

HILLCREST HIGH SCHOOL

Marks: 225

GEOGRAPHY PAPER 1

Time 3 hours

Examiner CR Madeley

AUGUST 2020

Instructions:

1. This paper consists of **Four** questions, **Two** questions in section A and **Two** in section B.
 2. You must answer **THREE** questions
 3. All diagrams are included on the separate annexure booklet
 4. Number your answers exactly as the questions are numbered
 5. Pay careful attention to mark allocation as well as descriptors in the question e.g.: outline, explain, state etc.
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Section A Climate, Weather and Geomorphology**Question One**

Refer to fig 1.1 The synoptic map for South Africa.

- 1.1.1. Name the pressure system **A** in full.
- 1.1.2 Describe the direction of air circulation at **D**
- 1.1.3 State the wind direction at weather station **F**.
- 1.1.4 Name the ocean current **E**
- 1.1.5 The elongated section of cell **A** is referred to as a **trough/ ridge**?
- 1.1.6. The air flow at Cape Town caused by cell **A** is **offshore/onshore**?
- 1.1.7 Suggest one reason why this may be a summer synoptic map
- 1.1.8 State the isobaric interval on this map. (8)

1.1.9 Refer to the same synoptic map as for 1.1

- 1.1.9 a. Outline how the ocean current **E** affects the amount of rainfall received along the eastern parts of South Africa. (2x2=4)
- 1.1.9. b During winter the cell **D** is normally not visible at this level and is replaced by a high-pressure cell. Name this high-pressure cell. (1)
- 1.1.9 c. Explain how the position of cell **A** may affect summer rainfall patterns in the south western Cape. (2)

1.2 Refer to the schematic of a drainage basin fig 1.2

Match the letters on the diagram with the descriptions below

1.2.1 Where the river system originates

1.2.2 Watershed

1.2.3 Refers to a second order stream

1.2.4 a confluence

1.2.5 a tributary

1.2.6 base flow and groundwater feeding the river

1.2.7 river channel (7)

1.3 Refer to the diagram illustrating the path of a tropical cyclone 1.3

1.3.1 Account for the direction of the tropical cyclone. (2)

1.3.2 What evidence suggests that this cyclone is in the southern hemisphere? (2)

1.3.3 What causes the dangerous semi-circle/quadrant to form? (2)

1.3.4 State two conditions that may cause this cyclone to dissipate as it continues its path. (4)

1.3.5 Outline in a paragraph of approximately eight lines, the associated weather conditions of the dangerous quadrant and its effect on coastal communities. (4x2=8)

1.4 Refer to the photograph depicting a katabatic wind Fig 1.4

1.4.1 Name the type of fog evident in the photograph. (1)

1.4.2 Account for the position of the fog on the valley floor. (2)

1.4.3 Explain the role played by *terrestrial radiation* in the formation of air movement A. (2x2=4)

1.4.4 Explain how the time of day will affect the wind direction in this valley (2)

1.4.5 Explain how farmers may have to adapt their farming methods due to the climatic conditions that occur in valleys. (2x2=4)

1.4.6 Suggest why wind A may be more intense (stronger) during winter. (2)

1.5 Refer to the diagram illustrating the process of rejuvination Fig 1.5

1.5.1 What is a floodplain? (1)

1.5.2 Suggest why the soil in floodplains is generally fertile. (1)

- 1.5.3 Explain, referring to the process of rejuvenation why there are two floodplains in this landscape. (2x2=4)
- 1.5.4 State two possible reasons for rejuvenation occurring here. (2x2=4)
- 1.5.5 Sketch a simple cross -profile of this rejuvenated river valley. (2)
- 1.5.6 Suggest two reasons why the rejuvenated landscape may cause problems for farmers (2x2=4)
- 1.5.7 Outline why the meandering channel pattern occurs in this landscape. (2x2=4)

[75]

Question Two**2.1 Refer to the diagram showing the longitudinal profile of a river Fig 2.1**

- 2.1.1 Explain the term base level (1)
- 2.1.2 Why does sea level represent the ultimate base level for most rivers? (1)
- 2.1.3 Suggest evidence from the diagram that this river is a **graded** river. (2)
- 2.1.4 Explain why a drop in sea level will cause a change in the profile of this river. (2x2=4)

2.2 Various options are provided as possible answers to the following questions.

Choose the answer and write only the letter (A–D) next to the question number (2.2.1–2.2.8) for example 2.2.9 A.

2.2.1 Water flowing downslope over land is known as ... flow.

- A. channel
- B. Sheet flow
- C turbulent
- D. base

2.2.2 The raised banks of a river due to continuous flooding and deposition is a/an ...

- A delta
- B alluvial fan.
- C levee.
- D meander scar.

2.2.3 The type of flow common in the middle course of a river is...

- A laminar flow.
- B infiltration.
- C base flow.
- D Turbulent flow

2.2.4 A river that flows all year because the riverbed cuts into the water table is a/an ... river.

- A exotic
- B perennial
- C periodic
- D episodic

2.2.5 A ... drainage pattern develops in the valleys between parallel ridges or mountain ranges.

- A trellis
- B rock-controlled
- C rectangular
- D radial

2.2.6 The arrangement of streams in a drainage basin is known as the ...

- A drainage pattern.
- B stream order.
- C stream density.
- D stream profile.

2.2.7 Where a stream channel appears to be breaking up into many smaller streams, a ... stream channel pattern develops.

- A meandering
- B rock-controlled
- C braided
- D dendritic

2.2.8 Drainage density can be affected by:

- A vegetation cover
- B gradient of the landscape
- C the type and amount of rainfall
- D All of the above

(8 x 1) (8)

2.3 Refer to fig 2.3 showing a cross section of a mid-latitude cyclone in its mature stage.

- 2.3.1 State why the term "mid- latitude" is applied to this type of cyclone. (1)
- 2.3.2 State where the "warm sector" of this system occurs. (1)
- 2.3.3 Tabulate two differences between this system and a tropical cyclone referring to their place of origin and direction of movement. (2x2=4)
- 2.3.4 A warm front occlusion may occur in the next "stage" in the system's life cycle. Explain how this occlusion develops. You may use a sketch to illustrate your answer. (2x2=4)
- 2.3.5 Outline in a paragraph of approximately eight lines how mid- latitude cyclones and their associated cold fronts may impact commercial farming operations in the Western Cape during winter. (4x2=8)

2.4 Refer to the Fig 2.4 showing a heat island over Durban

- 2.4.1 Define the term "heat island." (1)
- 2.4.2 Over what part of the city would you expect the highest temperatures to occur? Explain one reason for your answer. (2X1=2)
- 2.4.3 State two possible reasons why temperatures decrease as you move northward towards the Umgeni river. (2x2=4)

2.4.4 Outline two sustainable measures that urban planners could introduce to the Durban area to reduce temperatures over the city area. (2x2=4)

2.4.5 a. A pollution dome may develop over cities like Durban. What is a pollution dome? (1)

2.4.5 b. Explain with the aid of a sketch, how the *time of day* may influence the *position/altitude* of the pollution dome over Durban. (4)

2.5 Refer to the diagram 2.5 of a river system.

2.5.1 Name the drainage pattern in the *area B* and comment on the underlying rock structure here. (3)

2.5.2 Explain the impact that removal of the trees (i.e.: deforestation) may have on:

a. drainage density in the area (2)

b. water quality in the river system (2)

2.5.3 Explain in a paragraph of approximately eight lines the importance of wetlands and natural vegetation (such as grassland and forest) in maintaining the health of a river system. (4x2=8)

2.6.1 Refer to figure 2.6 illustrating the process of river capture.

For each of the following statements say whether it is True or False and then state a reason or fact to support your answer.

2.6.1 a. The captor stream is more energetic than the captive stream (2)

2.6.1 b. The stream order in the drainage basin of *river 2* will decrease because of capture. (2)

2.6.1 c. *River 2* is now known as the beheaded stream (2)

2.6.1 d. Rejuvenation is likely to occur in the basin of *river 1*. (2)

2.6.2 Explain why the valley of *river 2* will now become *under graded* and become known as a *misfit* stream. (2)

[75]

SECTION B RURAL AND URBAN SETTLEMENTS AND THE SOUTH AFRICAN ECONOMY

Question 3

3.1 Choose a term from **column A** that matches the statement in **column B**. Write only the question number and the letter corresponding to your answer.

	Column A	Column B
3.1.1	The physical growth of urban areas	A. Rural to urban migration
3.1.2	The process that may lead to urban growth and urbanisation	B. Gap town
3.1.3	Location of a settlement in relation to surrounding areas	C. Urban expansion
3.1.4	The uncontrolled growth of urban areas into the surrounding landscape	D. Urban sprawl
3.1.5	A decrease in the numbers of people living in rural areas	E. hamlet
3.1.6	Transport towns that develop on mountain passes	F. defence site
3.1.7	Made up of a grouping of farmsteads	G. rural depopulation
3.1.8	A town that develops inside a meander loop	H. Situation

(8)

3.2 Refer to the figure 3.2 showing statistics related to rural population in South Africa between 2004 AND 2015

- 3.2.1 State the trend represented here. (1)
- 3.2.2 Describe two possible reasons for this trend occurring in South Africa. (2x2=4)
- 3.2.3 The trend shown could cause economic decline in the rural areas of South Africa.
Outline briefly **how** the process of rural decline occurs. (2x2=4)
- 3.2.4 Explain how this trend can affect **food security** in the rural areas. (3x2=6)

3.3 Refer to the figure 3.3 showing small scale farming.

3.3.1 What is small scale farming? (1)

3.3.2 Explain why small-scale farming plays an important role in the South African

Agricultural sector (2x2=4)

3.3.3 Outline in a paragraph of approximately eight lines some of the reasons why small-scale farmers may earn low profits from their produce. (4x2=8)

3.3.4 Explain one climatic and one physical factor NEGATIVELY affecting all South African

farmers. (2x2=4)

3.4 Refer to the Urban profile fig 3.4

3.4.1 Name the land use A. (1)

3.4.2 Which letter represents the transition zone? (1)

3.4.3 Describe two problems that may occur in the transition zone. (2x2=4)

3.4.4 Is land use B likely to be heavy or light industry? (1)

3.4.5 Explain why a market orientated industry would locate at B. (2)

3.5 Refer to the figure 3.5- an extract from an article from Business Day

3.5.1 Discuss three reasons for the very large number of people living in informal

settlements in South Africa. (3x2=6)

3.5.2 Identify two social injustices these people experience. (2)

3.5.3 How does the informal economy support people living in these settlements? (2)

3.6 Refer to the figure 3.6 showing exports from the Western Cape.

3.6.1 Into which sector of the economy does exporting fall? (1)

3.6.2 Discuss two factors that support the exporting of fruit from the western cape. (2x2=4)

3.6.3 Identify a primary product which benefits from processing before export. (1)

3.6.4 Explain how the manufacturing and export of engine parts contributes to the local economy of the Western Cape. (3x2=6)

3.6.5 Describe two challenges facing manufacturing in South Africa at the moment (apart from the

effects of the covid restrictions on trade) (2x2=4)

[75]

Question Four

4.1 Match the statements in column A with the corresponding statements in column B. Just write the number of the question and the letter corresponding to your answer. Eg: 4.1.1 -B

Column A	Column B
4.1.1 Town that supplies services to the surrounding countryside	A. Market town
4.1.2 The minimum number of people required to support an activity in a settlement	B. Lower order service
4.1.3 A service that people use on a daily or weekly basis	C. Higher order service
4.1.4 Services that have a large range and are generally more costly	D. Dry point
4.1.5 Rural settlement pattern that often occurs along roads	E. Junction town
4.1.6 Rural settlement site that avoids low lying land near rivers	F. Linear
4.1.7 A town that develops where a railway line meets a road	G. Central place
4.1.8 A town where the main activity is to distribute and sells goods	H. threshold population

(8)

4.2 Refer to the figure 4.2 showing "urban characteristics".

4.2. Urban regeneration (growing and rebuilding) and gentrification (fixing and modernisation of old housing areas) are both strategies undertaken to fix or reverse the problems caused by urban decay.

4.2.1 Outline two reasons for urban decay occurring in cities like Durban and Johannesburg. (2x2=4)

4.2.2 What is the main purpose of the green belt in cities like this one? (1)

4.2.3 Suggest one other positive effect of green belts for cities. (1)

4.2.4 Describe the process of invasion and succession. (2)

4.2.5 Outline in a paragraph of approximately eight lines the economic and social benefits for a city that can successfully regenerate its older neglected areas. (4x2=8)

4.3 Refer to the diagram of 3 typical street patterns found in cities. Fig 4.3

4.3.1 Which street pattern, A B or C

- a. is associated with older settlements
- b. is normally found in high income residential areas.
- c. is normally found where land is hilly (4)
- d. alleviates traffic congestion

4.3.2 Outline two environmental impacts of traffic congestion that can be caused by poorly designed streets. (2x2=4)

4.4 Refer to the figure 4.4 showing the contribution to GDP in South Africa by mining and quarrying.

- 4.4.1 Describe the trend in the contribution by this sector to the economy. (1)
- 4.4.2 Suggest a reason for this trend. (1)
- 4.4.3 Name the industrial region in South Africa that developed because of mining (1)
- 4.4.4 Explain how mining contributes to infrastructure and manufacturing in South Africa. (3x2=6)
- 4.4.5 Describe three challenges faced by the mining sector in South Africa. (3x2=6)

4.5 Refer to the extract 4.5 that refers to the policy of Land Reform

- 4.5.1 Explain the term land reform. (2)
- 4.5.2 What is meant by "land restitution?" (2)
- 4.5.3 Identify two reasons why the land reform programme has failed. (2x2=4)
- 4.5.4 Outline three strategies you would suggest for "post settlement support" which would help land reform succeed. (3x2=6)

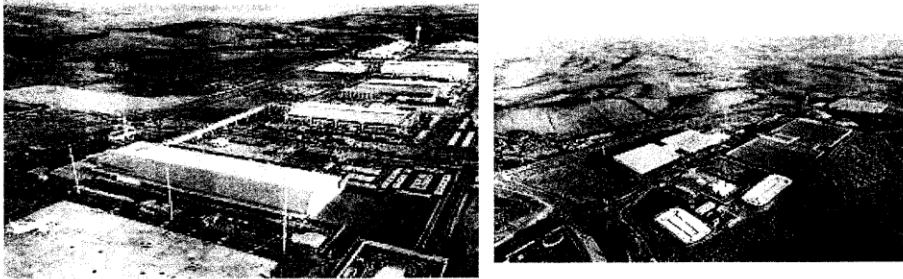
4.6 Refer to the extract below:

The Dube Trade Port IDZ is the latest in the nationwide rollout of special economic zones aimed at growing the country's economy to meet the target of five percent growth by 2019. Situated 30km north of the City of Durban, Dube TradePort is a greenfield development, purpose-built to facilitate airport-related business.

As the first IDZ for Durban, the Dube Trade Port IDZ joins a list of other similar projects which have attracted a combined investment of over R5 billion in Port Elizabeth, East London and Richards Bay.

According to Trade and Industry Director General Lionel October more special economic zones will be rolled out across the country as government intensifies its approach to industrialise South Africa's economy as demanded by the National Development Plan (NDP).

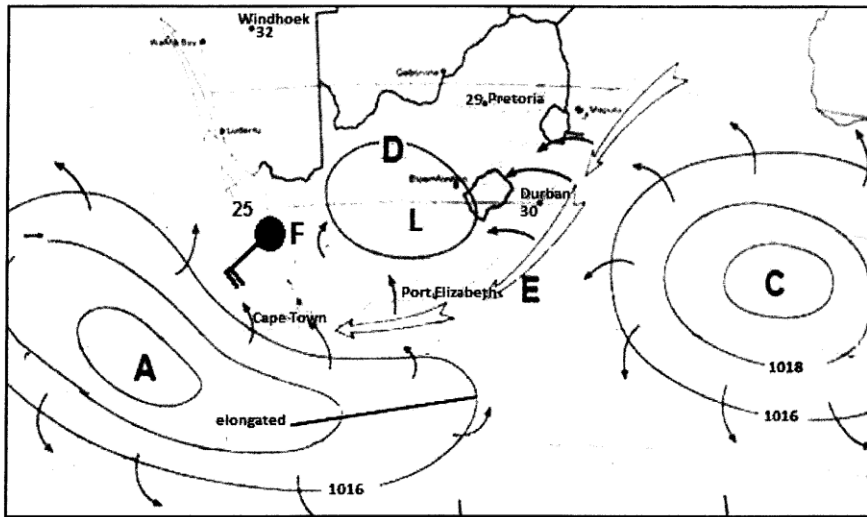
built to facilitate airport-related business.



- 4.6.1 What is an IDZ? (industrial development zone) (2)
- 4.6.2 State two ways in which the development of the Dube trade port will benefit the local KZN economy. (2x2=4)
- 4.6.3 Explain two advantages that the site for this special economic zone enjoys. (2x2=4)
- 4.6.4 Suggest three reasons why it is important to *industrialise* South Africa's economy. (2x2=4)

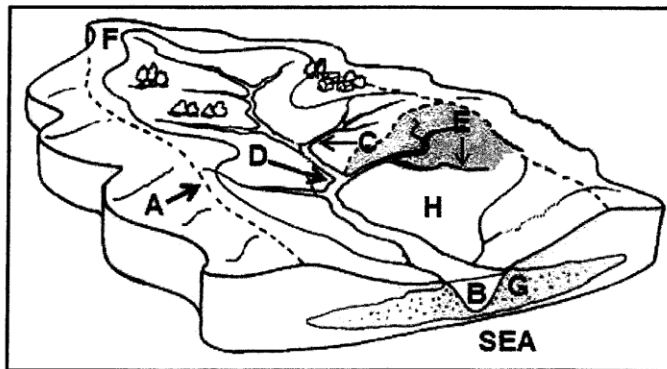
[75]

FIGURE 1.1: A SYNOPTIC WEATHER MAP OF SOUTH AFRICA



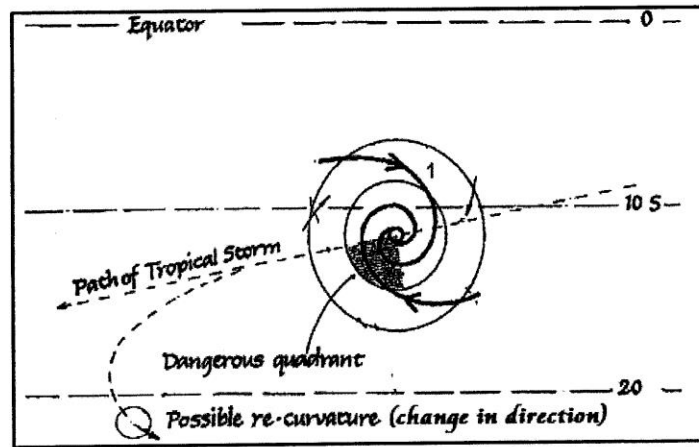
[Source: South African Weather Service]

FIG 1-2



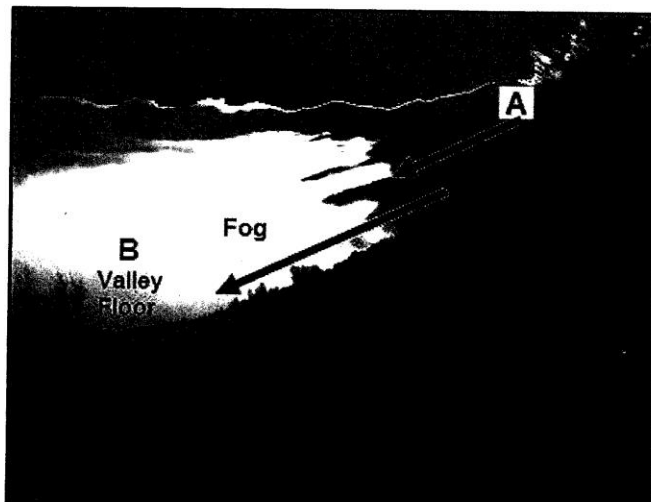
[Adapted from <http://www.waterwise.co.za/export/sites/water-wise/images/water/catchment.jpg>]

FIGURE 1.3: PATH OF A TROPICAL CYCLONE



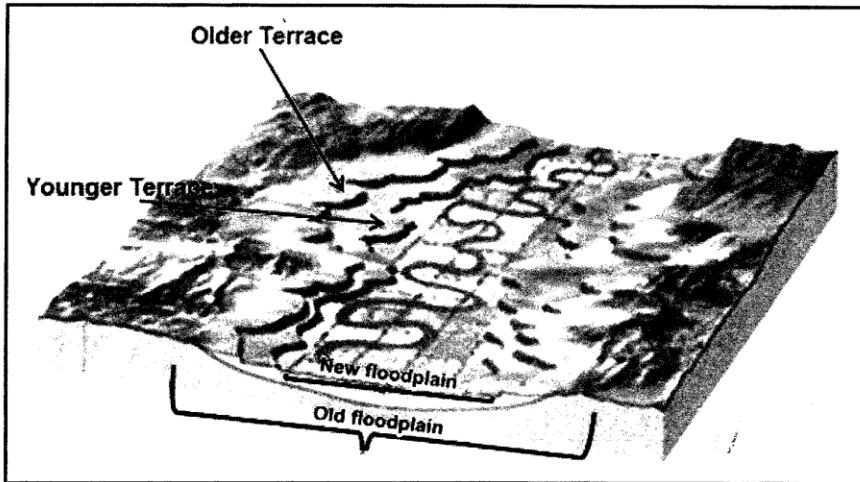
[Source: <http://about.metservice.com/assets/Learning-Centre/Mariners-Met-Pack-South-West-Pacific-ch5-Tropical-Cyclones.pdf>]

FIGURE 1.4: A KATABATIC WIND



[Source: <http://fox41blogs.typepad.com/.a/6a0148c78b79ee970c019affe51c3d970c-500wi>]

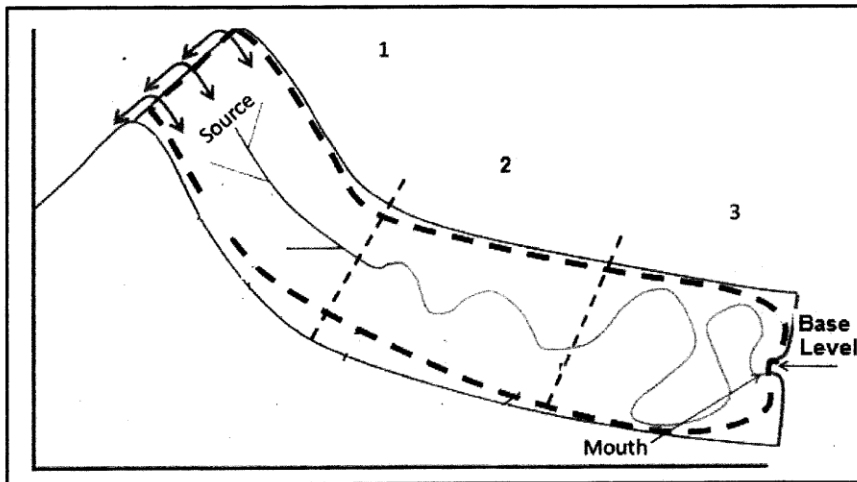
FIGURE 1.5: FLOODPLAIN AFTER REJUVENATION



[Adapted from Pearson Education]

FIG 2.2

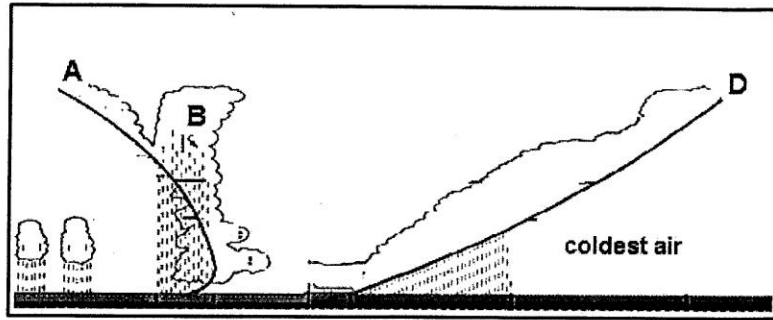
LONGITUDINAL PROFILE OF A GRADED RIVER



[Adapted from Yorkshiredalesrivertrust.com]

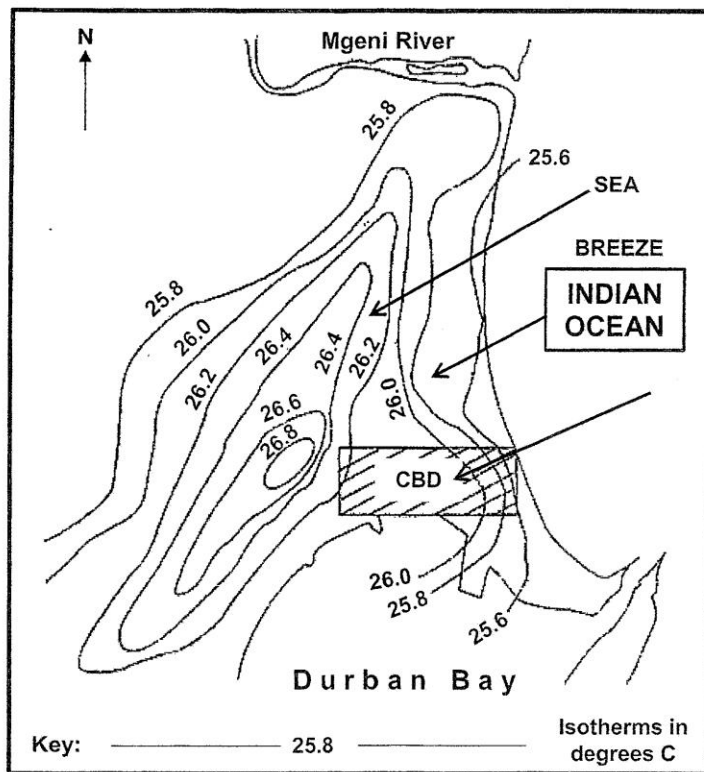
FIG 2.3

A CROSS-SECTION OF A MID-LATITUDE CYCLONE



[Adapted from <http://isu.indstate.edu/ebermudez/hlth210/lesseightc.html>]

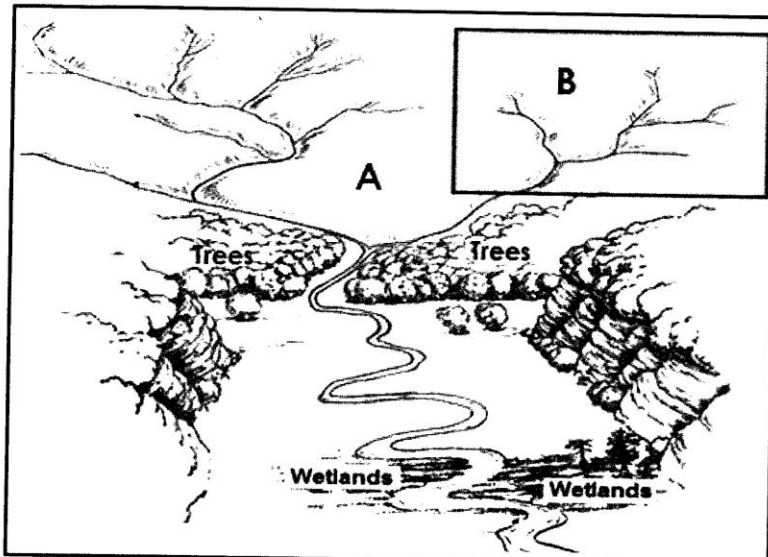
FIGURE 2.4 : URBAN HEAT ISLAND OVER DURBAN



Source: Adapted from Solutions for all

FIG 2.5.

: A RIVER SYSTEM



[Adapted from ecoursesonline.iasri.com]

FIG. 2.6

Figure 2.6

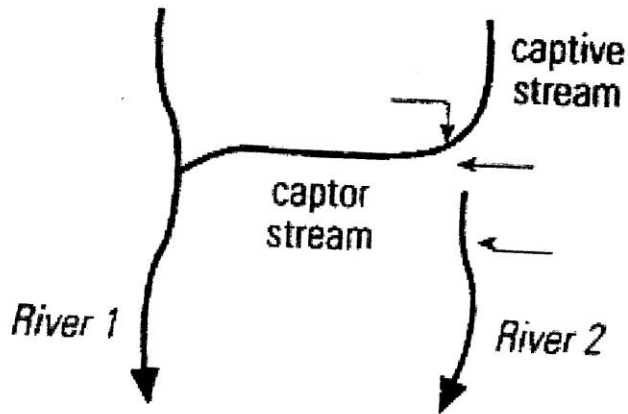
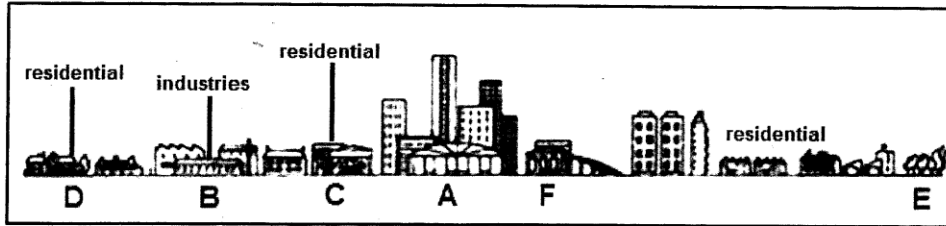


FIG 3.4.

URBAN PROFILE



[Adapted from www.learnmindset.co.za]

Figure 3.5

South Africa's 5-million residents of informal settlements still dream of the services other South Africans take for granted.











Over the past six weeks the Asivikelane campaign ("let's protect each other" in Zulu) has reported that many residents still share communal toilets that are not regularly cleaned, queue for insufficient taps that are not repaired when they break, and tolerate refuse removal that depends on the whims of the truck driver. This endangers the lives of these residents daily, and during a pandemic, the lives of all South Africans.

Nevertheless, the Covid-19 pandemic has suddenly catapulted the fate of informal residents to the top of local governments' agendas. In the past weeks the department of human settlements has delivered 41,000 water tanks, and local governments has mostly found money to fill them.

Source: "Business Day" MAY 2020

FIG 3.6

WESTERN CAPE EXPORT PRODUCTS

TOP 10 WESTERN CAPE EXPORT PRODUCTS	
	1 Refined Petroleum ZAR18,2 bn
	2 Citrus ZAR8,6 bn
	3 Wine ZAR8,6 bn
	4 Apples and Pears ZAR6 bn
	5 Grapes ZAR6 bn
	6 Iron and Steel ZAR3 bn
	7 Fruit Juice ZAR2,2 bn
	8 Dried Fruit and Nuts ZAR2,1 bn
	9 Tobacco ZAR1,8 bn
	10 Engine Parts ZAR1,6 bn

[Source: [http://www.wesgro.co.za/pdf_repository/0077%20Wesgro Investment%20Folder_004.1%20SP%20new.pdf](http://www.wesgro.co.za/pdf_repository/0077%20Wesgro%20Investment%20Folder_004.1%20SP%20new.pdf)]

FIG 4.2

FIGURE 4.1: URBAN CHARACTERISTICS

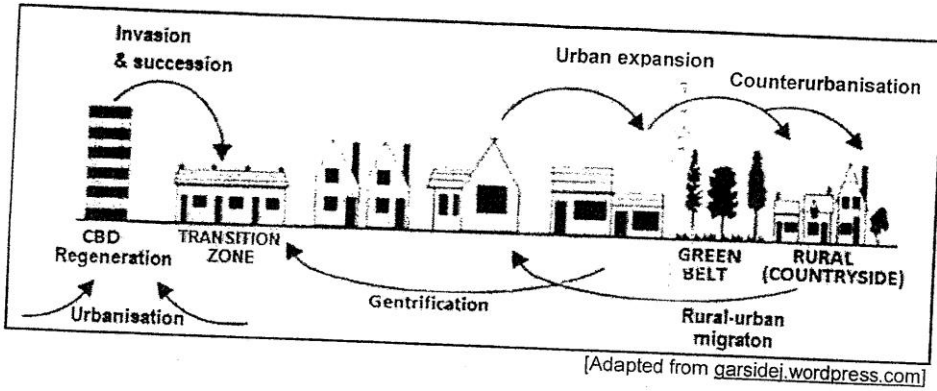
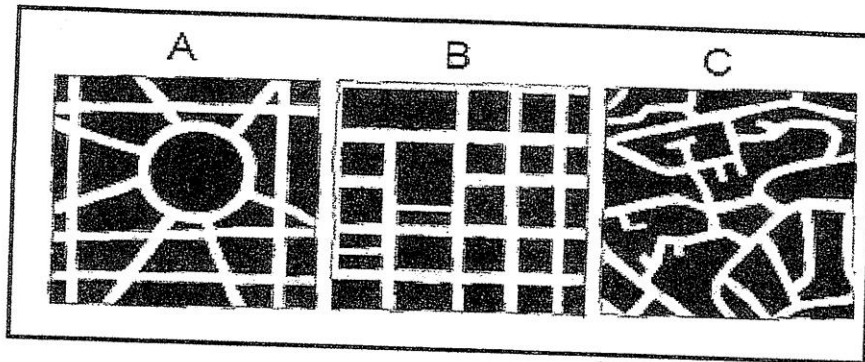
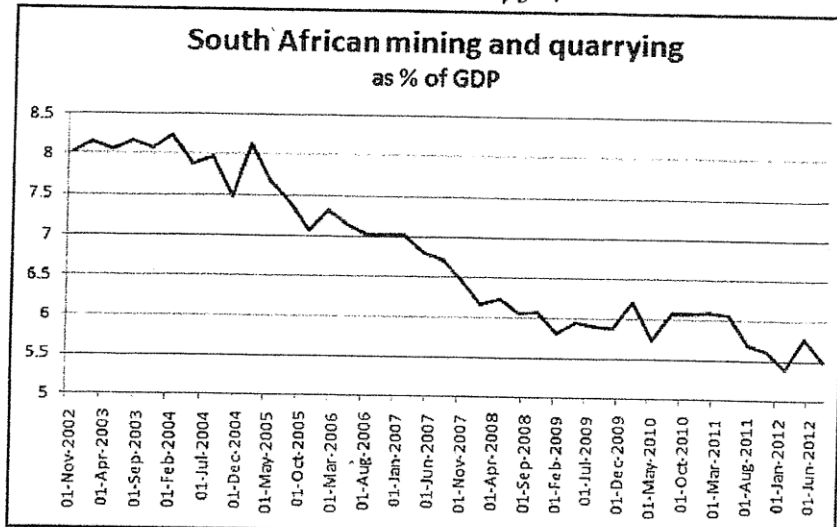


FIG. 4.3



Source: Focus Geography

FIG 4.4



[Source: Statistics SA]

FIG 4.5

**SOUTH AFRICA'S LAND REFORM EFFORTS LACK
A FOCUS ON STRUGGLING FARMERS**

South Africa's land reform programme has suffered many failures and its beneficiaries have in many cases seen little or no improvements to their livelihoods. Land reform remains an unresolved historical grievance.

There is a general agreement that land reform has been a failure and needs to be sped up. Research shows that between 70% and 90% of the projects (including land restitution projects) have failed. The government needs to reconsider its policy of simply acquiring land for redistribution. It needs to take measures to make sure that redistributed land is used productively.

If land reform is to continue in its current fashion, its prospects are doomed. It is the government's duty to see to it that they create self-sufficient farmers through the provision of post-settlement support.

[Adapted from <http://mg.co.za/article/2016-12-06-south-africas-land-reform-efforts-lack-a-focus-on-struggling-farmers>]