

Climate and weather

1.3 Refer to the synoptic map below and answer the questions that follow.

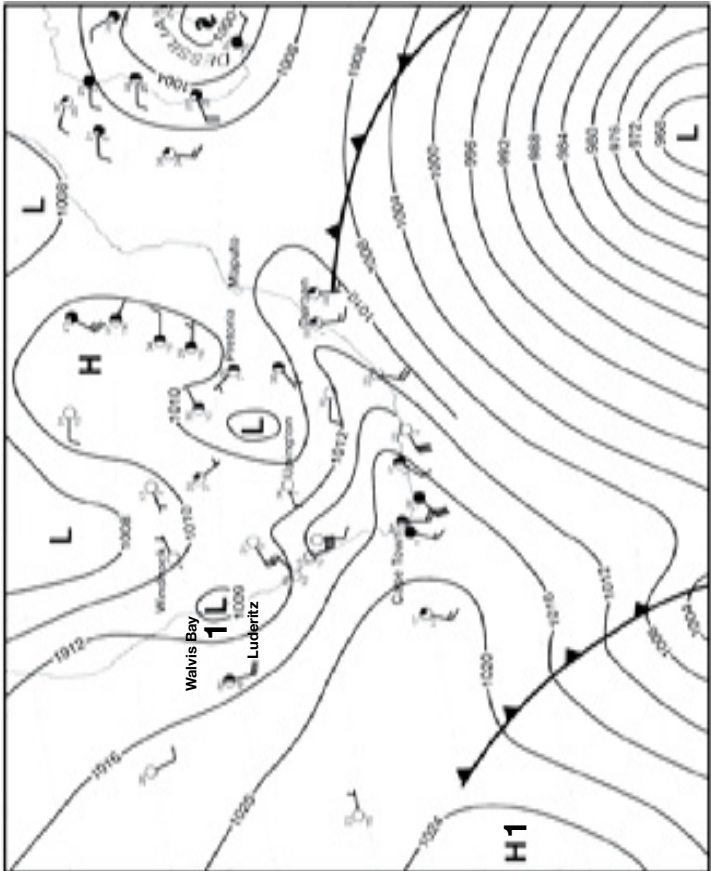


Figure 1.1: A synoptic weather map

- 1.3.1 List three factors which support that this synoptic map shows a summer's day.
 $3 \times 2 = (6)$
- 1.3.2 a. Give the name of H1. (2)
b. Describe the weather conditions associated with this system. $2 \times 2 = (4)$
- 1.3.3 Locate the coastal low at L1. The synops for Walvis Bay and Luderitz have wind direction missing.
a. Redraw the sketches below onto your answer sheet and indicate the wind at Walvis Bay and at Luderitz. Be sure to label your sketches. $2 \times 2 = (4)$
- 1.3.4 The Benguela current flows along the west coast of South Africa. How does this current affect temperature and rainfall along this coast? $2 \times 2 = (4)$
- 1.3.5 Locate tropical Cyclone Dessilia.
a. How many cyclones have there been before Cyclone Dessilia? (2)
b. Describe what happens to wind speeds, temperature, rainfall and cloud cover as you move closer to the centre of the storm. $4 \times 2 = (8)$
c. Cyclone Dessilia never reached the coast of South Africa. Explain why. $2 \times 2 = (4)$
- 1.3.6 The east coast of Madagascar is frequently struck by tropical cyclones. List four precautions you would tell villagers along this coast to take. $3 \times 2 = (6)$

[40]

- 1.1.3 The tropical cell of the general circulation of the atmosphere occurs between
A $60^{\circ} - 90^{\circ}$ north and south of the equator
B $30^{\circ} - 60^{\circ}$ north and south of the equator
C $0^{\circ} - 30^{\circ}$ north and south of the equator
D $0^{\circ} - 40^{\circ}$ north and south of the equator. (2)
- 1.1.4 The warmest slopes in the northern hemisphere are the
A north slopes
B south-facing slopes
C south slopes
D north-facing slopes. (2)
- 1.1.5 The ITCZ
A brings rain to southern Africa in winter
B is the inter-tropical convection zone
C is associated with frontal rain
D is continuous in tropical areas. (2)
- 1.2 True or false. Identify which of the statements given below are true or false. [10]
- 1.2.1 The fastest flowing water will be found in the upper course of a river. (2)
- 1.2.2 The dip slope of a hogback has a steeper gradient than the dip slope of a cuesta. (2)
- 1.2.3 Mass movement is all downslope movement under the influence of gravity. (2)
- 1.2.4 Superimposed drainage occurs when the river is older than the structures over which it flows. (2)
- 1.2.5 In a trellis drainage pattern the tributaries join the main river at right angles. (2)

[10]

Set goals

No-one who has won an Olympic gold medal ever said: 'I don't know what I want to achieve in life. Whether they are Olympic athletes or successful students, winners all have the vision and the motivation to make the best of their potential and talents. They find ways of achieving their goals and commit themselves to turning their dreams into reality. Effective goal setting is the starting point to all meaningful achievement.

Goal setting can help you to:

- Determine your priorities;
- Get organised;
- Make decisions;
- Realise your dreams.



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Fluvial processes

1.4 Refer to the sketch below.

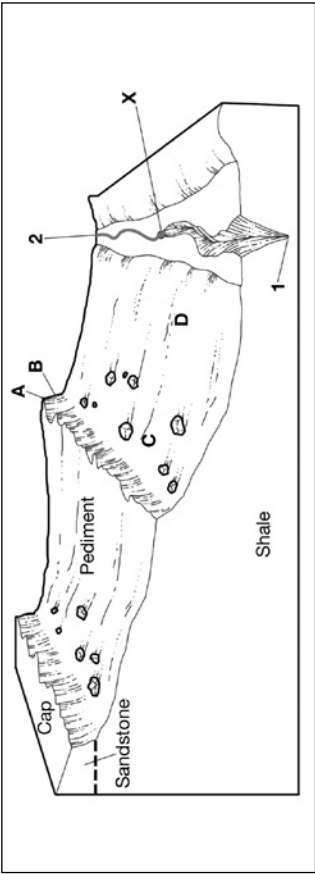


Figure 1.2: A valley with incised river and slopes

- 1.4.1

Name the slope forms at A, B, C and D.

(4)
- 1.4.2

Give two characteristics of the slope form at C.

$2 \times 2 = (4)$
- 1.4.3

Name the mass movement most likely to occur at B.

(2)
- 1.4.4

A knickpoint waterfall is located at X.

a. Draw a long-profile of the river from 1 to 2.

$2 \times 2 = (4)$

b. Explain why the knickpoint waterfall would have formed.

$3 \times 2 = (6)$

c. Describe what happens to the waterfall over time.

(2)
- 1.5

Look at the example of river capture below. The Black Volta River has captured the White Volta River.

[22]

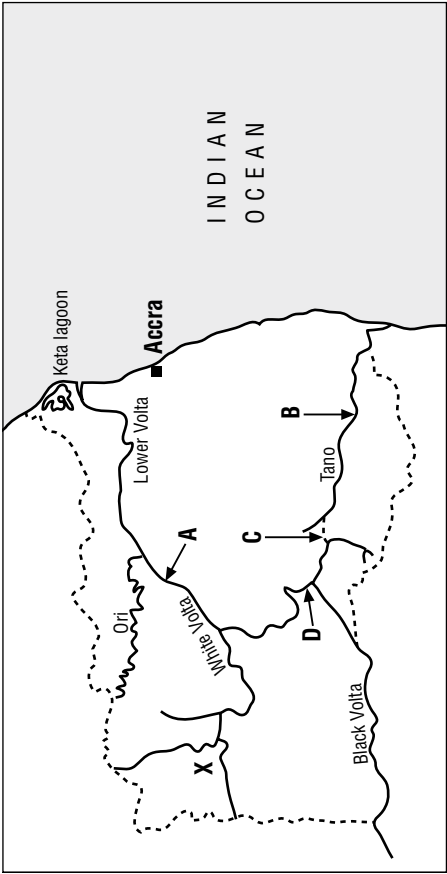


Figure 1.3: River capture in west Africa

- 1.5.1

Identify the features of river capture at A, B, C and D.

$4 \times 2 = (8)$
- 1.5.2

What impact will river capture have had on the volume and velocity of the Tano River?

$2 \times 2 = (4)$
- 1.5.3

Identify the drainage pattern at X on the diagram.

(2)
- 1.5.4

What does the presence of this drainage pattern reveal about the landscape in that region?

$2 \times 2 = (4)$
- [18]

Question 2

Short questions

2.1 Match the feature with the correct definition. Write the number of the question and the letter of the correct definition next to it.

Term	Possible definitions
2.1.1 Superimposed drainage pattern	A The average length of streams within each km ² of the drainage basin.
2.1.2 Drainage density	B A graph that shows the relationship between the volume and load of a river
2.1.3 Solifluction	C The slowest form of mass movement
2.1.4 Tributaries	D Smaller streams that join the main stream
2.1.5 Flow hydrograph	E The river is therefore older than the structures it flows over
	F A graph that shows the relationship between discharge in a river and a period of time
	G Means 'soil flow' is a slightly faster movement, averaging between 5 cm and 1 m a year
	H The river is therefore younger than the features it flows over and erodes into
	I Small streams that flow from the main river
	J The average discharge in streams within each km ² of the drainage basin.

- $5 \times 2 = (10)$

[10]
- 2.2

Give the correct term for the following:

(2)
- 2.2.1

An increase in temperature with an increase in height.

(2)
- 2.2.2

Upslope winds that occur during the day.

(2)
- 2.2.3

Processes that are used to remove greenhouse gases from the atmosphere.

(2)
- 2.2.4

Heat that is stored and released during condensation.

(2)
- 2.2.5

The force that causes winds to be deflected.

(2)
- [10]

Fluvial processes

2.3 Look at the sketch below of a drainage basin and activities that occur in it.

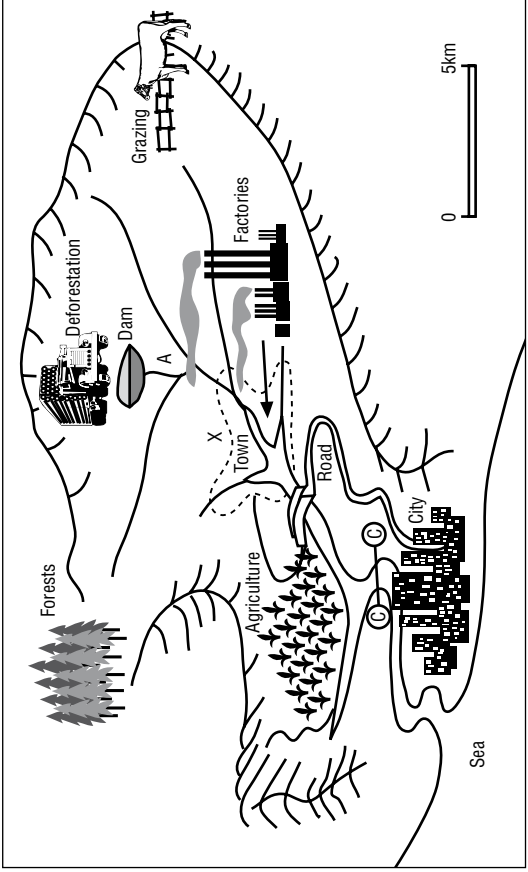


Figure 2.1: A drainage basin in the southern hemisphere

- 2.3.1

What is a drainage basin?

(2)
- 2.3.2

Identify the drainage pattern in the drainage basin in Figure 2.1.

(2)

Climate and weather

2.6 Refer to the diagram below which shows a cross-section through the atmosphere showing mid-latitude cyclones and tropical cyclones.

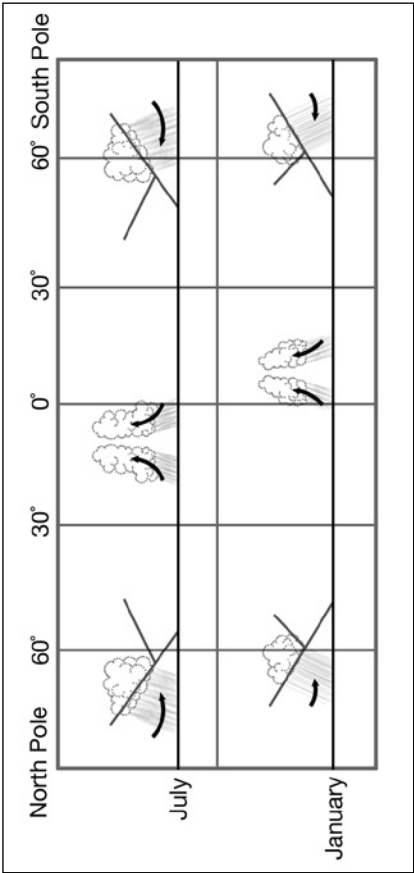


Figure 2.3: A cross-section through the atmosphere showing mid-latitude cyclones and tropical cyclones

- 2.6.1 a. Compare the latitudinal positions of the mid-latitude cyclones for January and July. (2)
b. Account for your observation. $2 \times 2 = (4)$
- 2.6.2 a. Name the surface winds that occur between 30° and 60° north and south of the equator. (2)
b. What influence do these winds have on the movement of mid-latitude cyclones? (2)
- 2.6.3 Explain why tropical cyclones will not be found beyond 30° north and south of the equator. $2 \times 2 = (4)$
- 2.6.4 a. Name the band of high pressure cells found at 30° north and south of the equator. (2)
b. Describe the weather conditions associated with these pressure cells. (2)

[18]

2.7 A group of cyclists decided to cycle through Lesotho. They wanted to see the Lesotho Highlands Water Project (LHWP) as they had been studying it at university. The LHWP is Africa's largest water transfer project. The LHWP is constructed on layers of horizontal sedimentary rock capped by basalt flows which forms part of the Drakensberg. Rivers form deep, narrow valleys, becoming highly erosive in the summer months when rainfall is higher.

- 2.7.1 Explain why this region experiences summer rainfall. $2 \times 2 = (4)$
- 2.7.2 Choose one of the following words to describe this type of rain: frontal, monsoonal, orographic, typhoonal. (2)
- 2.7.3 The cyclists decided to go on their trip in summer as they had read that the highlands can experience temperatures of -18°C . Explain why temperatures can drop so low in this area. $2 \times 2 = (4)$

- 2.3.3 Deforestation and overgrazing have influenced runoff in areas of this drainage basin. Will runoff increase or decrease? Explain your answer. $2 \times 2 = (4)$
- 2.3.4 What impact will the dam have on the volume, velocity and work capacity of the river at A? $3 \times 2 = (6)$

[14]

2.4 Refer to Figure 2.2 below and answer the questions that follow

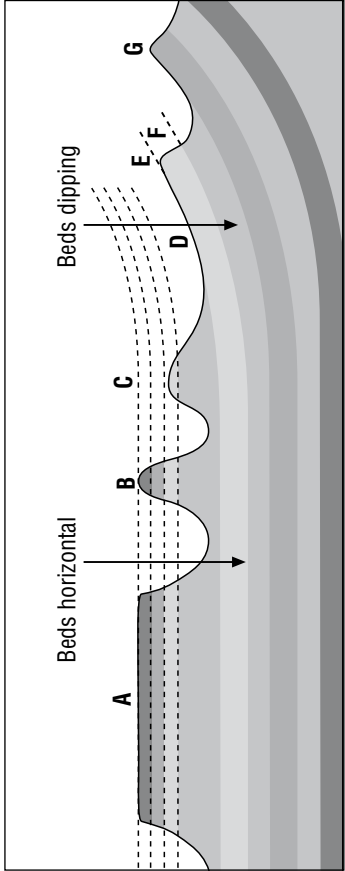


Figure 2.2: Landscape with horizontal and inclined strata

- 2.4.1 Identify the landforms labelled A, B and C. $3 \times 2 = (6)$
- 2.4.2 Identify the slopes at D and F. $2 \times 2 = (4)$
- 2.4.3 Name the erosion process that caused feature A to be reduced to feature B. (2)

[12]

2.5 Read the text below and answer the questions that follow.

Developing landslide warning systems

On 17 February 2006 a landslide killed 1 500 people in Leyte, in the Philippines. Before the landslide there had been 10 days of rain which had dropped 500 mm of rain in an area prone to landslides.

Today scientists are working on ways to predict and give warning of landslides. Satellite instruments collect data about soil moisture, atmospheric vapour and flooding rivers. This data will be used to create a landslide hazard map for the globe. When high hazard areas receive rainfall, they can be flagged for where landslides are likely to occur.

- 2.5.1 What occurred in Leyte, Philippines before the landslide? (2)
- 2.5.2 What three things will scientists collect data about to help predict landslide activity? $3 \times 2 = (6)$
- 2.5.3 What should you do if you are in an area experiencing a landslide? $3 \times 2 = (6)$

[14]

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- 2.7.4

After completing the cycling trip, one of the cyclists was quoted as saying, “It was incredible how in the early morning we could feel the temperature drop as we cycled down into the valleys and then by the late afternoon we could feel a gentle, warm wind blowing behind us as we cycled out of the valley.”

a

Fully account for the lower temperatures at the bottom of the valley.

2 × 2 = (4)

b

What name is given to the phenomenon you have described in Question 2.7.4a?

(2)

c

What name is given to the gentle, warm winds that the cyclists experienced?

(2)
- 2.7.5

The cyclists also noticed that most of the rural settlements occurred on only one side of the valley. Would you expect it to be the north-facing or south-facing slope? Account for your answer.

2 × 2 = (4)

[22]

Total = [100]

Section B

Answer ONE question from this section.

Question 3

Short questions.

- 3.1

Provide a term for the following definitions:
- 3.1.1

The smallest rural settlement.
- 3.1.2

The exact place on which the settlement exists.
- 3.1.3

The first development programme of the government after 1994.
- 3.1.4

Rural settlements that are scattered or spread out over the land.
- 3.1.5

The movement of people from rural to urban areas. 5 × 2 = (10)

[10]
- 3.2

Explain what is meant by the following:
- 3.2.1

Centralization of industry.
- 3.2.2

Land redistribution.
- 3.2.3

Balance of payments.
- 3.2.4

Globalization.
- 3.2.5

Spatial Development Initiative (SDI).

5 × 2 = (10)

[10]

People and places: rural and urban settlement

- 3.3

Refer to the map of a rural area in KwaZulu-Natal before answering the following questions.

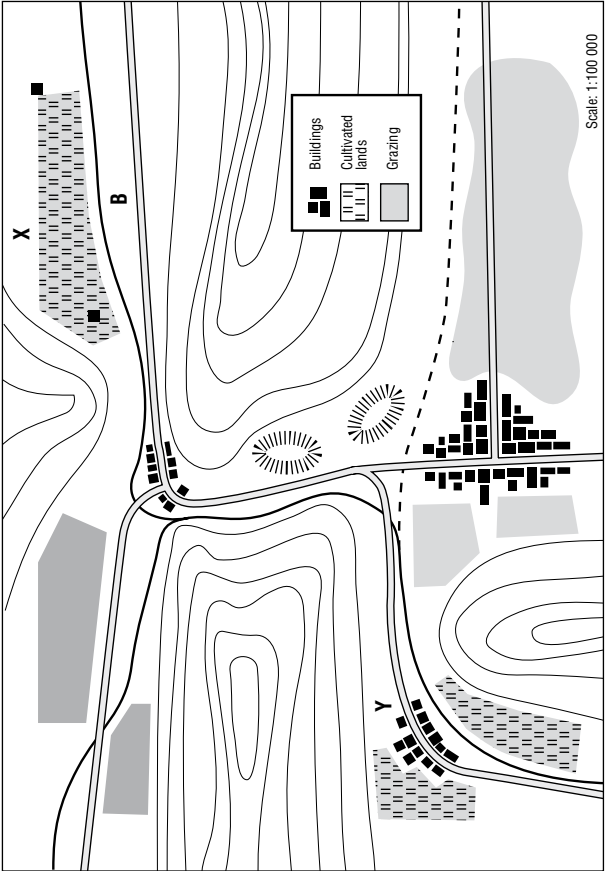


Figure 3.1: A rural area in KwaZulu-Natal

- 3.3.1

What is the settlement pattern at X and at Y?

2 × 2 = (4)
- 3.3.2

List and discuss three socio-economic advantages for the farmer at X.

3 × 2 = (6)
- 3.3.3

Describe two disadvantages for the farmers at Y.

2 × 2 = (4)
- 3.3.4

A primary healthcare clinic is planned to be built at B. What are some of the problems that may be experienced when building the clinic in this area?

3 × 2 = (6)
- 3.3.5

Many of the young people have moved away from this area. Discuss three possible push factors that are causing the rural depopulation of this area.

3 × 2 = (6)
- 3.4

Refer to the graph showing rentals in the different land use zones of an urban area before answering the following questions.

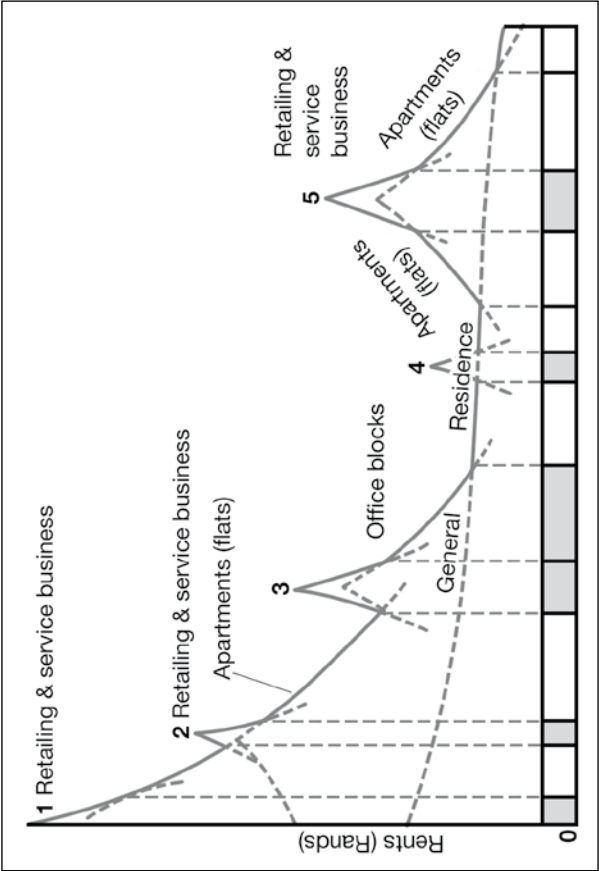


Figure 3.2: Graph showing rentals in different land use zones in the city

- 3.4.1. In which land use zone is the rental the greatest? Give two reasons for your answer. $3 \times 2 = (6)$
- 3.4.2 Why would rentals be more expensive at 5 than at 4? (2)
- 3.4.3 Urban renewal has taken place in the area marked 2. What is urban renewal and why did it take place in this area? $3 \times 2 (6)$ [14]

People and their needs

- 3.5 Refer to the table showing the contribution of the various sectors to the GDP.

	Percentage		Average annual real growth	
	1995	2000	1995	2000
Primary sector				
Agriculture	10.9	10.9		
Mining	3.9	3.3	0.3	0.3
Secondary sector				
Manufacturing	27.9	24.2	-0.4	0.4
Electricity	21.2	19	1.7	2.2
Construction	3.5	2.7	1.6	-1.2
Tertiary sector				
Trade and catering	3.2	2.5	2.5	2.3
Transport	61.3	64.8		
Finance	14.3	15.2	2.1	4.6
Personal services	8.9	9.6	6.9	6.5
Government	16.4	18.0	4.8	5.0
Total	5.5	6.1	2.6	4.1
	16.2	15.9	-0.3	-0.3
	100	100		
Real GDP at market price			2.4	2.7

Table 3.1: Contribution by various sectors to the GDP

- 3.5.1 Define GDP. $2 \times 2 = (4)$
- 3.5.2 Which primary activity decreased its contribution to the GDP between 1995 and 2000? Give reasons why this occurred. $3 \times 2 = (6)$
- 3.5.3 The contribution for the secondary sector dropped from 1995 to 2000. Why should this be of concern to the South African government? $2 \times 2 = (4)$
- 3.5.4 Which sectors of the economy are growing? Give a reason for your answer. $2 \times 2 = (4)$ [18]

- 3.6 Refer to the extract from the newspaper before answering the following questions.

Richards Bay IDZ starts to roll out R6.6bn in projects

Samantha Enslin

Durban – The Richards Bay Industrial Development Zone (IDZ) will begin infrastructure development on phase one of its 370ha site to pave the way for fixed investment worth R6.6 billion. Twenty four projects worth R6.6 million would be established to create 1 200 permanent jobs. These include Tata Steel's R650 million ferrochrome smelter and R16 million investment by Grinman Powders, which will produce aluminium powder. Both these investments will be subject to environmental impact assessment processes.

Source: Cape Times, 8 June 2006

- 3.6.1 What is the aim of the Richard's Bay IDZ? $2 \times 2 = (4)$
- 3.6.2 Name two other Industrial Development Zones in South Africa. $2 \times 2 = (4)$
- 3.6.3 Why were the development strategies of the previous government not very successful? $3 \times 2 = (6)$
- 3.6.4 Why are the projects in the article subject to environmental impact assessments? $1 \times 2 = (2)$
- 3.6.5 List three factors that favour industrial development in Richard's Bay. $3 \times 2 = (6)$ [22]

Total = [100]

Question 4

Short questions

- 4.1 Match the columns. Write down only the number and the letter.

Column A	Column B
4.1.1 Urban growth	A. Number of people living in urban rather than rural areas
4.1.2 Urbanization	B. The movement of people from rural to urban areas
4.1.3 Rural–urban migration	C. The % of people living in urban areas
4.1.4 Rate of urbanization	D. The change in the number of people living in urban areas
4.1.5 Level of urbanization	E. The increase in urban population

$5 \times 2 = (10)$ [10]

- 4.2 Provide a term for the following:
- 4.2.1 The goods sold to other countries.
- 4.2.2 When people have enough to eat and do not fear starving.
- 4.2.3 Land returned to its original owners.
- 4.2.4 Land given to previously disadvantaged, emerging farmers.
- 4.2.5 The fair distribution of the world's opportunities and resources amongst people.

People and their needs

- 4.3 Refer to the cartoon before answering the following questions.



Figure 4.1: Cartoon

- | | | |
|-------|---|--------------------|
| 4.3.1 | Why has the cartoonist drawn the Chinese man so large? | $2 \times 2 = (4)$ |
| 4.3.2 | What message is the cartoonist communicating? | $2 \times 2 = (4)$ |
| 4.3.3 | What type of goods would South Africa:
a. sell to China
b. buy from China? | $4 \times 2 = (8)$ |
| 4.3.4 | Give a reason for each answer.
Name another TWO of South Africa's main trading partners. | $2 \times 2 = (4)$ |
| 4.3.5 | What is meant by the term globalization? | $1 \times 2 = (2)$ |
| 4.3.6 | How has Africa been affected by globalization? | $3 \times 2 = (6)$ |
- [28]

- #### 4.4 Refer to the table below.

Sector	% contribution to GDP	1996 106m ³ /year	2030 106m ³ /year	% increase
Domestic		2 171	6 936	220%
Irrigation	6%	12 344	15 874	28%
Mining and industry	37%	1 598	3 380	111%

Table 4.1: Water requirements for 1996 and 2030 (estimated)

- 4.4.1 Which sector uses the most water? $1 \times 2 = (2)$
- 4.4.2 Which sector shows the greatest increase in water demand? $1 \times 2 = (2)$

- 4.4.3 What do you consider the greatest challenge to be when looking at these statistics?
- 4.4.4 What is meant by the term 'sustainable water supply'?
- $2 \times 2 = (4)$
- $2 \times 2 = (4)$
- [12]

People and places: rural and urban settlement

- | | | |
|-------|--|--------------------|
| 4.5 | Urban settlement | |
| | Refer to the map of the Cape Peninsula in Figure 4.2 before answering the following questions. | |
| 4.5.1 | Comment on the residential settlement pattern on this map. | $3 \times 2 = (6)$ |
| 4.5.2 | What factors limited the growth of the CBD of Cape Town? | $2 \times 2 = (4)$ |
| 4.5.3 | Why is the land in the CBD so valuable? | $3 \times 2 = (6)$ |
| 4.5.4 | Many people live in informal settlements near X. Discuss three problems that these people face each day. | $3 \times 2 = (6)$ |
| 4.5.5 | Explain how the RDP and GEAR strategies tried to improve the quality of life of many people in informal settlements. | $4 \times 2 = (8)$ |
| | | [30] |

- 4.6 Refer to the extract from an article that appeared in the *Cape Times*, 2006.

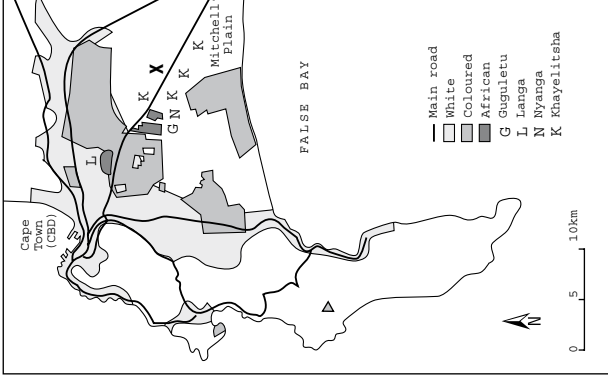


Figure 4.2: Map of the Cape Peninsula

The nature and rate of population migration from South Africa's rural areas and small towns to metropolitan centres may not be as straightforward as it sometimes appears.

Debates on urbanization, settlement patterns and migration often assume that the shift of population to urban metropolises is of a massive and permanent nature, with major implications for the delivery of urban infrastructure. However, reports recently published by Statistics SA suggest that there are various forms

Pali Lehohla

- 4.6.1 Explain why the 'nature and rate of population migration from South Africa's rural areas...' may not be as straightforward as it sometimes appears. (2)
- 4.6.2 Why is much of the rural urban migration in South Africa temporary? $2 \times 2 = (4)$
- 4.6.3 Why does temporary migration help improve rural areas? (2)
- 4.6.4 What implications does this type of migration have for urban planners? (2)

Total = [100]

SECTION A

QUESTION 1

- 1.1

Various possible options are provided as answers for the following questions. Choose the correct answer and mark, only on the letter (A - D) next to the question number (1.1.1 - 1.1.10)
For example 1.1.6 D
- 1.1.1

The type of soil structure where soil particles are arranged into thin compacted plates found on the top of bare soil.

A

Crumb.

B

Prism-shaped.

C

Platy.

D

Blocky.

(2)
- 1.1.2

The water that moves downwards by gravity after good rainfall and may percolate beyond reach of the roots of crop plants:

A

Hygroscopic water.

B

Capillary water.

C

Veld water capacity.

D

Gravitational water.

(2)
- 1.1.3

Any material such as straw, sawdust, leaves, grasses and plastic film that is spread upon the surface of the soil to protect the soil and plant roots from the effects of raindrops, soil crusting, freezing and evaporation is known as . . .

A

mulch.

B

muck.

C

fallow.

D

peat moss.

(2)
- 1.1.4

The bacteria responsible for the formation of root nodules on the roots of the legume family such as lucerne, clover, peas and beans:

A

Clostridium

B

Azotobacter

C

Rhizobium

D

Bacillus

(2)
- 1.1.5

Which cells are responsible for opening and closing of the stomata under certain environmental conditions to minimize the loss of water by transpiration?

A

Leaf cell

B

Sieve cells

C

Companion cell

D

Guard cell

(2)

- 1.1.6

The fertilizers derived from living organisms (plants and animals residues) and usually improve the nutritional holding capacity of the soil, the water holding capacity and soil structure:

A

Inorganic fertilizers

B

Organic fertilizers

C

NPK fertilizers

D

Commercial fertilizers

(2)
- 1.1.7

The Bt maize (GMO maize) developed through genetic engineering is resistant to:

A

maize earworm

B

maize rootworm

C

maize stalk-borer

D

maize-root aphids

(2)
- 1.1.8

The gene which causes the seeds derived from GM crops to be sterile so that farmers cannot use the harvested seeds for the next season's seeds:

A

'Terminator gene'

B

'radiation gene'

C

'dormancy gene'

D

'germination gene'

(2)
- 1.1.9

The crops that are cultivated on land between cropping seasons so that the ground is covered for the period between harvesting and replanting to protect the land from leaching and erosion:

A

Companion crops

B

Ley-crops

C

Trap crops

D

Alien crops

(2)
- 1.1.10

When rivers, lakes, streams and ground water have a higher concentration of plant nutrients especially phosphorus and nitrogen:

A

Fertilization

B

Leaching

C

Elluviation

D

Eutrophication

(2)
- [20]



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- 1.2
- Give ONE word/term for each of the following descriptions:
- 1.2.1

The quantity of water retained by the soil after it has been saturated with water and after drainage has taken place.

(2)
- 1.2.2

The process whereby the elemental nitrogen is incorporated into bodies of micro-organisms to form different nitrogenous compounds such as amino acids and proteins.

(2)
- 1.2.3

The ploughing back of crops at an immature, succulent stage and is commonly practised in fruit orchards and vineyards.

(2)
- 1.2.4

The use of growing cells, tissues or tissue fragments (from complex, multicellular organisms) on nutrient medium in a dish, test tube or flask to produce a new plant.

(2)
- 1.2.5

A form of agriculture that uses very advanced technology including computers and satellite images to optimise farm production.

(2)
- 1.3
- Change the underlined word in each of the following statements. Write only the correct word(s) next to the question number (1.3.1 – 1.3.5)
- 1.3.1

Irrigating the deciduous fruit trees with brackish water can result in the accumulation of magnesium salts in the soil.

(1)
- 1.3.2

In the wine-making industry the natural yeast cells on the skin of grapes are neutralised by adding potassium to the juice.

(1)
- 1.3.3

The manure stored for a long time has relatively low phosphorus content because of the volatilisation from the manure.

(1)
- 1.3.4

Layering is the common way of propagating plants with fibrous or tuberous root systems.

(1)
- 1.3.5

A form of agriculture that relies on organic sources, amongst other practices, to create a naturally balanced ecosystem, is known as monoculture.

(1)

- 1.4
- Choose an item/word(s) from COLUMN B that matches a/an item/word(s) in COLUMN A.
Write only the letter (A – G) next to the question number (1.4.1 – 1.4.5), for example 1.4.6 K.
- | COLUMN A | COLUMN B | | |
|----------|-----------------|---|--|
| 1.4.1 | Hypae | A | Microbial conversion of inorganic nitrogen into organic nitrogen |
| 1.4.2 | Binomial system | B | Prevents the build up of pests e.g. nematodes |
| 1.4.3 | Immobilization | C | A wire basket filled with stones used to rehabilitate dongas |
| 1.4.4 | Air layering | D | Fine threads of fungi |
| 1.4.5 | Gabions | E | The process is commonly known as <i>marcottage</i> |
| | | F | Soil form and soil series |
| | | G | They are used for cultural or ceremonial purposes |
- [10]
- TOTAL SECTION A:

[45]
- 1.2
- Give ONE word/term for each of the following descriptions:
- 1.2.1

The quantity of water retained by the soil after it has been saturated with water and after drainage has taken place.

(2)
- 1.2.2

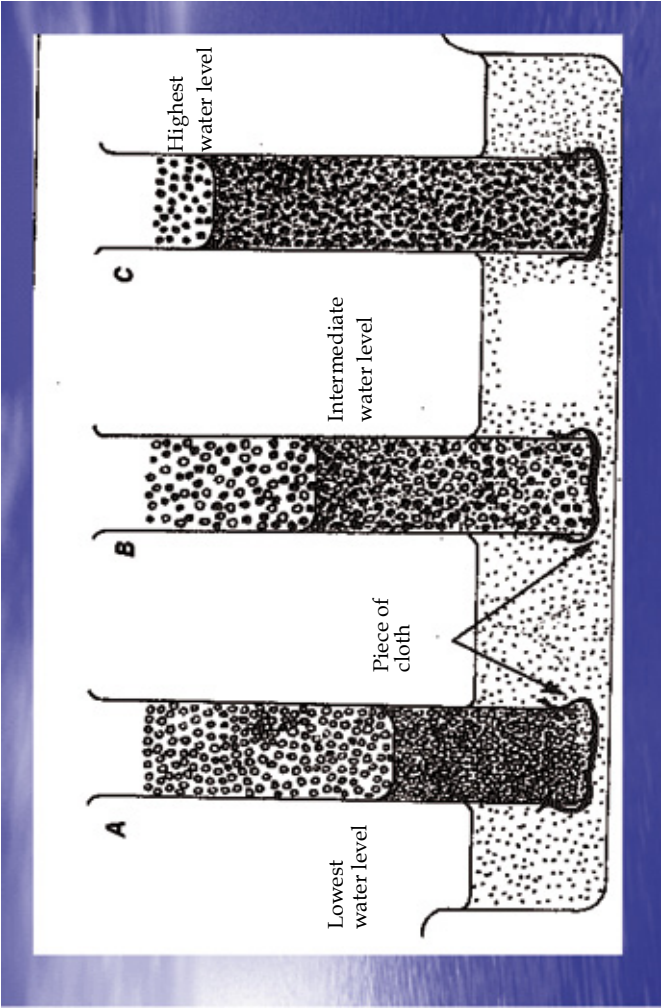
The process whereby the elemental nitrogen is incorporated into bodies of micro-organisms to form different nitrogenous compounds such as amino acids

TIP

Pitfalls to watch out for when making decisions

Be careful not to make a decision that is:

- Impulsive - made without thinking it through carefully
- Made only to please others
- Based on insufficient information
- In conflict with your values and priorities
- Likely to cause harm to either yourself or others



2.4 Read the following and answer the questions that follow:

The best way for farmers to utilise the farm land to maximum productivity is by looking at the land-use class that the land belongs to. There are different classes of land. Some land is better suited to grazing animals than growing crops. It is a common belief that if farmers can look after the land, then the land will look after them:

- 2.4.1 Discuss TWO guiding questions which farmers need to ask themselves prior to choosing the land-use of a piece of land. (4)
- 2.4.2 Mention THREE steps which farmers need to follow in order to find out the land-use classes of a piece of land. (3)

[35]

QUESTION 3

Start this question on a NEW page.

- 3.1 “Organic farming is one of the fastest growing disciplines within the local and international agricultural sector, with an estimated annual growth of up to 300% in South Africa” .
- 3.1.1 Describe FIVE ways in which organic matter in the soil influences physical properties of the soil. (5)
- 3.1.2 Calculate, using the following information, the organic material content of a sampled soil.
Mass of air dried soil =20g
Mass of soil after heating =15g
- 3.2 Soil is an important factor in sustainable agriculture. Advise a farmer by supplying FOUR factors that play an important role in the formation of soil. (4)
- 3.3 Annual losses occur as a result of weed infestation in cultivated crops. The annual yield loss in maize because of weed problem is estimated to be approximately 10%. The presence of weeds during harvesting may slow the process, pollute grain with seeds, transmit odours to grain, causing downgrading, or incur additional costs for removal of seeds:
- 3.3.1 Explain briefly the adaptation features/modes of weeds which let them grow more easily than planted crops. (5)
- 3.3.2 Provide FOUR agents of weeds dissemination/transmission from one field to the other in the farming sector. (4)
- 3.4 The following features are common in different plants that are found in arid and semi-arid areas. In each case explain how the feature assists the plant to adapt to scarcity of water in its surroundings by reducing water loss though transpiration:
- 3.4.1 Stomata on the underside of the leaves (1)
- 3.4.2 Hairs on the leaf surface (1)
- 3.4.3 Waterproof waxy layer on the outside of the leaf (1)
- 3.4.4 Small leaves (1)
- 3.4.5 Light grey coloured leaves (1)

- 2.1.1 Identify the soil types in test tube A, B and C (3)
- 2.1.2 Define capillarity movement of water. (2)
- 2.1.3 What conclusion can be reached in the above experiment? (4)

2.2 Soil is made up of various structural units. Indicate the type of soil structure that you would associate with each of the following:

- 2.2.1 Soil particles are arranged into thin compacted plates found on top of bare soil. This structure is common in the deeper parts of the topsoil. (1)
- 2.2.2 Soil particles are arranged in large upright columns that stand vertically in the soil. This structure is common in the subsoil. (1)
- 2.2.3 Soil forms large block-like shapes. This structure is common in the subsoil. (1)
- 2.2.4 The soil particles are arranged in a rounded form. This structure is common in the topsoil and is very suitable for crops. (1)
- 2.2.5 Structural units are either round, hard peds or soft, more porous peds. (1)

2.3 Fertilizer nutrient application rates in Africa are the lowest in the world and show little increase over the past two decades. In sub-Sahara Africa, the situation is of particular concern as the average fertilizer nutrient application rate is at present about 10 kg per hectare compared to South Africa’s 100 kg per hectare and most of the first world countries. Use the information on the bag of multi-nutrient fertilizer below to answer the questions that follow:



- 2.3.1 Describe what the numbers 3:2:1 (25) stand for, as seen on the multi-nutrient fertilizer bag. (4)
- 2.3.2 The numbers on the bag supply important information on the plant nutrients. Calculate the percentage quantity of each nutrient in this multi-nutrient fertilizer mixture. Show ALL calculations. (6)
- 2.3.3 Calculate the price per ton if the multi-nutrient fertilizer bag in the picture costs R15.50. (4)

3.5 Read the passage below and answer the following questions:

Hydroponic system



Hydroponics production only really came into existence in the 1930s, making a name for itself during the Second World War when used in the Pacific Islands to grow food for soldiers. Afterwards, hydroponics production took off in a big way by spreading world-wide. Various methods were discovered and implemented (some more effective than others). Most vegetable and fresh flower production markets in and outside South Africa rely more on hydroponics production systems. Hydroponics can help with food security and poverty alleviation in South Africa and the rest of Africa.

Source adapted: Farmer’s weekly 2007

S

3.5.1 Define a hydroponics production system. (2)

3.5.2 Explain how you would encourage farmers in big cities where there is limited space for agriculture to invest in a hydroponics production system. (2)

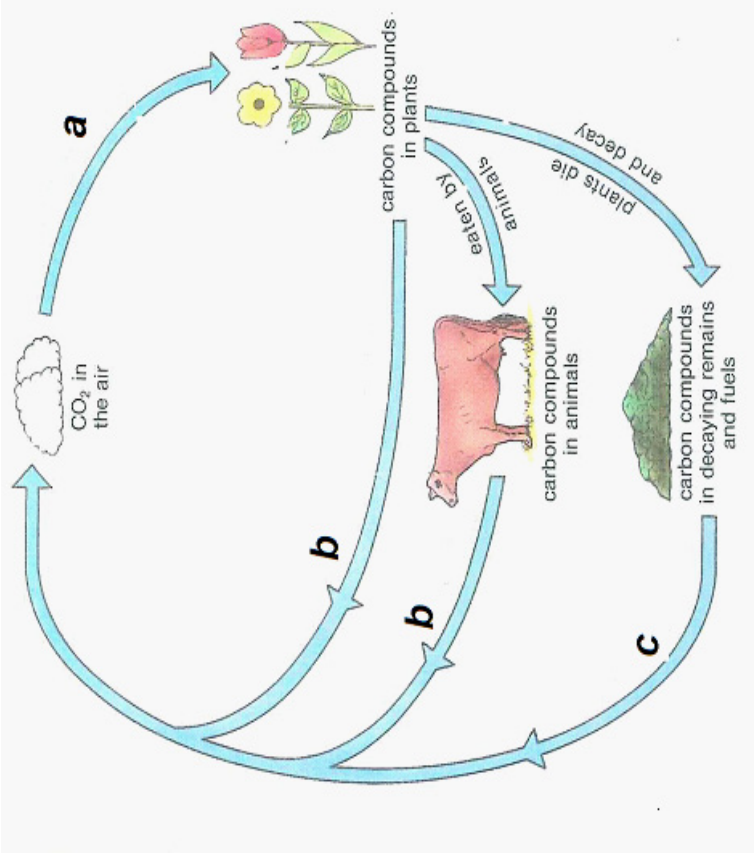
4.4.1 Write a comprehensive definition of the term crop rotation (2)

4.4.2 Justify, by giving FIVE reasons, why you would consider crop rotation as a desirable practice for maize producing farmers in your region. (5)

QUESTION 4

Start this question on a NEW page.

4.1 Study the carbon cycle below and answer the questions that follow:



4.1.1

Define the term carbon cycle.

(2)

4.1.2

Distinguish briefly between the processes labelled A, B and C.

(6)

4.1.3

Soil micro-organisms will decay carbohydrates of plants and animal origin with the purpose of satisfying their own energy requirements. Discuss THREE factors which contribute significantly to increase decay of carbohydrates in the soil by micro-organisms.

(6)

4.2

Study the article below and answer the questions that follow:

Bt Maize outperforms conventional



For the third successive year, trials with GM maize and non-GM maize showed that Bt yields were 42.6% higher than non-GM maize. In 2005/6 the trials were extended to ten demonstration sites compared to six the previous year. Once again, the harvest data showed that GM maize produced a markedly higher average(42.6%) compared to its unsprayed non-GM counterpart, and that GM maize was much less susceptible to stalkborer damage (average of 0.3%) than its unsprayed non-GM counterpart (average 6.8%).The results of the three growing seasons clearly indicate that GM maize, despite the slightly higher cost of seed, can make a meaningful contribution towards improving the food security of small scale farmers in Southern Africa.

Some of the results are shown in the following table. Note the cobs damaged by stalk borer. The demonstration plots consisted of 1ha GM maize and 1ha non-GM maize side by side.

Province	Non-GM maize			GM maize		
	Cob yield	Cobs damaged		Cob yield	Cobs damaged	
	(kg/ha)	%		(kg/ha)	%	
Eastern Cape	8 970	3.4		9 870	0.0	
Gauteng	5 700	1.0		7 900	0.0	
Northwest	7 700	1.2		8 800	0.0	
Mpumalanga	4 900	1.0		5 700	0.0	
Kwazulu-Natal	3 790	30.9		4 400	1.3	

Source adapted:GMO Indaba 2007

4.2.1

Draw a bar graph to compare the yields of non-GM maize and GM maize.

(5)

4.2.2

What advice would you give to the neighbouring farmers with non-GM maize contracts in the area to prevent their crops from being cross pollinated by GM maize?

(4)

4.2.3

GM maize is resistant to which pest?

(1)

4.3

Crops have several ways to avoid self pollination and encourage cross pollination. Discuss features which are common among crops adaptable to cross pollination.

(4)

Read the passage below and answer the questions that follow:

The choice of crop rotation system of a particular farm by a crop farmer depends upon the crops adapted to a particular soil, climate and economic conditions. Crop rotation alone may be 90 percent as effective as fertilizers for increasing crop yields as a whole for maize, wheat and sunflower production. A crop rotation system may be good or bad as measured by its effects on soil productivity or its economic returns.

4.4.1 Write a comprehensive definition of the term crop rotation (2)

4.4.2 Justify, by giving FIVE reasons, why you would consider crop rotation as a desirable practice for maize producing farmers in your region. (5)

[35]

TOTAL SECTION B:

105

GRAND TOTAL:

150

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10 things to do to succeed in the Grade 12 examinations

Check how ready you are for your matric examinations.

Did you know?

1. **The final matric timetable is out**
See the timetable opposite and start to plan now. There are sometimes two exams on one day so you will have to be super sharp and alert

☐

2. There are 100 days to the start of **final exams**
This includes all weekends and holidays. Start today and work everyday. Set targets for achievement. See the block on results on the right.

☐

3. **There are 69 days of school left before the exams begin**
Do not miss one day. Keep healthy and alert (See below). Listen to your teachers. They have done this before and will help you succeed.

☐

4. **Reading is a hot skill**
Reading will change your life. Read at least 1 000 words everyday. Read everything you can get your hands on. Read accurately and quickly.

☐

5. **Writing is power. But it requires practice**
We are all judged, every day, on our writing – we can inspire, impress, persuade, congratulate and express love with writing. Write at least 400 words everyday – carefully, accurately and beautifully.

☐

6. **Textbooks are an essential student companion**
Have you got a textbook for each subject? Make sure you do and that

☐
- you work systematically though your textbooks. Don't wait for your teacher to explain it all. Look at what you have to cover for the year and plan accordingly.

☐

7. **Your BMI can help you in matric**
Your Body Mass Index (BMI) is an indication of how healthy you are. Calculate your BMI and then exercise and eat healthily throughout the year to keep an optimum BMI.

☐

8. **Academic work requires concentration and focus**
Everyday you should be engaged in intensive, focused, individual academic work. Turn off iPods, music centres, the TV, the cellphone and have an intensive and rewarding academic workout everyday. Build your brain cells and be the envy of all your friends.

☐

9. **Good vibes are good for success**
Surround yourself with positive, happy people who want you to succeed. Your family and friends will be important in supporting you in the next 100 days. Be grateful for their support.

☐

10. **Matric success requires planning and hard work**
Start planning and working today. Attend school everyday. Do homework every day. Read everyday Write and calculate everyday. Draw up a year plan before the end of March and stick to it.

☐

How did you do? Count up the ticks in the right hand column.

1 – 2: Get help urgently

3 – 4: Start planning today

5-6: You are on your way. Intensify your efforts

7-8: You are well-organised and nearly ready for success

9 – 10: You're doing great. Help someone else to get organised for success

It is important to know the codes and percentages for recording and reporting in Grades 10-12

Rating code	Description of competence	Percentage
7	Outstanding achievement	80-100
6	Meritorious achievement	70-79
5	Substantial achievement	60-69
4	Adequate achievement	50-59
3	Moderate achievement	40-49
2	Elementary achievement	30-39
1	Not achieved	0-29

Aim for the highest mark possible!

Diet and academic performance

Did you know?

Your diet can affect your ability to perform academically. Malnutrition (inadequate diet, hunger, nutritional deficiencies) can result in decreased attentiveness, motivation and other behaviors that affect school performance. Even short-term nutritional deficiencies can influence one's ability to concentrate and to perform complex tasks. Skipping even one meal can negatively affect one's problem-solving ability and low energy intake at breakfast can have a negative effect on creativity. Deficiencies in specific nutrients such as iron also have an immediate effect on the ability to concentrate.

Body Mass Index (BMI) is an indicator of the level of under- or over-nutrition (total body fat) compared to an individual's ideal weight. It is calculated using a person's height and weight in the following formula: weight in kg divided by height in metres squared (weight (kg)/height (m)²). A BMI measure of 20-25 is considered healthy.

Body Mass Index norms

BMI norms (17-25 years of age)	Rating
under 20	Underweight
20-25	Healthy
25-30	Overweight
Over 30	Obese

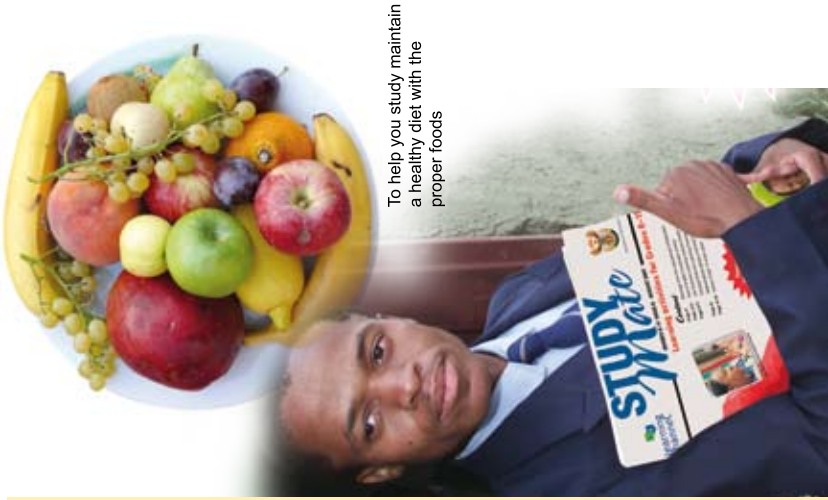
How to calculate Body Mass Index

The formula for calculating BMI is:

$$BMI = \frac{\text{weight (kg)}}{\text{height (m)}^2}$$

Examples

- The BMI of an individual who weighs 86 kg and is 1,80 m tall is 86 kg divided by (1,8 m)²: BMI = 86/(1,80)² = 26,5 = overweight
- The BMI of an individual who weighs 58 kg and who is 1,63 m tall is 58 kg divided by (1,63 m)²: BMI = 21,8 = healthy weight range



ENGLISH FIRST ADDITIONAL LANGUAGE

MEMORANDUM FOR: EXAMPLE PAPER 1

100 MARKS

SECTION A (COMPREHENSION)

- Question 1
- 1.1 There are opportunities for other people too. ✓
- 1.2 C ✓
- 1.3 Any three of: music, dance, drama, songs, poetry, plays ✓ ✓ ✓
- 1.4 South Africa expects to host more than 500 000 tourists. ✓
- 1.5 C ✓
- 1.6.1 Artisans works with their hands ✓ doing things like plumbing, building, house painting, electrical work. (must give an example ✓)
- 1.6.2 They will help in building ✓ stadiums and roads. ✓
- 1.7 A ✓
- 1.8 it has its own words/expressions ✓ which have different meanings ✓
- 1.9.1 Figuratively ✓
- 1.9.2 “The journalists wondered if he shouldn’t rather be complaining to the traffic police.” ✓
- 1.10 It changes over time ✓ and from country to country. ✓
- 1.11.1 Brazil ✓
- 1.11.2 The word for “ball” alone has 37 new words. ✓
- 1.12 like the American chewing gum ✓, the ball seems to stick ✓ to his feet ✓
- 1.13 they are not really hurt ✓; they just want to get a free kick ✓
- 1.14 B ✓
- 1.15.1 Passage 1 ✓
- 1.15.2 Any well chosen reason such as: “It is about employment opportunities” or “It is about something that concerns us all in South Africa.” (sensible reason given ✓ ✓; correct language ✓)

Total for Section A: [30]

1/30/

(2)

(4)

(2)

(1)

(2)

(1)

(1)

(1)

(2)

(1)

(3)

SECTION B (SUMMARY)

- Question 2
- Please note the following points:
- There must be SEVEN full sentences: 1 ✓ for every correct full sentence.
- The number of words must be given: 1 ✓ if the number is given and is between 50 and 60.
- All the grammar and spelling should be correct: ✓ ✓.

Here are the seven sentences:

1. Write or type your CV neatly.

2. Include your qualifications, skills and contactable references.

3. Send a covering letter to the person mentioned in the advertisement.

4. Emphasise the suitability of your knowledge and skills for the job requirements.

5. Mention your availability for an interview.

Question 7: Advertisement

7.1 Any one of: “you’re special”; “sophisticated palate”; “stand out from the crowd”; “be elegant” ✓

7.2 The advertiser cannot possibly know every reader personally. ✓

7.3.1 The personal pronouns in the advertisement create the impression that the we/you ✓

7.3.2 The advertiser is talking to the readers directly and that there is a personal relationship/understanding ✓ between the advertiser and the reader

7.4 Because the wine is the product that the advertiser is trying to sell ✓

Total for section C: [40]

TOTAL FOR PAPER 1: [80]

2/

[1]

[2]

[2]

[1]

[5/

AFRIKAANS FIRST ADDITIONAL LANGUAGE

1.1 Om kennis van ander kulture te bekom.

1.2 Ons kry ’n kans om ander kulture beter te leer ken.

1.3 Tradisie en kultuur

1.4.1 B Groet met die hand.

1.4.2 E Skud hand.....

’n Kopknik....

1.4.4 C Skud nie met

1.5 Mag vrede met jou wees

1.6 bladskaad

1.7 sisteegreep

1.8 Stewige handdruk vir mans 1

Piksoenijie vir vroue 1

2.1 Hulle is deel van ’n generasie wat sonder SMS’e grootgeword het. (1)

2.2 Short Message Service

2.3 Waar

2.4 grootste gebruikers

2.5 D - tvtallk

2.6 Goedkoop tariewe; langer boodskappe

2.7 Om te waarsku teen SMS-taal in opstelle

2.8 Internetkletskamertaal

2.9 Jongmense ken nie meer goeie Afrikaans nie

2.10 formele Afrikaans/ die taal van die volwassenes

2.11 Hy hou nie van SMS-taal nie

3.1 Raampie 1: Sy is kwaad/vies/ontsteld/woedend

3.2 A Verheug

3.3 Om die tyd te bekleemtoon /Om klem te lê op die tydsduur.

TOTAL AFDELING A: 30

Getal feite korrek	F	7	Maks = 7
Taalfoute	T	2	Maks = 2
Woorde aangedui/ nie lengte oorskry nie (meer as 80 woorde)	W	1	Maks = 1

Assesseer die opsomming soos volg:

- Sten eerste sewe sinne inhoudelik na.
- Regmerkie bokant elke wenk.
- Slegs een wenk per sin word nagesien.
1. Moenie laat in die aand SMS nie
2. SMS-taal kan net met vriende gebruik word
3. Moenie in geselskap SMS’e stuur nie
4. Moenie SMS terwyl jy bestuur nie
5. In die fliek moet jy nie SMS’e stuur nie
6. Moenie in vergaderings SMS’e stuur nie
7. Wees versigtig wat jy in ’n SMS se
8. Uimodigings en belangrike reëlings kan nie per SMS gedoen word nie.

AFDELING B

Vraag 4: OPSOMMING

FEITE:

6.1 She is making the point that she is cold. ✓

6.2 “Okay, okay” ✓

6.3 Her face is calm and serene ✓. She is making her point through an action rather than by being aggressive. ✓

6.4 He has given up his argument and she has won. ✓

Question 6: Cartoon

5.1 2 ✓

5.2 Because “scandal” is a noun ✓ (and cannot be used as a verb).

5.3 Greek ✓

5.4 It is an absolute outrage ✓ that the municipality has spent so much money on a statue of a dog. There has been a lot of gossip/disapproval ✓ about this foolish action.

Question 5: Dictionary entry

4.1 A bicycle can’t stand alone because it is two ✓ tyred. ✓

4.2 When she married she got a new name and address. ✓

4.3 She felt so ill when she saw her first grey hairs that she thought she’d die. ✓

Question 4: Homophones

3.1 have just finished reading

3.2 called

3.3 in

3.4 written

3.5 very

3.6 for

3.7 either

3.8 superstitious

3.9 yourself

3.10 who’s

3.11 lecturer

3.12 would be

3.13 died

3.14 been republished

3.15 so much

3.16 ago

SECTION C (LANGUAGE)

Question 3: Book review

6. Include information about your values and attitudes.
7. Proofread your CV.

[52 words]

Total for Section B: [10]

1/10/