

HILLCREST HIGH SCHOOL

GRADE 12
GEOGRAPHY PAPER I
SEPTEMBER 2019

TIME : 3 HOURS
EXAMINER : CM Girvin Esq.

MARKS : 225

INSTRUCTIONS

1. This question paper consists of 4 questions, two questions in Section A and two questions in Section B
2. Answer **ANY THREE** questions
3. All diagrams are included in the **ANNEXURE**
4. Leave a line between the subsections of each question you answer
5. Illustrate you answers with labelled diagrams, where possible
6. Write neatly and legibly

SECTION A : CLIMATE, WEATHER AND GEOMORPHOLOGY

QUESTION 1

- 1.1 Refer to Figure 1.1 which shows anticyclones over South Africa. Choose the correct word(s) from those given in brackets. You need only write down the question number and the correct word in your answer book
- 1.1.1 Pressure cell A is situated further (north/ south) in winter
- 1.1.2 Pressure cell B is the (South Atlantic/ South Indian) HP cell
- 1.1.3 When isobars are elongated away from pressure cell B, they form a (ridge/ trough)
- 1.1.4 The pressure reading at C is approximately (1012hPa/ 1016hPa)
- 1.1.5 The wind speed at station D is (20 knots/ 10 knots)
- 1.1.6 The wind direction at weather station D is (north east/ north west)
- 1.1.7 Pressure cells A, B and C are part of the (equatorial lo/ subtropical high) pressure belt (7)
- 1.2 Figure 1.2 shows sketches (1 – 4) based on river capture
- 1.2.1 Refer to sketch 1. Which river, A or B, is likely to be the captor?
- 1.2.2 Name the climatic factor causing river B in sketch 2 to erode at a faster rate
- 1.2.3 What type of erosion caused the watershed to move towards river A in sketch 2?
- 1.2.4 Refer to sketch 3. Which river, A or B, is the captured stream?
- 1.2.5 Refer to sketch 4. Name the feature of river capture at C
- 1.2.6 Refer to sketch 4. Name the feature of river capture at D
- 1.2.7 What is the term used to describe river A which has been reduced in volume in sketch 4?
- 1.2.8 Does river A or river B flow at a lower altitude in sketch 2? (8)
- 1.3 Study Figure 1.3 showing mid – latitude cyclones on a synoptic weather map of southern Africa
- 1.3.1 Give the term that is used to describe the linked mid – latitude cyclones (1)
- 1.3.2 What evidence suggests that mid – latitude cyclone A is the oldest? (2)

- 1.3.3 Why is front D **NOT** associated with heavy rain? (2)
- 1.3.4 What causes mid – latitude cyclones to dissipate (die out)? (2)
- 1.3.5 Write a paragraph of approximately **EIGHT** lines explaining the weather conditions that will be experienced by a tourist visiting Cape Town as the cold front approaches 4 X 2 = (8)
- 1.4 Figure 1.4 is a diagram depicting valley climates
- 1.4.1 Is the slope wind at X an anabatic or a katabatic wind? (1)
- 1.4.2 Other than the label, what evidence indicates that B is the thermal belt? (1)
- 1.4.3 What is the term used to describe an increase in temperature with height in the valley? (1)
- 1.4.4 Explain why slope wind X will be more intense in winter 2 X 2 = (4)
- 1.4.5 Account for the low temperature that is likely to be experienced on the valley floor in winter 2 X 2 = (4)
- 1.4.6 How will farmers have to adapt their farming methods (techniques) due to the temperature change on the valley floor? 2 X 2 = (4)
- 1.5 Figure 1.5 shows a river system with a low drainage density
- 1.5.1 Give evidence to suggest that the river system has a low drainage density (1)
- 1.5.2 Describe **TWO** factors that may have resulted in a low drainage density 2 X 2 = (4)
- 1.5.3 How will an increased drainage density impact on the existing stream order at A? (2)
- 1.5.4 Write a paragraph of approximately **EIGHT** lines discussing how human activities along the river's course could increase the drainage density of the drainage basin 4 X 2 = (8)
- 1.6 Figure 1.6 shows the changing cross – sectional profile of a valley along a river's course
- 1.6.1 In which course is the source of the river? (1)
- 1.6.2 Name **TWO** elements of the cross – profile of the valley that changed from the upper to the lower course in the diagram (2)

- 1.6.3 Differentiate between the fluvial processes that shaped the cross – sectional profiles of the upper course and the lower course of the river 2 X 2 = (4)
- 1.6.4 Describe the reasons for the change in the shape of the cross – profile of the middle course 2 X 2 = (4)
- 1.6.5 Explain why the shape of the cross – profile of the upper course of the river will make it the most suitable place to build a dam 2 X 2 = (4)
- [75]**

QUESTION 2

- 2.1 Refer to Figure 2.1 showing berg wind conditions, Choose the correct answer from the alternatives given. Write down just the question number and the letter corresponding to the most correct answer
- 2.1.1 Berg winds are common in
 A winter
 B summer
 C spring
 D throughout the year
- 2.1.2 The _____ high at A is associated with the formation of berg winds
 A South Atlantic
 B South Indian
 C Kalahari
 D Thermal
- 2.1.3 The general direction of movement of the frontal depression C is
 A westward
 B eastward
 C southward
 D northward
- 2.1.4 Winds at Durban are _____ winds
 A onshore
 B maritime
 C sea breezes
 D off shore
- 2.1.5 The cloud cover over the interior will be
 A overcast
 B clear skies
 C partly cloudy
 D scattered cloud
- 2.1.6 The air mass _____ as it moves from A to B in its downward descent towards the coast
 A cools adiabatically
 B warms adiabatically
 C becomes hot and moist
 D becomes cool and dry
- 2.1.7 There could be a risk of _____ along the east coast
 A thunderstorms
 B lightning
 C fog
 D veld fires
- (7)

- 2.2 Refer to Figure 2.2 which illustrates a fluvial feature. Choose the correct word(s) from those given in brackets. You need only write down the question number and the correct word(s)
- 2.2.1 The fluvial feature is a/an (delta/ alluvial fan)
- 2.2.2 The feature is formed in the (upper/ lower) course of the river
- 2.2.3 The river flowing in this course has a (turbulent/ laminar) flow
- 2.2.4 The feature forms over a (steep/ gentle) gradient
- 2.2.5 The feature is formed at the (source/ mouth) of the river)
- 2.2.6 The fluvial process responsible for this feature developing is (erosion/ deposition)
- 2.2.7 The river channels in the fluvial feature are called (tributaries/ distributaries)
- 2.2.8 The feature is more likely to form along a (steeply/ gently) sloping coastline (8)
- 2.3 These questions refer to Figure 2.3, an article on Cyclone Joyce and the Saffir – Simpson Scale used to classify tropical cyclones (hurricanes)
- 2.3.1 How many cyclones occurred in the present cyclone season ahead of Joyce? (1)
- 2.3.2 Describe **TWO** climatic conditions that may have favoured the development of cyclone Joyce (2)
- 2.3.3 Explain the impact that a category one storm would have on the infrastructure of the western coast of Australia (2)
- 2.3.4 In a paragraph of approximately **EIGHT** lines, provide reasons why cyclone Joyce failed to reach the category three storm that was predicted 4 X 2 = (8)
- 2.4 Figure 2.4 shows a heat island over Durban
- 2.4.1 Define the term **URBAN HEAT ISLAND** (1)
- 2.4.2 Why are the highest temperatures not recorded over the CBD of Durban as expected? (2)
- 2.4.3 Explain how the geometric shapes of the buildings and materials such as tar, contribute to the high temperatures in the city 2 X 2 = (4)

- 2.4.4 The concentration of pollutants over the CBD is greater at night than during the day. Draw a fully labelled diagram to illustrate the dust dome produced by these pollutants together with the air circulation over the city at night
4 X 1 = (4)
- 2.4.5 The city authorities are concerned about the high temperatures over the city of Durban. Suggest **TWO** sustainable measures that can be put in place to reduce the temperatures in the city
2 X 2 = (4)
- 2.5 Figure 2.5 shows a drainage basin
- 2.5.1 Name the drainage pattern shown at A (1)
- 2.5.2 Provide **ONE** piece of evidence from the sketch to substantiate your answer in 2.5.1 (2)
- 2.5.3 State the underlying rock structure which influenced drainage patterns A and B respectively
2 X 2 = (4)
- 2.5.4 Discharge in the main stream in drainage basin A will increase during times of flooding. Explain this statement
2 X 2 = (4)
- 2.5.5 Provide **TWO** possible reasons why the landscape illustrated in the diagram shows an antecedent drainage pattern
2 X 2 = (4)
- 2.6 Refer to the article in Figure 2.6 on river catchment management
- 2.6.1 Define the term **CATCHMENT AREA** (1)
- 2.6.2 State how the uncontrolled growth of alien vegetation along the Mthatha River will decrease the potential of hydro – electric power generation in the Future (2)
- 2.6.3 Explain how human activities along the upper part of the Mthatha River could impact on agricultural activities further downstream
2 X 2 = (4)
- 2.6.4 In a paragraph of approximately **EIGHT** lines, discuss sustainable measures that could be implemented to improve water quality in the Mthatha River catchment area
4 X 2 = (8)

[75]

SECTION B : RURAL AND URBAN SETTLEMENTS AND SOUTH AFRICAN ECONOMIC GEOGRAPHY

QUESTION 3

3.1 Choose a term in Column B that matches the description in Column A. Write down just the question number and the letter corresponding to the most correct answer eg. 3.1.9 J

	COLUMN A	COLUMN B
3.1.1	Settlement located close to a well or oasis	A Defence
3.1.2	Sites located inside a meander loop	B Gap town
3.1.3	Loose grouping of a few farmsteads	C Cross roads
3.1.4	Transport towns that develop near gateways through a mountain	D Wet point site
3.1.5	Largest rural settlement unit	E Aspect
3.1.6	Accessibility to transport is the main reason these settlements develop	F Situation
3.1.7	Location of a settlement in relation to the surrounding area	G Hamlet
3.1.8	Settlements located away from flood prone areas	H Dry point site
		I Village

(8)

3.2 Figure 3.2 illustrates street patterns. Match the street patterns with the statements below. Write down A, B or C next to each of the question numbers

- 3.2.1 A street pattern that allows for easy flow of traffic
- 3.2.2 Streets that radiate in all directions from a central point
- 3.2.3 A street pattern characteristic of the CBD of many South African cities
- 3.2.4 Streets mainly intersect at right angles in this street pattern
- 3.2.5 Streets do not link up easily in this pattern causing people to get lost
- 3.2.6 Feature of new urban settlements
- 3.2.7 An attractive pattern with very high construction costs

(7)

- 3.3. Figure 3.3 shows traffic congestion
- 3.3.1 Define the term **TRAFFIC CONGESTION** (1)
- 3.3.2 State **ONE** negative effect of traffic congestion on the physical environment (1)
- 3.3.3 What is the trend shown by the graph from 1982 to 2010 with regard to the hours of delay per commuter per year? (2)
- 3.3.4 Give a possible reason for your answer to Question 3.3.3. (2)
- 3.3.5 Describe **TWO** negative effects that this delay might have on commuters
2 X 2 = (4)
- 3.3.6 Suggest **TWO** possible ways in which traffic congestion in urban areas can be reduced
2 X 2 = (4)
- 3.4 Figure 3.4 shows an informal settlement
- 3.4.1 Define the term **INFORMAL SETTLEMENT** (1)
- 3.4.2 Outline **TWO** socio - economic problems prevalent in these areas 2 X 2 = (4)
- 3.4.3 Explain why informal settlements in South African cities are growing (1)
- 3.4.4 Explain why municipal bylaws (laws introduced by the local municipality) can be regarded as an advantage and a disadvantage (2)
- 3.4.5 Assume that you are the Minister of Human Settlements and you have been asked to outline solutions to combat the problems of people living in informal settlements. In a paragraph of approximately **EIGHT** lines, outline the strategies you would propose to improve the living conditions of people living in these settlements
4 X 2 = (8)
- 3.5 Figure 3.5 shows a market - orientated secondary economic activity
- 3.5.1 Define the term **SECONDARY ECONOMIC ACTIVITY** (1)
- 3.5.2 What is a **MARKET ORIENTATED INDUSTRY?** (1)
- 3.5.3 Why is this bakery market orientated? (2)
- 3.5.4 State **TWO** characteristics of the bakery that make it a light industry
2 X 2 = (4)

- 3.5.5 Discuss **TWO** factors that are likely to influence the production costs at the bakery 2 X 2 = (4)
- 3.5.6 Explain the economic importance of light industries to the economy of South Africa 2 X 2 = (4)
- 3.6 On a national level, about 45,6% of households in South Africa are food secure
- 3.6.1 Define the term **FOOD SECURITY** (1)
- 3.6.2 Give the percentage of the South African population that is food insecure (1)
- 3.6.3 Discuss **TWO** natural factors that contribute to food insecurity 2 X 2 = (4)
- 3.6.4 Write a paragraph of approximately **EIGHT** lines in which you propose measures that can be put in place to improve food security in South Africa 4 X 2 = (8)
- [75]**

QUESTION 4

- 4.1 Refer to Figure 4.1. Match the descriptions below to the labels on the diagram. Write down just the question number and the correct term
- 4.1.1 Movement of people from rural areas to cities
- 4.1.2 Movement of people from cities to rural areas
- 4.1.3 A term that describes the physical growth of the city
- 4.1.4 An area of decay on the outskirts of the CBD
- 4.1.5 Refers to the modernisation of old houses by wealthy people
- 4.1.6 A feature that prevents urban sprawl
- 4.1.7 Renovation of buildings to reduce migration and improve the urban environment
- 4.1.8 The percentage increase of people living in cities (8)

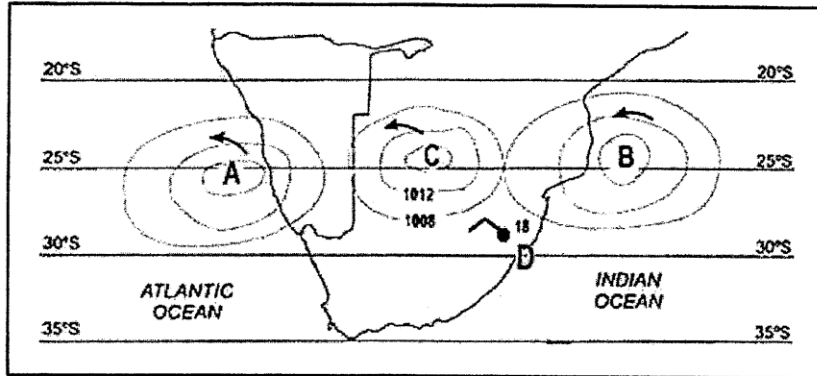
- 4.2 Choose the correct word(s) from those given in brackets. Write down just the question number and the correct word(s)
- 4.2.1 The dispersal of industries away from core areas is known as industrial (centralisation/ decentralisation)
- 4.2.2 An initiative that promotes industrialisation along major routes is called a (spatial development initiative/ industrial development zones)
- 4.2.3 Industries that are located between the raw material and the customer are called (bridge/ footloose) industries
- 4.2.4 An oil refinery is classified as a (heavy/ light) industry
- 4.2.5 A food processing factory is a (primary/ secondary) economic activity
- 4.2.6 The sector of the economy that is associated with research and development is the (tertiary/ quaternary) sector
- 4.2.7 A coal – fired power station is (raw – material/ market) orientated (7)
- 4.3 Figure 4.3 shows various types of rural settlements
- 4.3.1 What evidence suggests that B is a dry point settlement? (1)
- 4.3.2 State **TWO** social advantages of living in settlement B (2)
- 4.3.3 Refer to settlement C
 (a) Identify the settlement shape at C (1)
 (b) Suggest a reason for the elongated shape of the individual farms in settlement C (2)
 (c) Explain why the farms at C are likely to experience soil erosion 2 X 2 = (4)
- 4.3.4 A decision was taken to upgrade the existing road in the village at B. Explain how and why this decision would change the classification of the village in the urban hierarchy 2 X 2 = (4)
- 4.4 Figure 4.4 shows urban sprawl in an urban settlement from 1980 to 2020
- 4.4.1 Define the term **URBAN SPRAWL** (1)
- 4.4.2 Describe the effect of urban sprawl on housing density in this area (1)
- 4.4.3 Give a possible reason why area A was not used for urban development in 1980 (2)

- 4.4.4 (a) Which street pattern would be most suitable for area A in the diagram in 2020? (2)
 (b) Give a reason for your answer in A (2)
- 4.4.5 In a paragraph of approximately **EIGHT** lines, evaluate the effect of urban sprawl on the natural environment at A in 2020 4 X 2 = (8)
- 4.5 Figure 4.5 shows current trends in South African agricultural production
- 4.5.1 Which crop in South Africa has shown an increase in production since 2014? (1)
- 4.5.2 Name the crop showing the greatest decrease in production from 2014 to 2015 (1)
- 4.5.3 State the relationship between crop yield and hectares planted for the period 2014 to 2015 (2)
- 4.5.4 Give **TWO** possible reasons for the relationship you stated in 4.5.3 2 X 2 = (4)
- 4.5.5 In a paragraph of approximately **EIGHT** lines, suggest measures that might be employed to improve crop production to meet the needs of South Africa's growing population 4 X 2 = (8)
- 4.6 Figure 4.6 is based on South African mining and quarrying
- 4.6.1 To which economic sector does mining and quarrying belong? (1)
- 4.6.2 Describe the trend in the contribution of mining and quarrying to South Africa's GDP (1)
- 4.6.3 Give **ONE** reason for the trend you observed in 4.6.2 (2)
- 4.6.4 Discuss the significance of mining and quarrying to the South African Economy 3 X 2 = (6)
- 4.6.5 Describe how labour issues **OR** mining hazards contributed to the trend observed in 4.6.2 2 X 2 = (4)
- [75]**

TOTAL : 225

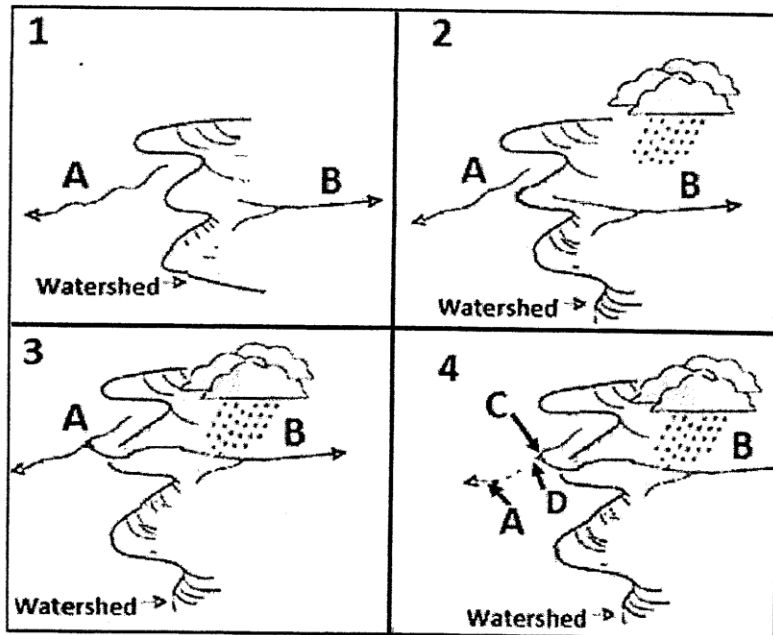
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SEPTEMBER 2019
DIAGRAM BOOKLET

FIGURE 1.1 : ANTICYCLONES



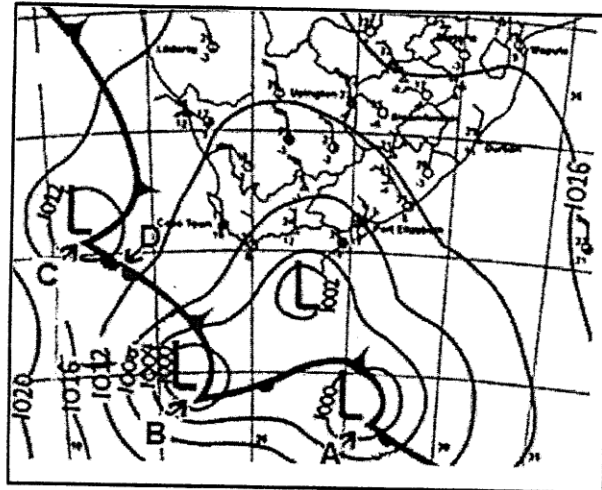
[Source: http://www.aelsnet.net/eportal/pluginfile.php/412/mod_imscp/content/2/influence_of_pressure_systems.htm]

FIGURE 1.2 : RIVER CAPTURE



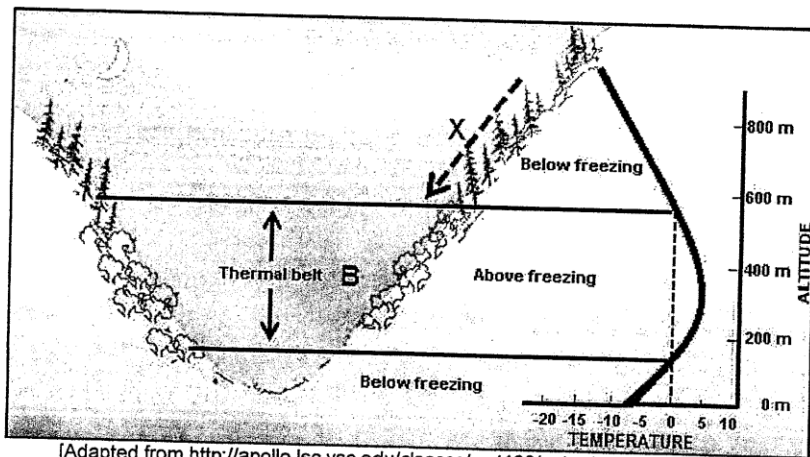
[Adapted from <https://www.bing.com/images/search=landforms+of+stream+capture>]

FIGURE 1.3 : MID – LATITUDE CYCLONES



[Source: South African weather services]

FIGURE 1.4 : VALLEY CLIMATES



[Adapted from <http://apollo.lsc.vsc.edu/classes/met130/notes/chapter3/drainage3.html>]

FIGURE 1.5 : DRAINAGE DENSITY

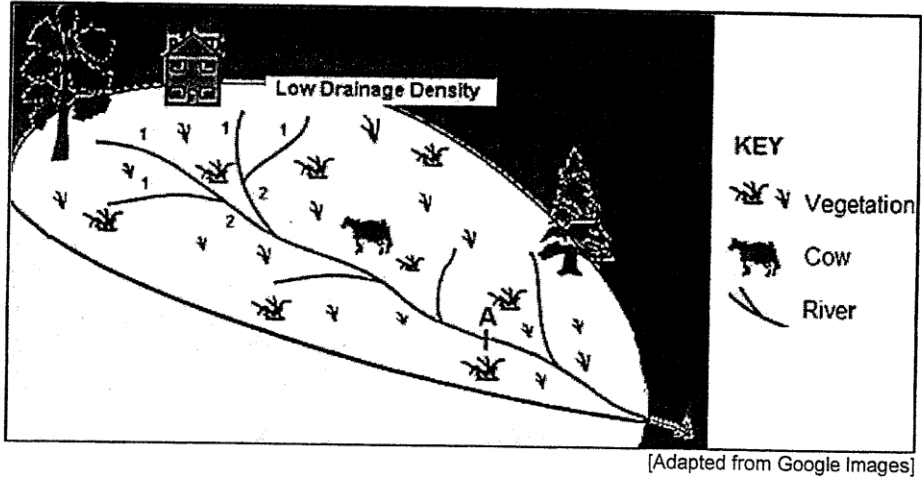


FIGURE 1.6 : CHANGING CROSS – SECTIONAL PROFILE OF THE VALLEY ALONG A RIVER'S COURSE

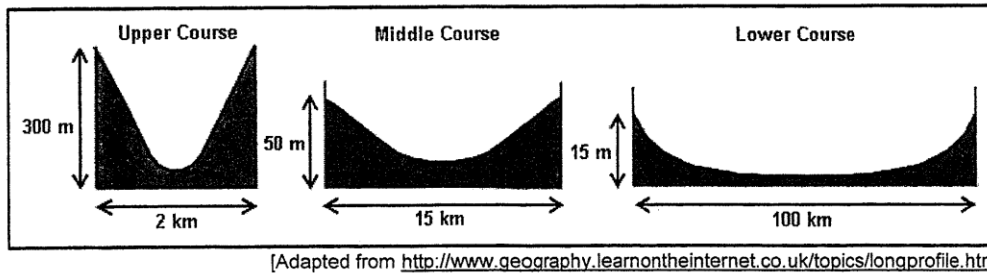
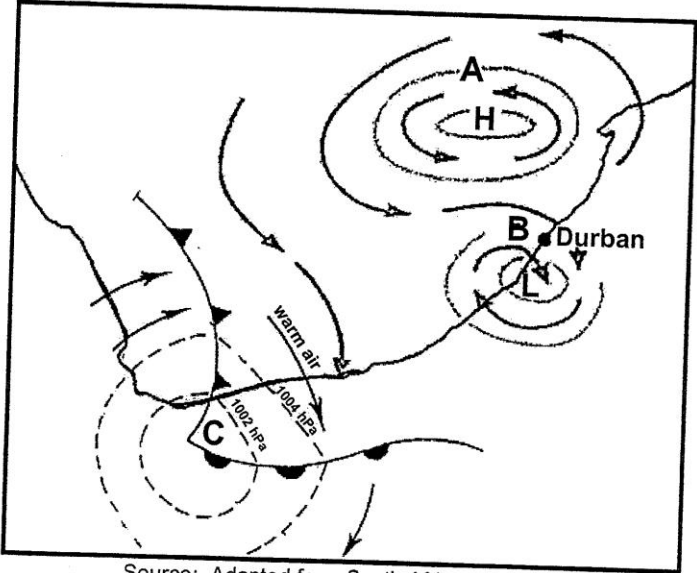
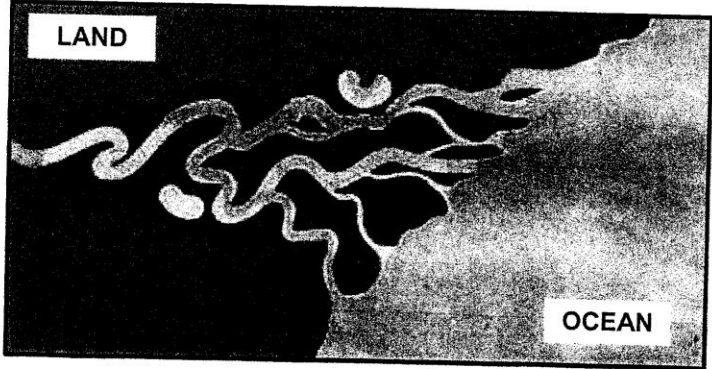


FIGURE 2.1 : BERG WINDS



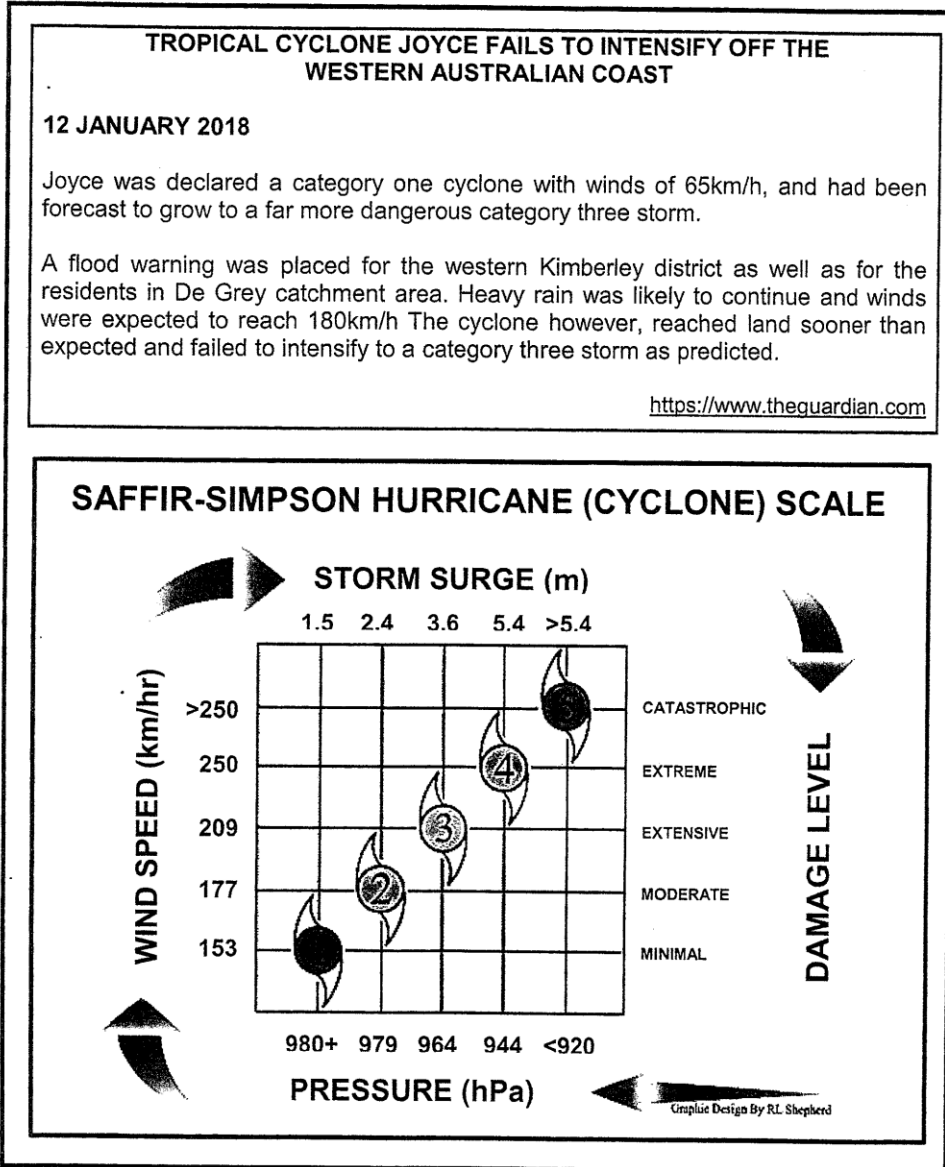
Source: Adapted from South African Weather Patterns

FIGURE 2.2 : FLUVIAL FEATURE



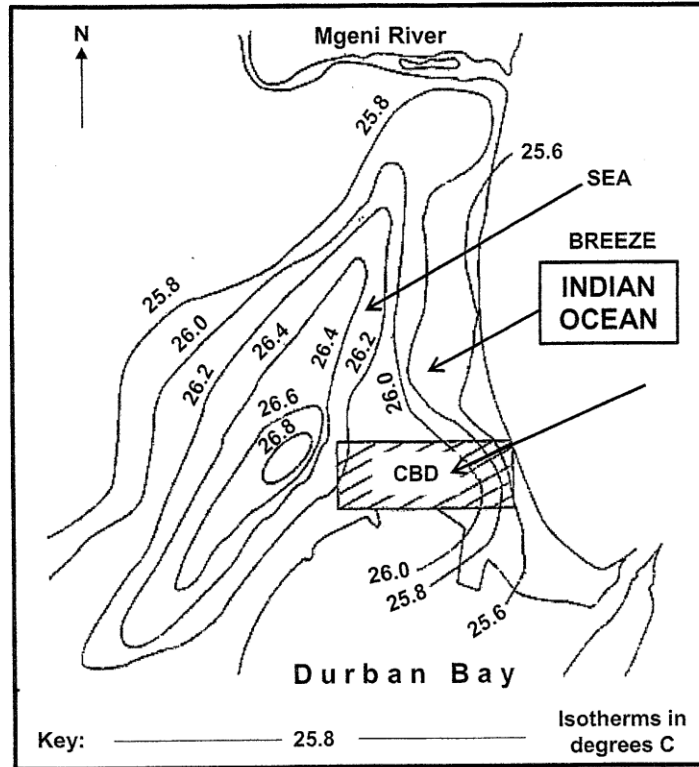
Source: Google images

FIGURE 2.3 : CYCLONE JOYCE AND THE SAFFIR – SIMPSON SCALE



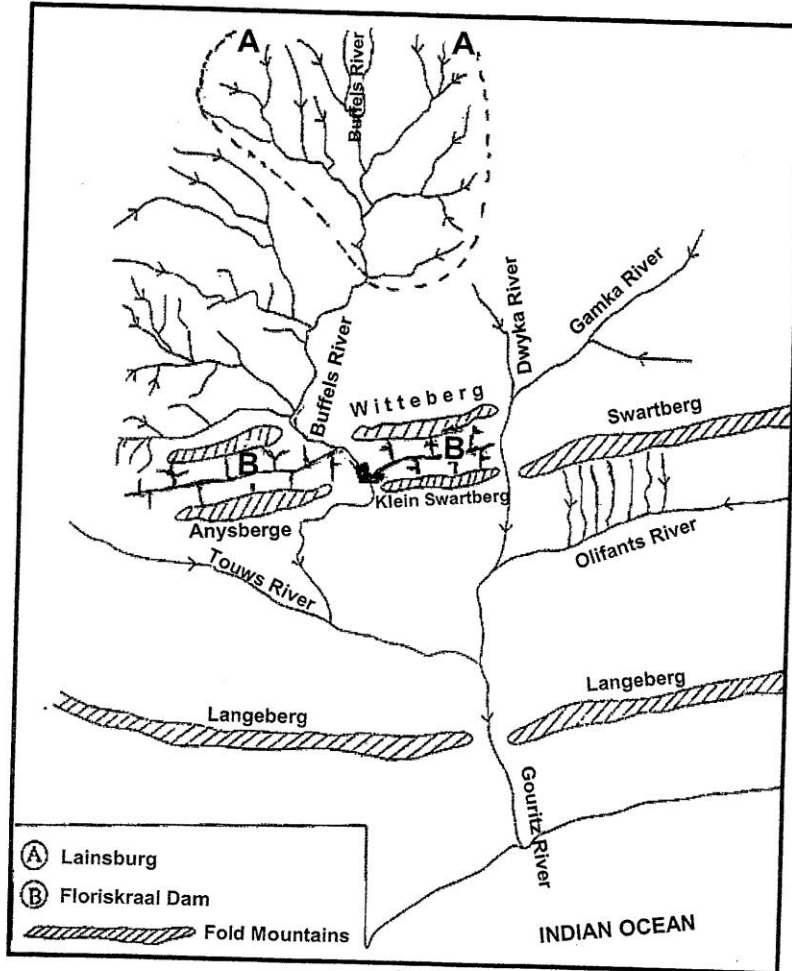
Source: Google upload

FIGURE 2.4 : URBAN HEAT ISLAND OVER DURBAN



Source: Adapted from Solutions for all

FIGURE 2.5 : DRAINAGE BASIN



Source: Adapted from NSC Exemplar

FIGURE 2.6 : RIVER CATCHMENT MANAGEMENT

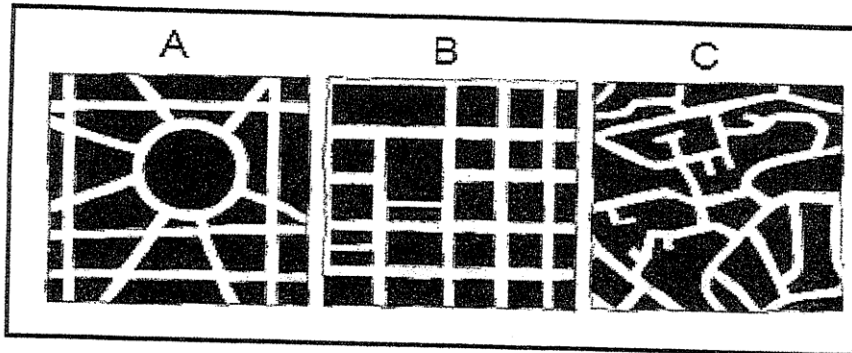
MTHATHA RIVER SYSTEM

Mthatha is a major urban region in the Mthatha river catchment area. Activities such as agriculture, hydro-power generation, urbanisation and industry put a strain on the river system and ground water supply.

Alien trees encroach on the riparian zone (area between river and land) which reduces the natural vegetation along the river banks. Hydroelectric power releases water that scours (scrapes) the river banks and untreated sewage is discharged directly into the river.

Source: Adapted from Study and Master

FIGURE 3.2 : STREET PATTERNS



Source: Focus Geography

FIGURE 3.3 : TRAFFIC CONGESTION

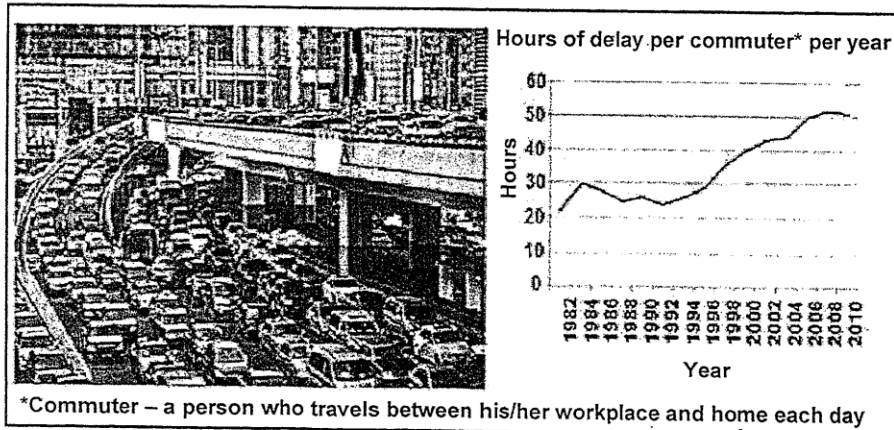


FIGURE 4.1 : URBAN CHARACTERISTICS

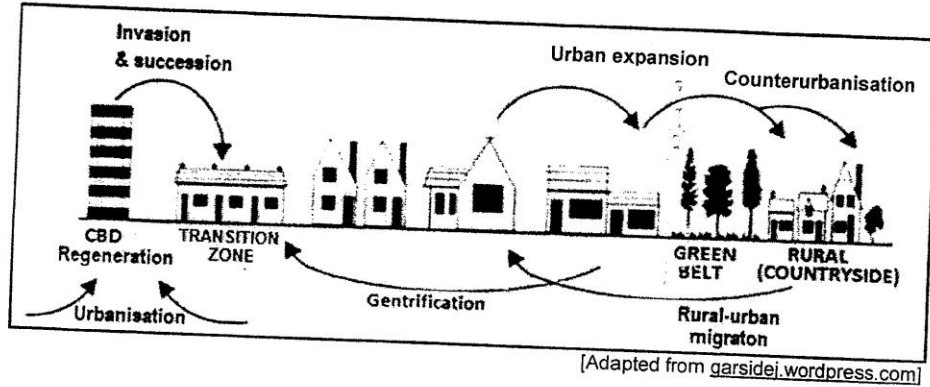


FIGURE 4.3 : TYPES OF RURAL SETTLEMENT

