



NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY EXAMINATION – MARCH 2017

GEOGRAPHY: PAPER I

Time: 3 hours

300 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 16 pages and a Colour Insert of 4 pages (i–iv). Detach the Colour Insert from the middle of the question paper. Please check that your question paper is complete.
 2. Read the questions carefully.
 3. **ALL THREE QUESTIONS ARE COMPULSORY.**
 4. Credit will be awarded for the following:
 - Interpretation and explanation; and
 - Evidence of personal observations where this is appropriate to the question.
 5. You are encouraged to use sketch maps, diagrams and other explanatory drawings to support your answers wherever relevant.
 6. Number your answers exactly as the questions are numbered.
 7. It is in your own interest to write legibly and to present your work neatly.
 8. There is a GLOSSARY of words on page 2 explaining what the words in **bold** used in the questions mean.
 9. Candidates must pay attention to the mark allocation. Unless otherwise indicated, two marks are awarded for a valid response. This means that a question carrying four marks requires two responses.
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GLOSSARY

WORD	MEANING
Account for	To justify, and provide reasons for something using a short explanation
Compare/ Comparison	To note the similarity or dissimilarity between something
Comment	To give your opinion or make a statement about something; to write generally about
Describe	To provide the main characteristics of something; to provide an account of (Note – a diagram or map may be included as part of a description.)
Discuss	To examine or investigate by way of an argument the various aspects of a statement
Draw	To show by means of a sketch
Evaluate	To judge or determine, to provide an opinion about a particular matter
Explain	To make clear or plain. To make sure the reader understands what is being said
Examine	To explore, to weigh up and analyse the details of something
Identify	To give the essential characteristics of; to name
Illustrate	To give examples or drawings to support an argument
Justify	To explain and give reasons for
Match	To find the exact counterpart of another
Name	To state something; to give; to mention
Prepare	To put together; to prepare and produce something
Provide	To give
Propose	To put forward by way of a plan or suggestion
Select	To choose; to pick out the correct answer from several alternatives
State	To express an idea clearly
Suggest	To put forward an idea, to recommend, or propose something
Tabulate	To arrange or organise ideas into a table format
Verify	To confirm, show or prove that something is true
Write	Make a note of, or list

SECTION A GEOGRAPHICAL ISSUES**QUESTION 1 GEOGRAPHICAL CASE STUDY: THE GEOGRAPHY OF DROUGHT IN SOUTH AFRICA****1.1 Agriculture in South Africa**

Match the correct term from Column A with the most correct explanation in Column B. Write down only the correct number and letter, e.g. 1.1.1 – A.

Column A		Column B	
1.1.1	Small-scale farmer	A	The cultivation of one main crop extensively, such as maize.
1.1.2	Food insecurity	B	Farmers who pool their resources in mutual support of one another; such as the purchase of seeds, fertilizers, and equipment.
1.1.3	Monoculture	C	Also known as self-sufficiency farming in which farmers focus on growing enough food to feed themselves and their families.
1.1.4	Co-operative farming	D	A farmer who has a small, but economically viable piece of land that is intensively and profitably farmed.
1.1.5	Subsistence farming	E	Individuals, households and communities do not have access to quality food at all times.
		F	Insufficient food to meet the needs of households and communities in rural areas.
		G	The genetic modification of seeds, to create new resistant strains.

(10)

Study Figure 1 and Figure 2 in the Colour Insert Booklet (pages i and ii). Read the Fact File below.

FACT FILE

- South Africa is facing its worst drought since 1982, with more than 2,7-million households facing water shortages across the country (refer to Figure 1, Colour Insert, p. i).
- The dams are at an all-time low (refer to Figure 1).
- A lot of resources are required by local governments to manage the drought situation, which is impacting everyone – rural and urban dwellers.
- Boreholes are also drying up fast.
- The presence of a strong El Niño episode in 2015/16 raises serious concerns regarding the impact on food security.
- Small-scale farmers in the North West and Free State face bleak prospects.
- Summer crops (soya beans, maize, sugar cane) and livestock farming are likely to be hardest hit by the drought and consumers are likely to see food prices elevated for some time to come.
- In 2015 maize production, accounting for nearly 80% of the total cereal output, declined by 27% on account of adverse weather.
- Maize prices in South Africa, the continent's top producer of the staple crop, are near record highs in the face of rolling heat waves and poor rains over key growing areas.

[Information adapted from a selection of newspaper articles, June-November, 2015]

1.2 Catchment and river management; agriculture

- 1.2.1 Refer to Figure 1 (Colour Insert, p. i). **Name** FOUR of South Africa's provinces that have been worst affected by the drought conditions. (4)
- 1.2.2 **Identify** TWO sources of water for irrigation of agriculture as mentioned in the Fact File. (4)
- 1.2.3 Refer to Figure 1 (Colour Insert, p. i). The map of South Africa includes the 500 mm isohyet line.
- (a) **Explain** what this line illustrates. (2)
- (b) **Suggest** the relationship between the 500 mm isohyet line and irrigation trends in agricultural regions across South Africa. (2)
- 1.2.4 Refer to Figure 1 (Colour Insert, p. i).
- (a) Dams are important to farmers in South Africa. Which province has experienced the highest percentage decrease in dam storage levels between October 2014 and October 2015? **Provide** the percentage value of the decrease. (4)
- (b) Besides low rainfall, **suggest** TWO other reasons for a decrease in dam levels. (4)
- 1.2.5 Drought is strongly linked to natural causes; however, poor catchment management and ineffective water usage also contribute towards drought. **Propose** THREE strategies that maize farmers in the Free State could adopt to better manage river catchment areas as a proactive measure against future droughts. (6)

1.3 Climate and weather

- 1.3.1 Refer to Figure 2 (Colour Insert p. ii). **Name** the province in South Africa where areas are likely to experience wetter than normal rainfall patterns in 2015-2016. (2)
- 1.3.2 **Identify** the predominant type of rainfall associated with the province as identified in Question 1.3.1 above. (2)
- 1.3.3 **Draw** a well-labelled cross-section diagram **illustrating** the phenomenon that is responsible for the rainfall in the province identified (Questions 1.3.1 and 1.3.2). (6)
- 1.3.4 **Explain** and **describe** the formation of line thunderstorm events that typically occur during the summer months over the interior plateau region of South Africa. (8)

1.4 Rural settlement issues and food security

- 1.4.1 Drought affects both rural and urban populations. The Fact File (page 3) focuses specifically on the impacts on rural communities. **Identify** TWO ways in which drought has an impact on rural settlements. (4)
- 1.4.2 Drought has already contributed to rural depopulation in the Free State and North West provinces. **Discuss** the impact rural depopulation will have on small rural settlements in these provinces. (6)
- 1.4.3 **Write** a paragraph in which you **discuss** how the recent drought has had an impact on food security in southern Africa. Refer to the Fact File and your own knowledge. Include at least FIVE relevant facts in your discussion. (10)

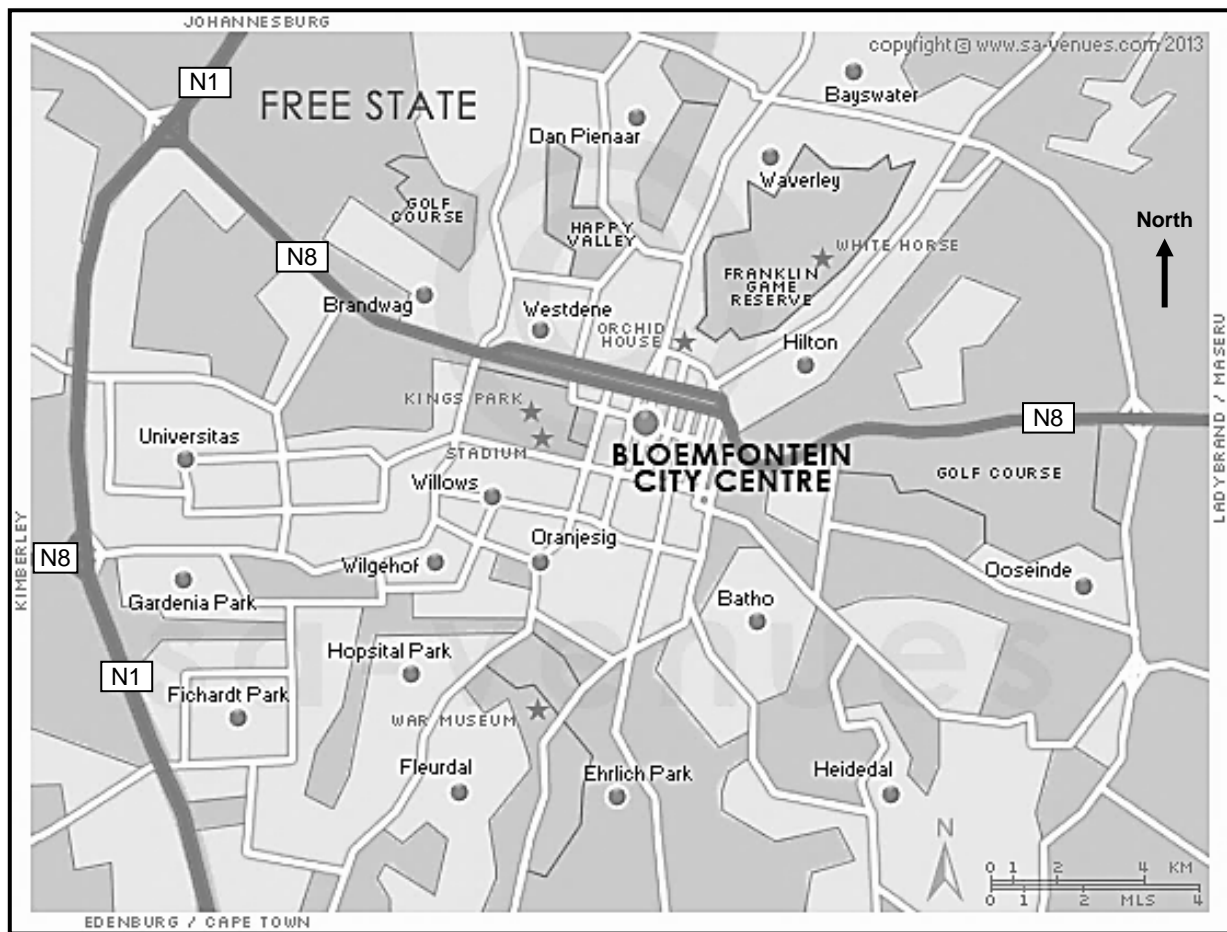
1.5 Urban settlement issues

Study the map of Bloemfontein, Figure 3 (page 6). Read the information below.

FACT FILE: BLOEMFONTEIN WATER CRISIS – 2015

- Bloemfontein has water restrictions for the first time in 32 years.
- A 20% price increase for water will be part of the drought management strategy.
- 69% of Bloemfontein's water comes from the Welbedag dam, which provides water to the Bloem Water reservoir. That dam has 26% less water than last year.
- Mangaung (*Bloemfontein's greater metropolitan area*) uses 200 million litres of water a day.

[Adapted from News24, 3 July 2015]

Figure 3: Map of Bloemfontein, city centre and outlying suburbs (Mangaung municipality)

[Source: SA Venues]

- 1.5.1 Refer to Figure 3 above. Study the Bloemfontein City Centre area. **Provide** map evidence that proves that this is the central business district (CBD) area of the city. Make specific reference to the following:
- Street patterns,
 - Accessibility (transport networks), and
 - Density of buildings/land use.
- (6)
- 1.5.2 Refer to Figure 3 above. **Examine** the suburbs southwest of the city centre area. **Provide** TWO forms of map evidence which show that these areas of Bloemfontein are newer areas of the city compared to the CBD region.
- (4)
- 1.5.3 (a) The Mangaung municipality has a number of issues with service provision, particularly with respect to water. How is the municipality dealing with the drought issue in this urban region?
- (4)
- (b) In your view, are these effective measures? **Provide** a reason for your opinion.
- (4)
- 1.5.4 **Suggest** FOUR ways (other than water restrictions) that urban planners can use to manage the urban and environmental challenges linked to water provision and usage in South African cities. You may draw on any case study examples you are familiar with.
- (8)

100 marks

SECTION B CLIMATE AND WEATHER AND GEOMORPHOLOGY**QUESTION 2 SUB-TROPICAL ANTICYCLONES, TROPICAL CYCLONE CHAPALA, MICROCLIMATE TERMINOLOGY, FLUVIAL PROCESSES, AND DRAINAGE SYSTEMS****2.1 Sub-tropical anticyclones and associated weather conditions: The Cape Southeaster**

Study Photograph 1 (page ii of the Colour Insert). The image shows Table Mountain covered with a 'table cloth' (cloud cover), due to the Cape Southeaster.

2.1.1 **Select** the correct underlined terms in each of the following sentences. Write down only the question number (a) to (d) and the correct term(s) in your Answer Book. For example: 2.1.1 (a) Kalahari High.

- (a) The Kalahari High/ South Atlantic High/ South Indian High is commonly associated with this wind (Cape Southeaster).
- (b) The Cape Southeaster frequently blows in autumn/ summer/ winter.
- (c) Another name for the Cape Southeaster is the berg wind/ Cape Doctor/ amanzi wind.
- (d) The weather associated with the Cape Southeaster is wet, windy and cold/ clear, hot and windy/ clear, hot and calm. (8)

2.1.2 **Draw** an annotated sketch map to show the synoptic conditions associated with the Cape Southeaster blowing over the Western Cape. (6)

2.2 Tropical Cyclone Chapala

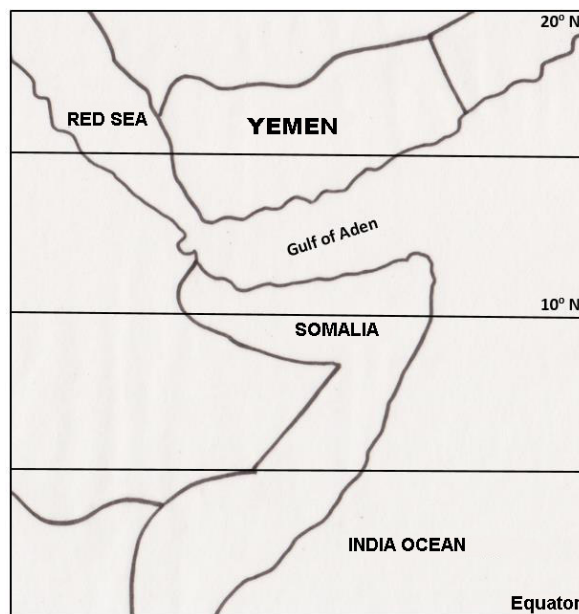
Read the information in the Fact File below. Refer to Photographs 2 and 3 on page iii of the Colour Insert.

FACT FILE TROPICAL CYCLONE CHAPALA HITS YEMEN

For the first time since records were started in the 1960s, a rare, intense tropical cyclone formed in the Arabian Sea and made landfall over Yemen on 3 November 2015. Tropical Cyclone Chapala generated sustained winds of 175 km/h, a storm surge of more than 7,5 m and dumped eight years' worth of rain (180 mm) in about 48 hours.

Yemen typically has a hot desert climate with low annual rainfall, making these conditions very unusual for this area.

Location map of Yemen



[Source: <earthobservatory.nasa.gov>]

2.2.1 **Describe** THREE environmental conditions necessary for the formation of tropical cyclones. (6)

2.2.2 **Explain** why the large amount of rain that was 'dumped' over Yemen could have disastrous consequences. (4)

Refer to Photographs 2 and 3 on page iii of the Colour Insert. These are Landsat images showing Yemen before and after Tropical Cyclone Chapala made landfall.

2.2.3 (a) (i) What type of river is the Wadi al Masilah? (2)

(ii) **Provide** TWO characteristics of such a river. (4)

(b) **Compare** the way in which the vegetation and water flow changes from Photograph 2 to Photograph 3. (6)

(c) **Suggest** why the coastal areas appear to be quite intensely flooded (Photograph 3). (4)

(d) **Verify** that Photographs 2 and 3 are high resolution images. (2)

2.3 Microclimate terminology

Match the concepts in Column A with the correct statement in Column B. Write **ONLY** the number and the correct letter, for example 2.3.1 – A.

Column A		Column B	
2.3.1	Temperature inversion	A	Forms when pollutants are mixed with fog.
2.3.2	Katabatic	B	Dust and pollutant particles that form the nucleus around which water droplets collect.
2.3.3	Thermal belt	C	A pool of cold air at the bottom of a valley.
2.3.4	Condensation nuclei	D	Where air temperature increases with decreasing altitude.
2.3.5	Smog	E	An upslope wind occurring during the day.
		F	A warm layer of air trapped above the cold air at the bottom of the valley.
		G	Where air temperature increases with increasing altitude.
		H	A downslope wind occurring at night.

(10)

2.4 Drainage basin systems and fluvial processes

Study Photographs 4 and 5 (page iv of the Colour Insert), which show river flow in the Orange River, South Africa.

2.4.1 Refer to Photograph 4.

- (a) **Identify** the type of river flow taking place in this photograph. (2)
- (b) (i) **Name** the fluvial feature associated with the flow pattern as identified in Photograph 4 in Question 2.4.1 (a). (2)
- (ii) **Explain** how this fluvial feature (identified in (b–i) above) is formed. (4)

2.4.2 Refer to Photograph 5.

- (a) **Identify** the type of river flow taking place in this photograph. (2)
- (b) **Describe** the river channel characteristics one would expect in Photograph 5. (4)

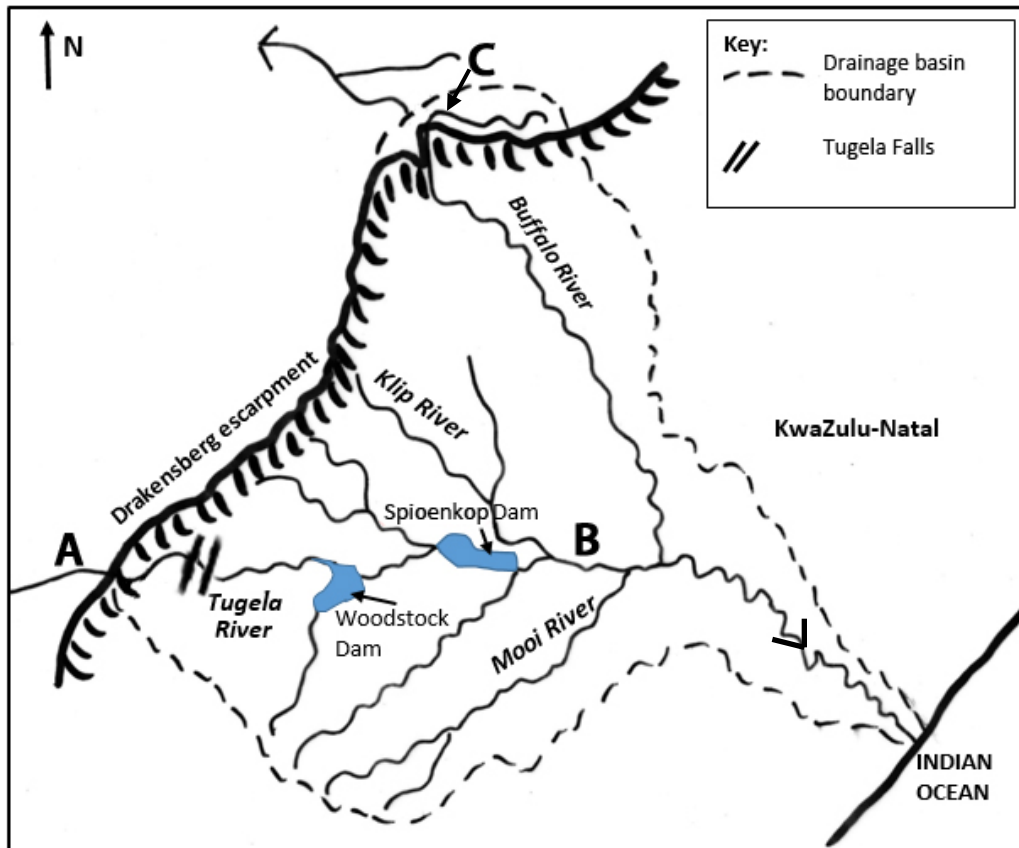
2.4.3 **Discuss** the energy and type of work performed by the river as shown in Photographs 4 and 5. **Tabulate** your answer, e.g.

	Energy	Type of work
Photograph 4: Orange River		
Photograph 5: Orange River		

(6)

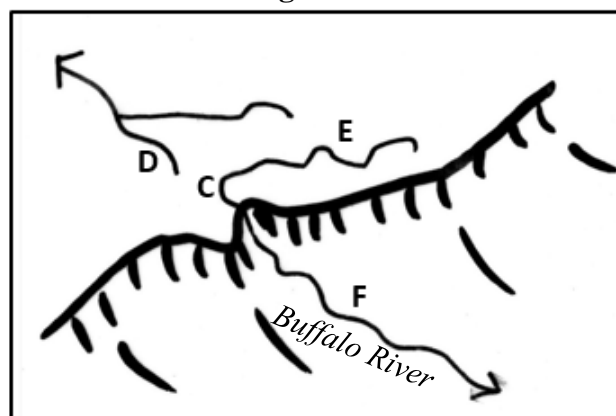
2.5 Study Figure 4A below, showing the Tugela River Basin, KwaZulu-Natal.

Figure 4A: Tugela River Basin, KwaZulu-Natal



- 2.5.1 **Draw** a longitudinal profile sketch of the Tugela River from A to B. Label the features that make this profile multi-concave/ ungraded. (8)
- 2.5.2 **Account for** the fact that runoff from rivers on the eastern escarpment (Drakensberg) is high. (6)
- 2.5.3 There is evidence that river capture has taken place at C on Figure 4A. Figure 4B below shows details of the capture that has taken place at C.

Figure 4B



- (a) **State** TWO environmental conditions that would promote river capture. (4)
- (b) **Provide** evidence to prove that river capture has taken place at C. Refer to the letters C to F on Figure 4B. (6)
- (c) **Explain** why rejuvenation occurs after river capture has taken place. (4)

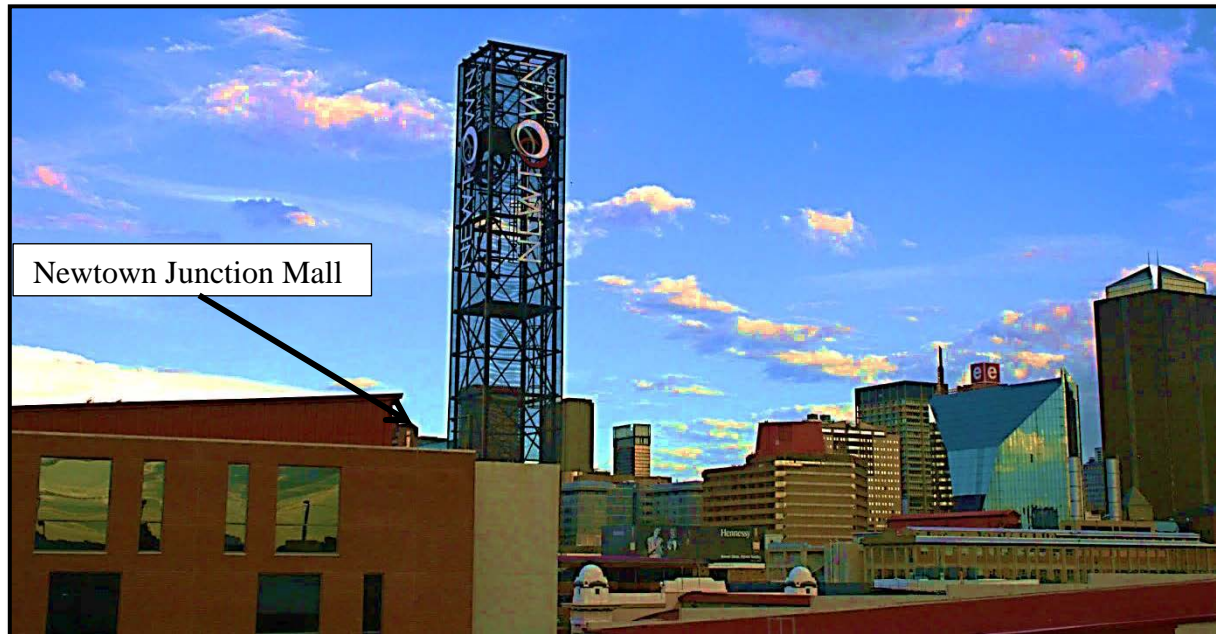
100 marks

SECTION C RURAL AND URBAN SETTLEMENT AND ECONOMIC GEOGRAPHY OF SOUTH AFRICA

QUESTION 3

3.1 Urban structure and changing land-use patterns

Figure 5: Newtown Junction Mall, inner city of Johannesburg, Gauteng



[Source: Examiner's photograph]

FACT FILE: URBAN RENEWAL IN THE INNER CITY OF JOHANNESBURG

Newtown Junction opens its doors

- As part of the inner city of Johannesburg, Newtown is one of the priority areas identified by the City of Johannesburg for upgrading and development. The Johannesburg Development Agency (JDA) manages these areas on behalf of the city.
- Newtown Junction is one of the biggest **multi-use developments** to open in Johannesburg's central business district (CBD) since the Carlton Centre in the 1970s.
- The project development cost R1,3 billion.
- The project saw the old potato sheds from the original city market making way for a hotel, offices and retail space. It consists of a 38 000 m² shopping centre, 39 000 m² of office space, a gym, a hotel and four levels of basement parking for 2 400 cars.

[Adapted from: The Johannesburg Development Agency]

- 3.1.1 **Identify** the urban land-use zone represented in Figure 5 above. **Provide** a reason for your answer. (4)
- 3.1.2 The Fact File (above) indicates that Newtown Junction is a multi-use development. **Explain** your understanding of a multi-use development and **justify** why new urban developments are encouraging of such projects. (6)

- 3.1.3 R1,3 billion was spent on the Newtown Junction development. **Suggest TWO** reasons why the Johannesburg CBD is a good place to invest money. (4)
- 3.1.4 While Newtown Junction has brought positive investment into the area, some local business people have not been supportive of the development. **Suggest THREE** ways this mall may negatively impact on the local economy of the area. (6)
- 3.1.5 Write an essay in which you **comment** on the quotation below regarding the strategic importance of the inner city region of Johannesburg.

"It is important to state that anyone who is familiar with the complexities and challenges of urban renewal and regeneration will agree that we cannot underestimate the strategic importance of the inner city of Johannesburg. The inner city has not only just been the historical centre of Johannesburg; it has also been its symbolic, economic and cultural centre."

[Mpho Parks Tau]

In your essay, take care to **discuss** the following points:

- The importance of the inner city of Johannesburg.
- Why the inner city area of Johannesburg is in need of renewal.
- Challenges associated with urban renewal in South African cities.
- Sustainable settlements – urban renewal strategies, e.g. Newtown Junction.

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

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)

3.2 Rural settlement and mining

Read the information below and study Photograph 6 on page iv of the Colour Insert.

FACT FILE

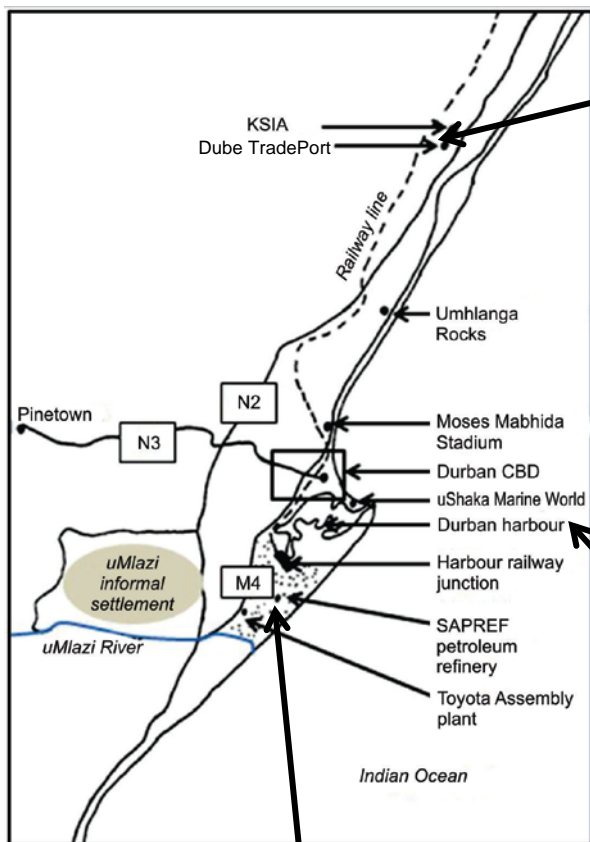
Kathu is a small town in South Africa, and the iron ore capital of the Northern Cape province. Kathu is located between Upington and Vryburg, with about a 2-hour drive to each. Kimberley is a 3-hour drive away. Kathu means '*town under the trees*', after the Camel Thorn forest it is situated in. The town has a population of around 11 500 people, the majority of whom are Sishen mining personnel. The town continues to grow and attract people; in January 2015 a new independent school opened its doors for the first time in Kathu. The town and the accompanying industrial area of Sishen came into being in the early 1970s because of iron ore mining activity in the region. It has one of the five largest *open-cast* iron ore mining operations in the world. Some of the world's longest ore trains travel through the region on the Sishen-Saldanha railway to offload their cargo at the Saldanha Bay harbour. Kumba Iron Ore is the main mine operator in Kathu.

[Adapted from: <www.wikipedia.com>]

- 3.2.1 What type of town is Kathu classified as? **Provide** ONE reason for your answer. (4)
- 3.2.2 With reference to Photograph 6 (Colour Insert p. iv) and the information above, **describe** the site and situation of Kathu. Make sure your answers are under two separate headings. (4)
- 3.2.3 In which economic sectors have the people of Kathu found employment? **Provide** examples of the economic sector and the specific types of employment people may be involved in. **Tabulate** your answer. (6)
- 3.2.4 **Discuss** the significance of iron ore mining to the economy of the Northern Cape and South Africa as a whole. (6)
- 3.2.5 Sishen is one of the world's largest open-cast mines, as seen in Photograph 6 (Colour Insert, p. iv).
 - (a) **Explain** what an open-cast mine is. (2)
 - (b) Kumba Iron Ore as a mining company has to put various environmental health and safety measures in place to protect both the environment and people at the Sishen mine. **Evaluate** how both people and the environment of Kathu might be at risk as a result of the large Sishen open-cast mine in the area. (8)

3.3 Strategies for industrial development

Figure 6: Map illustrating important industrial areas in the Durban-Pinetown region, KwaZulu-Natal



Dube TradePort

- Occupies a 2 840-hectare 'greenfield' site 30 km north of Durban.
- 50-year master planned world-class airfreight and passenger hub comprising four business zones.
- At the heart of the precinct is King Shaka International Airport [KSIA].
- A purpose-planned industrial estate that promotes the establishment of world-class manufacturing, warehousing assembly, and logistics facilities.
- Set to become a major contributor to job creation and critical skills development.
- Located between southern Africa's two primary seaports – Durban and Richards Bay.

[Adapted from <www.dubetradeport.co.za>]

South Durban Basin hub

- The South Durban Basin (SDB) is an area approximately 4 km wide and 24 km long, extending from the Durban CBD southward to Umbogintwini.
- Contains 2 large petrochemical refineries, a large paper mill, motor manufacturers and at least 5 000 businesses and 200 000 residents.
- Bordered by major transport linkages and a sensitive coastal strip.
- Key infrastructure upgrades aimed at improving service delivery are being rolled out.
- These include a major traffic interchange, electrical substation upgrades, roads and storm-water upgrades, as well as the improvement of public space through urban greening.

[Adapted from <www.durban.gov.za>]

Durban Harbour

- SA's busiest port.
- Beginning to work beyond its capacity.
- An upgrade is currently planned.
- Sustainable development is a key priority.
- Plans are ahead to expand the harbour.
- A joint port/city plan includes the upgrading of the existing container terminal, a new container terminal, and a new general-cargo terminal on the Point.
- Plans are in place to deepen and widen the entrance channel to the harbour.

[Adapted from <www.southafrica.net>]

Prepare a detailed and informative comparison table **comparing** the Dube TradePort and the Durban harbour and South Durban Basin hub. Use your own knowledge together with the information provided on the map (Figure 6) and associated Fact Files (page 15).

Tabulate your comparison as indicated below. Look carefully at the mark allocation for each section as stipulated in the table below. For this question, ONE mark is awarded for ONE correct point. Use sufficient space when preparing your table.

Points of comparison	Dube TradePort	Durban harbour and South Basin hub
Physical location	2	2
Types of industry present	2	4
Infrastructure	4	4
Break-of-bulk points	2	2
Economic benefits of the industrial region	2	2

(26)

100 marks

Total: 300 marks