFRICA

1.1 Agriculture in South Africa

1.1.1	D
1.1.2	E
1.1.3	A
1.1.4	B
1.1.5	C

(10)

1.2 Catchment and river management

1.2.1 KwaZulu-Natal; Free State; North West, Limpopo (1 mark each) (4 × 1 = 4)

1.2.2
- Boreholes
- Dams (4)

1.2.3 (a) The 500 mm isohyet identifies the regions in SA that receive on average 500 mm of rainfall in a year. The east of the country normally receives more rainfall than 500 mm/ annum, whilst the west receives on average less. (2)

(b) The eastern areas of the country will be less reliant on irrigation during normal rainfall periods, whilst the western part of the country will be more reliant on irrigation in agricultural areas. (2)

1.2.4 (a) Western Cape province – 18% (4)

(b)
- High evaporation rates due to heat waves.
- High volume of usage for irrigation, industry and households (4)

1.2.5
- Inter-basin transfer schemes (Lesotho-Highlands scheme).
- Protection of wetlands as natural filters and water release mechanisms.
- Water harvesting (Jojo-tanks, mist/ fog catch nets).
- Construction of more reservoirs within catchment areas.
- Drought-resistant crop strains (GM crops).
- Soil management and careful crop rotation to reduce unnecessary runoff.

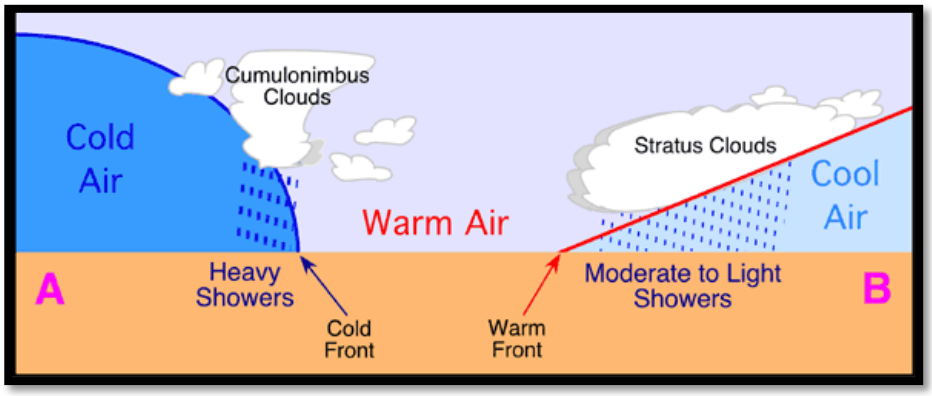
Credit any relevant point. [3 distinctly different points must be provided] (6)

1.3 Climate and weather

1.3.1 Western Cape province. (2)

1.3.2 Frontal rain associated with the mid-latitude cyclones. (2)

1.3.3 Marks allocated as follows:
- Correct orientation = cross-sectional view. (2 marks)
- Correct position and curvature of both cold and warm front. (2 marks)
- Some indication of weather, i.e. cloud/ rain on both fronts. (2 marks)



[Physicalgeography.net]

(6)

1.3.4
- A moisture front/line develops where the **cool dry air from the southwest** is pushed into the country from the South Atlantic HP. (2 marks)
- This cool dry air meets the **warm moist air coming from the northeast** (South Indian HP). (2 marks)
- The cool air lifts the warm air and line thunderstorms develop along this boundary/ moisture front. (2 marks)
- The moisture boundary develops in summer when the land heats up enough to cause low pressure cells in the interior of the country. (2 marks) (8)

1.4 Rural settlement issues and food security

1.4.1
- Decreasing crop production, lower income, food insecurity, rural depopulation
- Decreasing irrigation opportunities, i.e. boreholes/ wells/ dams dry up. (4)

1.4.2
- Decreasing demand for services in rural settlements.
- Less money spent and invested in rural communities – this will cause services to close.
- Shops and homes abandoned.
- Unemployment increases, fewer opportunities available, adding to further depopulation (younger people tend to leave).

[Any 3 valid points discussed] (6)

1.4.3 Food security means that individuals, households, communities and nations have access to sufficient quality of food at all times. (2)
- Recent droughts will have negatively impacted on food security, resulting in many areas of southern Africa becoming high-risk regions. (2)
- Food shortages and localised famine are realities.
- This is due to: [any 3 points can be mentioned here] (6)
  - A large percentage of southern Africa's farmers are subsistence farmers and may not have the money or equipment to irrigate crops.
  - Much of southern Africa relies on rain-fed agricultural practices.
  - Staple crops, such as maize, soya beans, sugar cane and rearing of cattle requires a lot of water; these are high risk as far as drought is concerned.
  - Food prices will increase – adding to food insecurity in poorer communities.

– Job losses are also likely in the agricultural sector due to the drought, meaning financially people will be unable to purchase food for their families. (10)

1.5 **Urban settlement issues**

1.5.1
- **Street patterns**: (2)
  Central area has a grid-iron pattern – typical in traditional CBD areas.
- **Accessibility** (transport networks): (2)
  Major routes converge in the city centre area (N1 and N8).
- **Density of buildings**: (2)
  Close network of streets suggests smaller properties and a nucleated (high-density) land-use pattern.

(6)

1.5.2
- Newer suburbs have more <u>irregular street patterns</u> – common traffic management strategy in newer urban areas.
- Properties are larger and more dispersed.
- Development is towards the outskirts of the city – newer areas tend to develop where there is land/space available, which is normally along the outer lying areas of the city.
- Older areas traditionally close to CBD (4)

1.5.3 (a)
- 20% price increase for water. (2)
- Household water restrictions. (2) (4)

(b) Opinion provided. (2)
Reason must adequately justify opinion. (2)
Aspects to consider:
- Price increments and restrictions don't always encourage wise water usage – particularly with respect to higher income residents and commercial properties.
- Restrictions and price hikes are often temporary solutions.
- Changes in mindsets, attitudes and behaviours are more sustainable approaches, but this takes time and education. (4)

1.5.4
- Water collection, i.e. Jojo tanks should be mandatory in homes/ office parks and schools.
- Greywater systems should be installed.
- Leaking pipes and taps should be repaired.
- Pavements, gardens and city parks should use water wisely and sustainable garden designs requiring minimum irrigation. (8)

[Any suitable 4 points]

100 marks

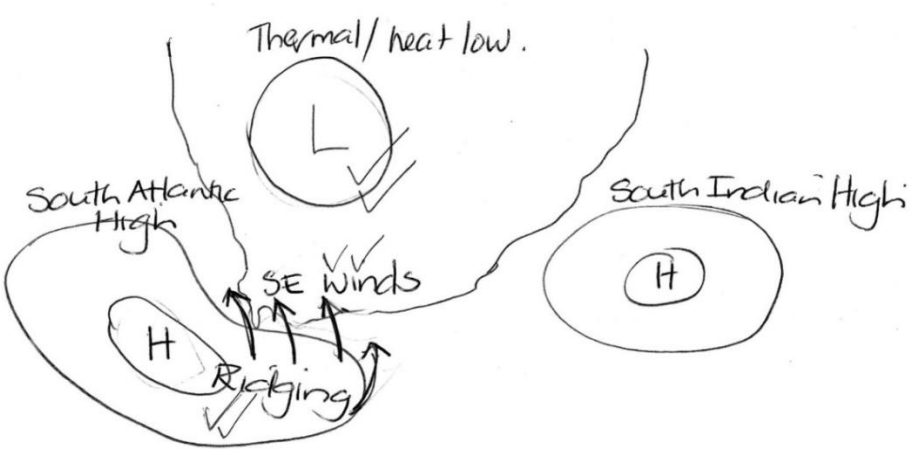
SECTION B CLIMATE, WEATHER AND GEOMORPHOLOGY

QUESTION 2 SUB-TROPICAL ANTICYCLONE, TROPICAL CYCLONE CHAPALA, MICROCLIMATE TERMINOLOGY, FLUVIAL PROCESSES, AND DRAINAGE SYSTEMS

2.1 The Southeaster

2.1.1 (a) The South Atlantic High is commonly associated with this wind (Cape Southeaster).
(b) The Cape Southeaster frequently blows in summer.
(c) Another name for the Cape Southeaster is the Cape Doctor.
(d) The weather associated with the Cape Southeaster is clear, hot and windy. (8)

2.1.2



(6)

2.2 Tropical Cyclone Chapala

2.2.1
- Form over vast tropical oceans where surface temperature is over 27 °C.
- Coriolis force needed so form about 5° N or S up to about 20° latitude.
- Cooling of warm, moist air allows for latent heat to be released – this energy drives the vortex of the storm.
- Continued rising air, which causes unstable conditions, sustains the storm and vortex.

Any THREE. (6)

2.2.2 Desert areas – no vegetation – high runoff from a rocky, barren surface
Rainfall is very low (100–130 mm) so any sudden storm could cause a flash flood.
People would be unprepared and perhaps evacuation systems are not in place.
Any TWO points. (4)

2.2.3 (a) (i) Episodic. (2)
(ii) Usually a dry river bed.
Never receives groundwater.
Only flows after an episode of heavy rain.
Water disappears as fast after the rainstorm as it appeared in the first place. (4)

(b) **Photograph 2**

Vegetation – shows red.
Water flow – no river shown; no base flow – only water in the delta region.

Photograph 3

Vegetation – red area denser than previously.
Water flow – a definite meandering river can be seen.

Suggested mark allocation:
Comparing vegetation (2 marks).
Water flow in **Photograph 2** (2 marks) and water flow in **Photograph 3** (2 marks). (6)

(c) **Storm surge** could have flooded the coastal regions as they are flat and low-lying.
Rainfall – a very high amount over 180 mm could cause **flash flooding**. (4)

(d) The images are both very clear, showing fine details.
A large area is shown very clearly, which indicates that the pixels are small and numerous. Thus these are high resolution images. (2)

2.3 Microclimate terminology

Column A		
2.3.1	Temperature inversion	G
2.3.2	Katabatic	H
2.3.3	Thermal belt	F
2.3.4	Condensation nuclei	B
2.3.5	Smog	A

(10)

2.4 Drainage basis system and fluvial processes

2.4.1 (a) Turbulent flow. (2)
(b) (i) Rapids. (2)
(ii) Formed when resistant bands or layers of rock cross the river channel/ outcropping.
Friction causes slow and swift flowing eddies of water (white water). (4)

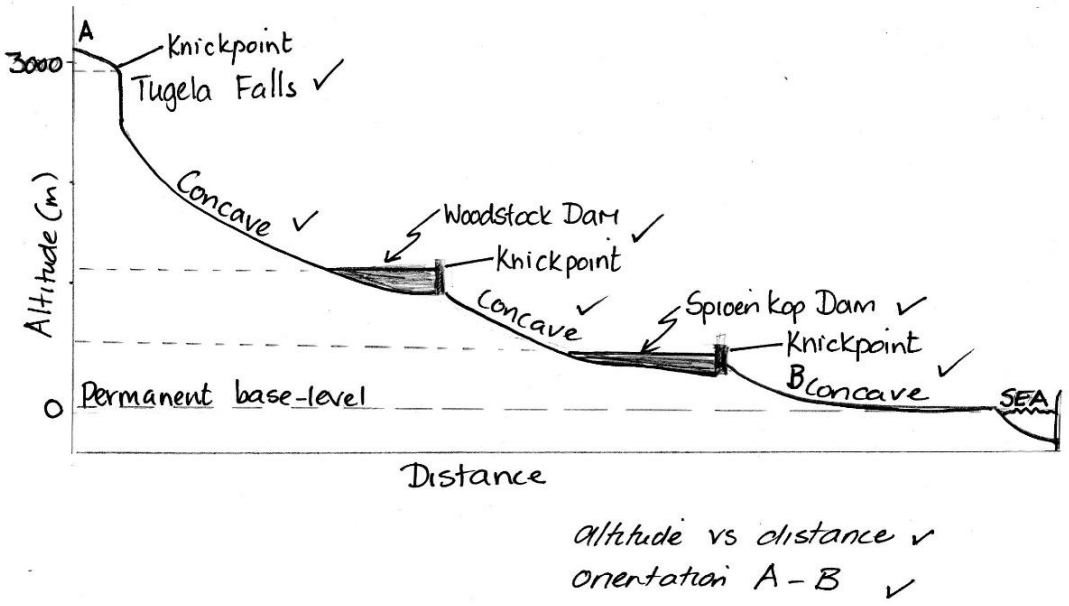
2.4.2 (a) Laminar. (2)
(b) A very wide channel, which is smooth – very little friction.
Fairly deep and water moving evenly and fairly fast. (4)

2.4.3

Photograph 4 Orange River	High Energy	Highly erosive. Load wears away the channel.
Photograph 5 Orange River	Fast moving	Transporting a large load. Much sediment suspended in river. Deposition occurring.

(6)

2.5 2.5.1



(8)

2.5.2 Area received high rainfall – over 1 000 mm. The gradients are steep and terrain is quite rugged at high altitudes; thus runoff is increased. The rivers have a relatively short distance to the sea and unless there is considerable catchment management this water would be lost as runoff to the sea. (6)

2.5.3 (a) One basin at a higher altitude than the other.
Steeper gradients on one side of the watershed.
Softer rock.
Higher rainfall on the one side of the watershed. (4)

(b) C Elbow of capture.
Rejuvenation waterfall just below the elbow of capture.
D Misfit stream.
Between C and D Wind gap and river gravels.
E Captured stream which now flows into the Buffalo River.
F Captor or pirate stream. (6)

(c) There is also a change in gradient; thus water flows more swiftly. (4)

100 marks

SECTION C RURAL AND URBAN SETTLEMENTS, AND ECONOMIC GEOGRAPHY OF SOUTH AFRICA

QUESTION 3

3.1 Urban structure and changing land-use patterns

3.1.1 Central business district (CBD). (2)
High-rise buildings are evident, presence of commercial activities. (2) (4)

3.1.2
- Multi-use refers to the fact that the area has multiple land-use functions, i.e. multipurpose. (2)
- The Newtown Junction area offers a hotel, retail space and commercial offices. (2)
- New urban developments are multi-use in nature, to offer greater convenience, to cut down on travel time and transportation issues, attract a variety of people into an area. (2) (6)

3.1.3
- Central location and accessibility.
- Many banks, mining houses and other organisations have their offices in the area – huge work force (customer base).
- Several renewal and regeneration projects underway – CBD is regaining popularity.
- Student population – Wits university.
- Large central residential area.

[Any 2 valid reasons] (4)

3.1.4
- Local business, e.g. coffee shops/restaurants have closed to make way for bigger corporate and commercial shops and restaurants. E.g. Pick 'n Pay, Wimpy, etc.
- Shops and new businesses are expensive – appealing to higher income residents.
- Local business owners may have been forced to move/relocate away from this area.

[Any 3 suitable points] (6)

3.1.5 In your essay, take care to **discuss** the following points:
- **The importance of the inner city of Johannesburg**
  - It is the heart of the city – historically and culturally significant.
  - Valuable floor space – commercial activity.
  - Provides marginalised communities an entry point into the formal economy.
  - It is the major public transport hub in Johannesburg (Park Station, Gautrain and Rea Vaya buses, taxi rank at Gandhi Square) – 800 000 people travelling into the inner city every day to work, trade, conduct government business, and onward travel.
  - Largest employment centre in greater Johannesburg and the home to the head offices of major corporations, the mining houses, banks and insurance companies and as such is a major economic generator and employment and service centre.
  - It is well-serviced, with much of its service infrastructure under-utilised.

- **Why the inner city area of Johannesburg is in need of renewal**
  - High levels of crime, particularly with regard to street crimes, theft from motor vehicles, and household break-ins.
  - A lack of enforcement of municipal by-laws, particularly in relation to traffic violations and taxi management; land-use; building control regulations, especially with respect to illegal conversions of office buildings and factory space to residential use and overcrowding of existing residential properties; and, illegal dumping and littering.
  - Serious problems arising from deregulated and unmanaged informal and street trading.
  - Problems arising from the militant taxi industry and poor traffic management.
  - Decay of residential buildings, lack of re-investment and maintenance, overcrowding, and illegal occupation of buildings;
  - Social problems, e.g. vulnerability of children living on the streets; homelessness; drug and alcohol abuse; domestic violence; crime; high levels of poverty.
  - Limited and inadequate public spaces and recreation facilities
  - Service delivery problems, e.g. waste management in residential areas and street and traffic light outages.

- **Challenges associated with urban renewal in South African cities**
  - Major disparities and inequalities (racial and socio-economic), which need resolving.
  - Takes time.
  - Costly exercise.
  - Issues of corruption and mismanagement of funds.
  - Urban planning expertise is required.
  - Requires community involvement and co-operation – often associated with some form of disagreement and or conflict.

- **Sustainable settlements – urban renewal strategies**
  - Urban areas must be liveable, safe and well-managed.
  - People centred – focus on celebrating cultural/historical diversity.
  - Improvement of public spaces and provision of green areas (road paving, placement of trees, lighting, landscaping).
  - Renovation of residential buildings (façades, gutters, elevators, roofs etc.).
  - Installation of communication technology (wiring of buildings, fibre-optic cabling, establishment of Wi-Fi areas).
  - Implementation and improvement of energy and environmental infrastructure (recycling centres, encouraging of renewable energy (solar), water-saving devices – e.g. Jojo tanks).
  - Improving accessibility and the removal of barriers (extension of sidewalks, construction of ramps, installation of escalators, and removal of obstacles).

You may draw on any case studies you have explored to support your essay discussion. Use the rubric to guide the planning and structure of your essay.

Essay Rubric – see full rubric on next page

Criteria	
Writing skills Use of brief introduction and conclusion. Logical discussion and use of sub-headings.	**5**
Content knowledge Correct use of geographical terminology. Adherence to topic and sub-headings.	**14**
Supporting evidence – analysis and understanding Reference made to case study material/fact file/source material provided. If appropriate, reference must be made to familiar/local or other examples.	**5**

(24)

CRITERIA	(LEVEL 3) EXCELLENT–GOOD	(LEVEL 2) SATISFACTORY	(LEVEL 1) POOR
Writing skills • Taking into consideration structure and presentation. • Use of brief introduction and conclusion. • Logical discussion and use of sub-headings. (5 marks)	Suitable introduction and conclusion. Sophisticated, coherent and structured writing. Subheadings and paragraphs have been effectively used. Essay is concise, well-structured and succinct.	Introduction and conclusion present, although not ideal. Attempts to adhere to subheadings and use of paragraphs. Essay deviates from the point in places and lacks brevity.	Writing is weak and almost unintelligible. No introduction or conclusion provided. No use/ adherence to subheadings. Long sentences, poor grammar and ineffective use of paragraphs. Essay is repetitive. Bullet points may have been used.
Content knowledge • Correct use of geographical terminology and concepts. • Adherence to topic and sub-headings. (14 marks)	Relevant content and detailed discussion of topic. Good usage of geographical terminology and concepts. Appropriate number of facts presented/ sub-heading. At least TWO factors have been discussed under each subheading (6 or more facts)	Some relevant content. An overview/ general discussion of key issues. Basic usage of geographical concepts and terminology. (50–60% of required facts presented/ sub-heading). At least ONE factor has been discussed under each sub-heading, with an additional TWO factors in two of the sections. (5–4 facts)	Digression from the topic. Weak grasp of concepts and terminology. Superficial/ poor discussion. Almost no relevant facts/ sub-heading. Only ONE factor has been outlined in each subheading or some of the sections have not been addressed, for example THREE factors are discussed under the one subheading and none in the other sections. (3 or fewer facts)
Supporting evidence – analysis and understanding • The ability to **analyse and evaluate** the topic is assessed in this category. • **Reference** made to **case study material/ fact file/source material** provided. • If appropriate, **reference** must be made to **familiar/local or other examples**. (5 marks)	The candidate is able to argue and evaluate appropriately. There is strong evidence of accurate application of understanding and evidence provided. Essay demonstrates understanding and integration of relevant case study/ fact file/ source material in the context of the essay discussion.	Superficial links made to case study/ fact file/ source material. Although reference to supporting examples has been made, it is not clear that the candidate has a good understanding of the example/ case study material. Supporting evidence does not always relate appropriately to the sub-heading or context of discussion. Discussion lacks depth.	Limited to no reference made to case study/ fact file/ source material. Examples not provided. Has little to no geographical meaning. Little analysis or understanding. Demonstrates minimal understanding of topic.

3.2 Rural settlement and mining

3.2.1 Mining town (2), due to close proximity to the Sishen open-cast iron ore mine (2). (4)

3.2.2 **Site**:
Small town established alongside the Sishen mine, flat area within a Camel Thorn forest.
Situation:
Situated in the Northern Cape province. Located between Upington and Vryburg with about a 2-hour drive to each. Kimberley is a 3-hour drive away. (4)

3.2.3
- Primary: mining
- Secondary: processing of ore – long iron and flat steel producers.
- Tertiary: retail services in the area, medical care, education (new school) and skill training centres. (6)

3.2.4
- SA is the world's seventh largest producer of iron ore and the fourth largest exporter.
- Major exporter to China – earner of foreign exchange.
- Many job opportunities, especially within the NC, which has relatively few opportunities due to the dry climate of the area.
- Large-scale infrastructure development to support the iron ore industry, which has benefitted other industries and the economy as a whole, e.g. Sishen-Saldanha railway, Saldanha harbour area, new solar energy parks.

[Any 3 relevant points] (6)

3.2.5 Sishen is one of the world's largest opencast mines, as seen in **Photograph 6** (Colour Insert).

(a) **Opencast mining** is a surface **mining technique** of extracting **rock** or **minerals** from the earth by their removal from an open pit or **burrow**. This form of **mining** differs from deep-level mining methods that require tunnelling into the earth. Open-pit mines are used when useful minerals or rocks are found near the surface. (2)

(b)
- The **dust** generated at opencast mining operations can have serious **health and pollution impacts** if these operations are not properly managed and mitigated. Health impacts include eye and lung problems.
- Opencast mining impacts negatively on **water quality**, due to the contamination of groundwater sources, the **pollution of surface water bodies** through the processing of raw ore, and waste generated through the various mining processes.
- Opencast mining activities create a significant amount of dust; this affects the **aesthetics of the environment** – a big issue in the town of Kathu and nearby Sishen mining area.

[2 points discussed linked to the environment, 2 points discussed linked to human health] (8)

3.3 **Strategies for industrial development**

Points of comparison	**Dube TradePort**	**Durban harbour and South Basin hub**
Physical location	30 km north of Durban Alongside King Shaka International Airport (2)	An area approximately 4 km wide and 24 km long, extending from the Durban CBD southward to Umbogintwini (2)
Types of industry present	Manufacturing, assembly, logistics, warehousing (2)	Vehicle assembly (Toyota) SAPREF oil refinery Sugar and paper mills Petrochemical industries (4)
Infrastructure	Airport N2 Planned industrial estate (4)	Port Cargo terminal N2, N3, M4 Railway junction (4)
Break-of-bulk points	Vehicle-aeroplanes (2)	Railway-container ships Also vehicles (2)
Economic benefits of the industrial region	Job creation Skills development Investment and development of a new industrial area (2)	Employment Major income generator for the country – exports/importing of goods (2)

(26)

100 marks

Total: 300 marks