

GEOGRAPHY

GRADE 12

2024

LAST PUSH

**TEACHER AND LEARNER
CONTENT MANUAL**



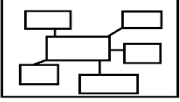

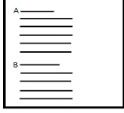

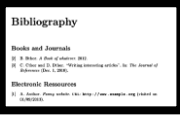

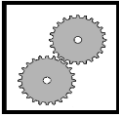



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ICON DESCRIPTION

 <p>MIND MAP</p>	 <p>EXAMINATION GUIDELINE</p>	 <p>CONTENTS</p>	 <p>ACTIVITIES</p>
 <p>BIBLIOGRAPHY</p>	 <p>TERMINOLOGY</p>	 <p>WORKED EXAMPLES</p>	 <p>STEPS</p>

GEOGRAPHY EXAMINATION TIPS

Paper, **ONE** comprises of **Climatology**; **Geomorphology** and **Mapwork**.

Paper **TWO** comprises of **Settlement Geography**; **Economic Geography** and **Mapwork**.

Learners are encouraged to read instructions carefully before answering the question paper.

Instructions provide important information with regards to the length of responses and to indicate the unit in all steps of calculations...

Highlighting the instructional verbs and important aspects of the question will assist learners in interpreting the question correctly.

Geographical issues are often assessed, and thorough preparation is crucial.
Learners should focus on:

- the causes and impacts
- both negative and positive impacts,
- Impact on human activities (social and economic) and the environment
- possible solutions or sustainable strategies/measures to be implemented to overcome these issues.

Paragraph writing

- Knowledge of paragraph writing skills is essential.
- Learners need to write in full sentences and **NOT** use bullets or point form.
- Four points (if required) must be explained(4x2) (8).;
- Answers in most instances require a factor and a qualification.
- Learners should underline or highlight the main topic of the question, the instructional verb, and the focus areas of the question.
- Make at least four points and then elaborate on each point.
- Learners know all the geographical concepts and definitions required.
- Learners must know all the geographical concepts and definitions required.
- Learners should compile a glossary of terms/concepts and an explanation of each in their notebooks for easy reference.

DAY 1 ECONOMIC GEOGRAPHY EXAMINATION GUIDELINES



1.1 Economic Geography of South Africa

- Economic sectors – definitions and examples:
 - Primary
 - Secondary
 - Tertiary
 - Quaternary
- Contribution of economic sectors to the South African economy:
- Definition, interpretation of, value and contribution to, GNP and GDP
- Use/Interpretation of statistical and graphical information.
- Employment (linked to different sectors, interpretation, and application)
- **Agriculture**
 - Contribution of agriculture to the South African economy
 - Small-scale farming and large-scale farming: definition, characteristics, and interpretation
 - Main products produced (definition and examples)- home market and export market

NOTE: Instruction at the beginning of the section on Economic Geography

EXAMINATION	YEAR	PRESCRIBED AGRICULTURAL PRODUCT
November 2024 May/June 2025	2024/25	Beef

- Areas of production on a map, identification and interpretation
- Apply factors that favour and hinder agriculture in South Africa to the product studied.
- Contribution of prescribed product to the South African economy

Food security:

- Definition of food security and food insecurity
- Importance of food security in South Africa
- Factors influencing food security in South Africa
- Strategies to improve food security in South Africa
- Case studies related to food security and food insecurity in South Africa.

Mining

- Contribution of mining to the South African economy
- Significance of mining to the development of South Africa
- A case study of one of South Africa's main minerals produced

Grade 12 summary notes 2024

NOTE: Instruction at the beginning of the section on Economic Geography

EXAMINATION	YEAR	PRESCRIBED MINERAL
November 2024 May/June 2025	2024/25	Coal

- Location of mineral studied on a map, identification and interpretation
- Apply factors that favour and hinder mining in South Africa to the main minerals above
- Contribution of prescribed mineral to the South African economy

Secondary and Tertiary Sectors

- South Africa's core/main industrial regions:
- Gauteng (PWV),
- South Western Cape
- Location of the **FOUR** core industrial regions on a map

Types of industries (definition, description, examples and characteristics):

- Heavy and light
- Raw material orientated
- Market orientated
- Footloose industries
- Ubiquitous industries
- Bridge (Break of bulk

Factors favouring industrial development in South Africa:

- Raw materials
- Labour supply
- Water supply
- Energy supply
- Transport
- Political intervention
- Competition
- Trade

Factors hindering industrial development in South Africa:

- Over-concentration
- Transport
- Air pollution
- Labour supply
- Water supply
- Energy supply
- Raw materials
- Political interference
- Competition
- Trade

Strategies for Industrial Development

- Overview of apartheid industrial development strategy:
- The Good Hope Plan

Overview of post-apartheid industrial development strategies:

- The Reconstruction and Development Programme (RDP)
- Growth, Employment and Redistribution (GEAR)
- Industrial Development Zones (IDZs) and spatial development Initiatives (SDIs):
- Case studies of two Industrial Development Zones (IDZs) and Spatial Development initiatives (SDIs):

EXAMINATION	YEAR	IDZ	SDI
November 2024 May/June 2025	2024/25	Saldanha Bay	West Coast

Key facts to concentrate on with regard to the prescribed IDZ's and SDI's

- Definition and difference between an IDZ and SDIs
- Map showing the location of prescribed IDZs and SDIs
- Factors influencing the location of the prescribed IDZs and SDIs
- Main industrial activities
- Factors that favour and hinder the development of the prescribed IDZs and SDIs
- Economic and social impacts
- Case studies to illustrate the above

The informal sector

- Concept of informal sector employment
- Characteristics of informal sector employment
- Reasons for high informal sector employment in South Africa
- Challenges facing South Africa's informal sector
- Importance/Role of the informal sector in the economy
- Strategies for strengthening the informal sector
- Case studies to illustrate the above in the South African context

IMPORTANT TERMS AND DEFINITIONS



Imports

Goods and services brought from outside countries

Exports

Goods and services sold to outside countries

Gross national product

Total value of goods and services produced in a country in a particular year

Industrial Development Zones

areas away from core industrial areas earmarked for industrial development.

The available infrastructure (seaport or airport) makes possible for export-orientated manufacturing industries

Spatial Development Initiatives

investment strategy that aims to unlock inherent economic potential in specific spatial locations in southern Africa

Foreign exchange

The money paid to South-Africa by other countries in exchange for goods and services. (Money earner by SA)

Balance of trade

The difference in value between the visible imports and exports

Informal Sector

The unregistered and unregulated sector of the economy which includes hawking and street vending. They do not pay tax and are not monitored by government.

Gross Domestic product

The total value of goods and services produced within the borders of the country in a year.

Home market

Products sold within the country South Africa

Export Market

Goods that are produced for export markets

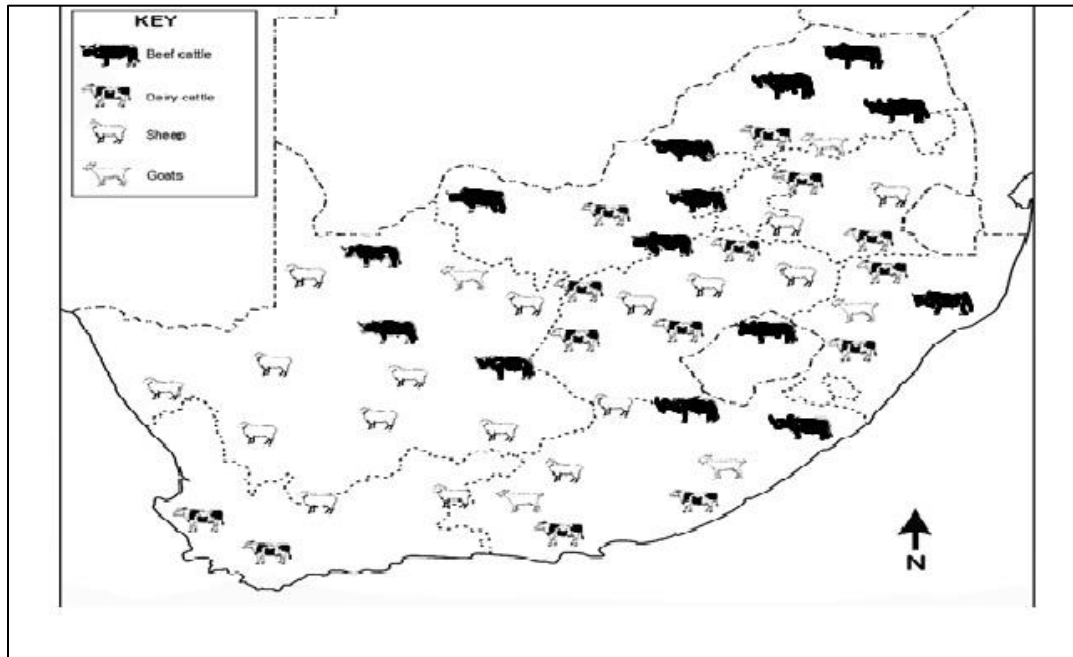
Food insecurity

When most people have lack of access to quality, nutritious food in a country for sustainable living.

Primary Activities

Beef Farming

Areas of production on a map



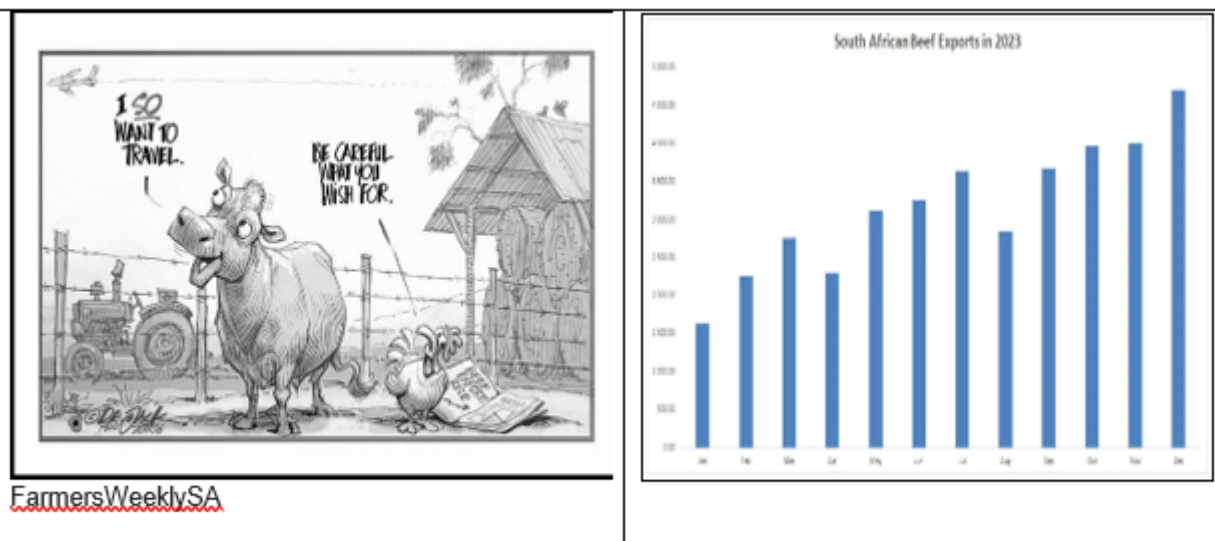
SOUTH AFRICAN BEEF	
Domestic production	792 095 tons
Exports	17 589 tons
Percentage of production	5 %
South Africa is now a nett exporter with 2.8 nett 2016 was the first year South Africa became a nett exporter of beef Gross turnover of the SA cattle industry on producer level is R 44 000 000 000 per annum	
SOUTH AFRICAN SHEEP MEAT	
Domestic production	106 316 tons
Imports	11 000 tons
Exports	1 300 tons
Export as percentage of production	1.2 %
South Africa is a nett importer with 9.1 % nett South Africa remains a nett importer of sheep meat Gross turnover of the sheep meat industry on producers' level is R 7 800 000 000	

www.rpo.co.za

- Beef is produced throughout South Africa.
- The amount of beef produced depends on the infrastructure such as feedlots and abattoirs, not necessarily by the number of cattle available in those areas.
- Mpumalanga, the Free State and Gauteng command the greatest share of beef production in South Africa.
- South Africa has highly developed transport infrastructure that allows movement of cattle and calves from one area to another

Activity 1

Study the infographic below



South African beef exports hit 7-year high in January

DailyInvestor • 22 March 2024

South African beef exports have shown strong growth over the last year. In January, they achieved their highest level in seven years.

A 2021 AgriSETA report stated that South Africa accounted for over 21% of the total meat produced in Africa and 1% of global meat production.

In addition, the livestock industry contributed 34.1% to the total domestic agricultural production and provided 36% of the population's protein needs.

Roelie van Reenen, supply chain executive at Beefmaster Group, said South Africa has shifted from a net importer of beef to a net exporter over the past 20 years.

"This is a great achievement. But the playing field is much bigger now, and there are more challenges on the global stage," Van Reenen said.

Despite a significant decline in beef exports due to foot-and-mouth disease in 2022 and the start of 2023, the market has recovered.

Saudi Arabia and other countries lifting a ban on South African beef exports will also benefit South African beef exporters.

Absa's 2024 AgriTrends Report said beef prices will follow an upward trend over the medium term, supported by improved export prospects to markets such as Saudi Arabia.

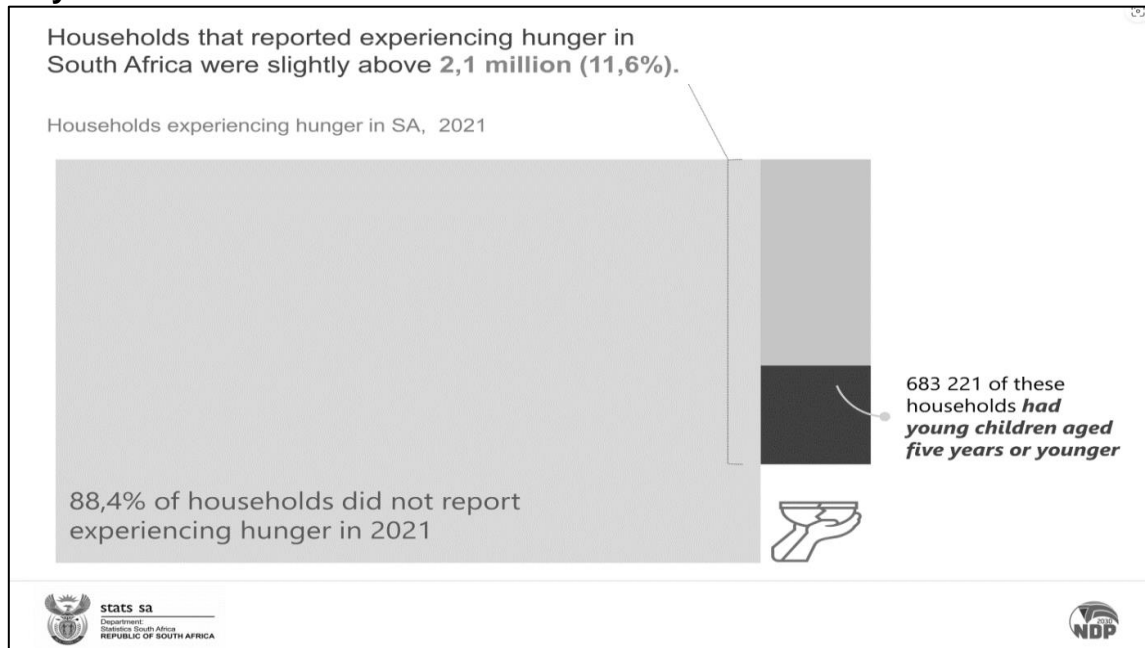
dailyinvestor.com

- 1.1.1 **Define** the concept exports. (1x2) (2)
- 1.1.2 **What** was the percentage contributed by South Africa to the global meat production in 2021? (1x1) (1)
- 1.1.3 **According to the article** what was the course for decline of beef exports in 2022? (1x2) (2)
- 1.1.4 In which month did South Africa have the lowest exports. (1x2) (2)
- 1.1.5 South African beef exporters experience a lot of challenges. In a paragraph of eight lines **explain why** the chicken warns the cow about wishing to travel. (4x2) (8)

IMPORTANCE OF FOOD SECURITY IN SA

- Food security refers to the availability of well-balanced meals on a regular basis
- South Africa has high unemployment levels and high poverty levels. Hence, many individuals and families have no food security at all.
- South Africa faces moderate risk of food insecurity along with a number of other African states

Activity 2

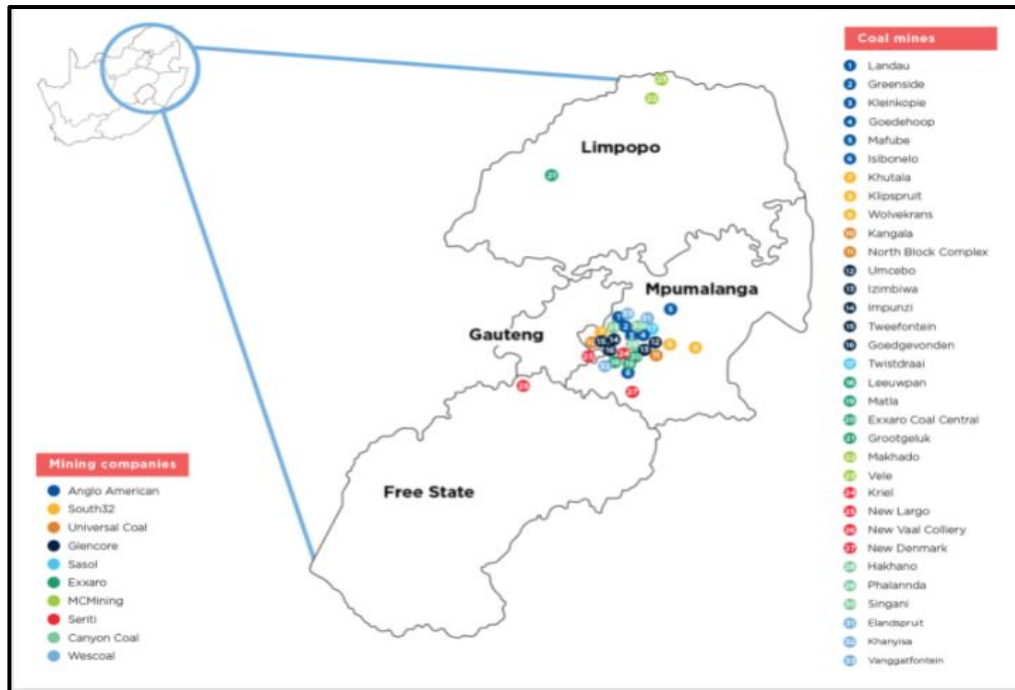


www.statssa.gov.za

- | | | | |
|-------|--|-------|-----|
| 2.1.1 | Explain the concept food security. | (1x2) | (2) |
| 2.1.2 | What was the percentage of households experiencing food insecurity in 2021? | (1x1) | (1) |
| 2.1.3 | Explain factors that led to food insecurity in South Africa. | (2x2) | (4) |
| 2.1.4 | Discuss why 88.4% of the households experiencing hunger could not report in 2021. | (2x2) | (4) |
| 2.4.5 | As a new minister of agriculture suggest sustainable measures that can be put in place to improve on food security. | (2x2) | (4) |

COAL MINING

Where is coal mined in SA?



- In 2018, South Africa produced 252.6 million tones (Mt) of coal. Sales of coal were valued at R139.4 billion.
- South African coal has a comparatively medium ash content, which can be reduced by washing before sale.
- Higher grades of coal are delivered to export markets with the lower-grade product burned by Eskom's specially designed power station boiler hearths.

3.1 Choose the answer and **write only** the letter (A–D) next to the question numbers (2.2.1 to 2.2.8) in the ANSWER BOOK, e.g. 2.2.9 D.

3.1.1 The GDP is the total value of ...

- A goods and services produced within a country in one year.
- B goods and services produced by permanent citizens in one year.
- C exports that leave a country in one year.
- D imports that come into a country in one year.

3.1.2 The concept ... is used to refer to products sold within South Africa.

- A export market
- B import market
- C home market
- D international market

3.1.3 Food security occurs when ...

- A there is a lack of food that gives rise to starvation.
- B there is access to sufficient nutritious food.
- C farmers experience drought and crop diseases.
- D farmers produce sufficient food.

3.1.4 ... is a physical factor that affects food security in South Africa.

- A Research
- B Trade
- C HIV/Aids
- D Rainfall

3.1.5 TWO types of industries associated with bulk transport:

- (i) Ubiquitous
- (ii) Heavy
- (iii) Light
- (iv) Raw material orientated

- A (i) and (iii)
- B (ii) and (iv)
- C (ii) and (iii)
- D (i) and (iv)

3.1.6 TWO types of industries generally associated with lower levels of air pollution:

- (i) Ubiquitous
- (ii) Heavy
- (iii) Light
- (iv) Raw material orientated

- (i) and (ii)
- (ii) and (iii)
- (i) and (iii)
- (ii) and (iv)

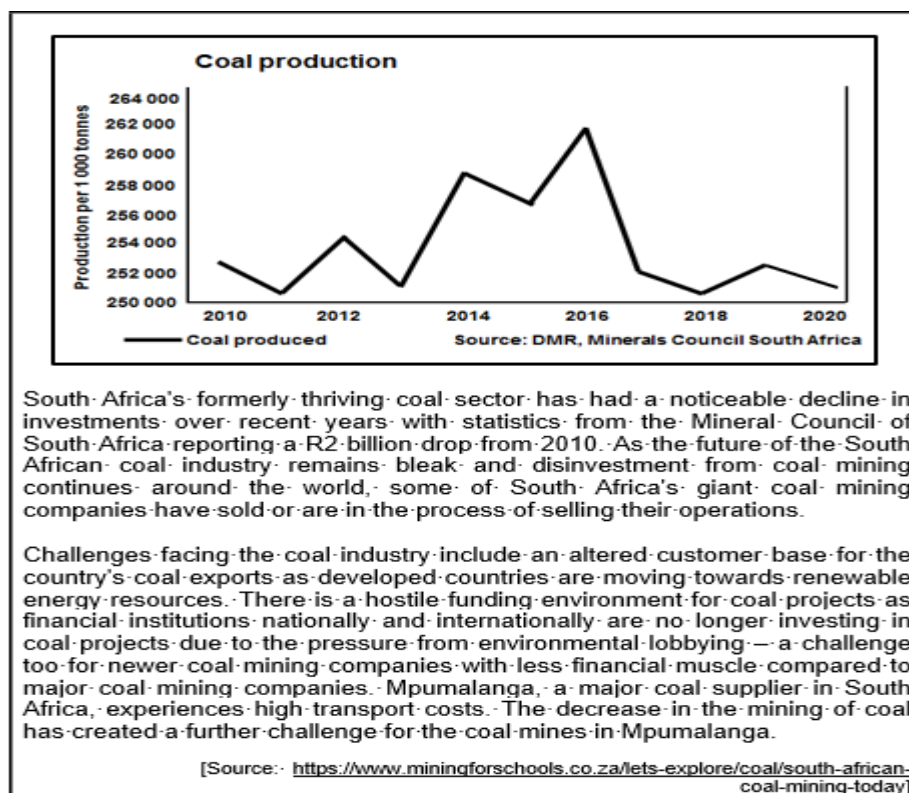
3.1.7 ... is an example of a tertiary activity.

- A Mining
- B Motor vehicle assembly
- C Transport
- D Information technology

3.1.8 ... refers to the difference in value between imports and exports.

- A Trade agreement
- B Balance of trade
- C Local trade
- D International trade

Activity 4



- 4.1.1 **According to** the Mineral Council of South Africa, by how much did the investments in coal drop from 2010? (1x1) (1)
- 4.1.2 **According to the graph**, over which Two-year period was the greatest decrease in production recorded? (1x2) (2)
- 4.1.3 **How** does the location of the coal mines in Mpumalanga increase the export costs of coal? (1x2) (2)
- 4.1.4 Despite Mpumalanga having rich coal reserves, the coal industry faces a bleak future. **Quote** reasons from the extract for this bleak future. (2x2) (4)
- 4.1.5 **Explain how** the decrease in the mining of coal will have a negative economic impact on Mpumalanga. (3x2) (6)

Secondary Activities

Conversion of raw material into fabricated items/ conversion of raw material in semi-finished or finished goods.

Raw Material Orientated Industry

found close to the source of the raw materials that they require.
This is usually because transportation costs are high.
For example, sugar mills are located close to the sugar fields.

Market Orientated Industry

located close to the market.
the products are perishable and need to be sold relatively fresh.
For example, baked foods, vegetables and fish products.

Footloose Industry

can be located anywhere without effect from factors such as resources or transport.
a software company. It does not need to transport any raw materials and the product is non-perishable

Ubiquitous Industry

These industries are **not located at a particular space** on a landscape.
For example, Telkom/MTN is a ubiquitous industry because it has lines that cover entire suburbs

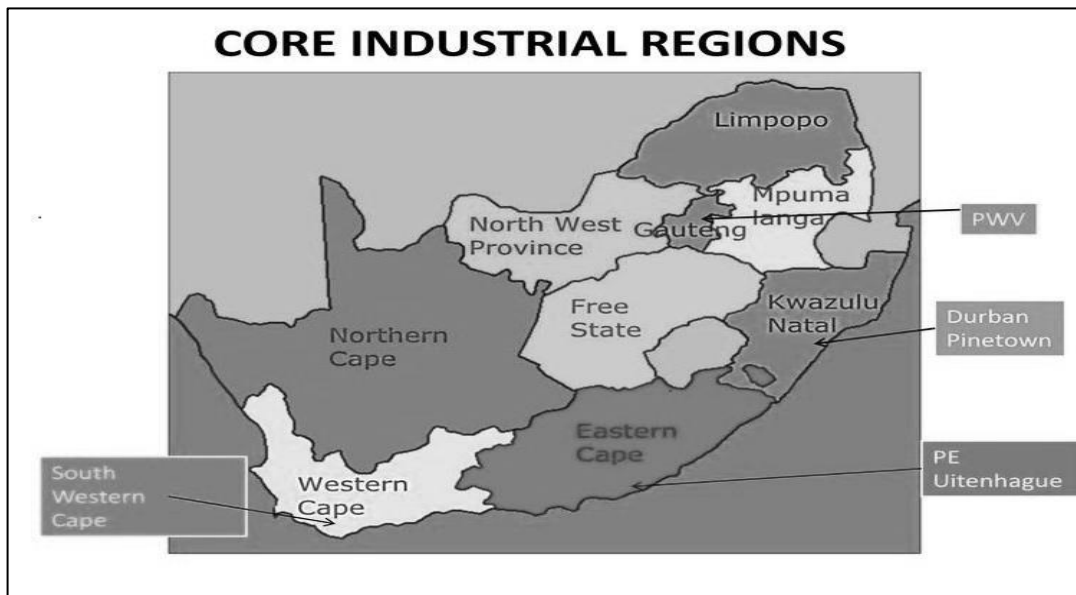
Bridge Industry

These industries are located between the raw materials and the market. Also known as “break-of-bulk” industries.
For example, an oil refinery. Oil is pumped ashore, refined into products and transported to the market.

2.1 Choose a statement from **COLUMN B** that matches the term in **COLUMN A**. Write only the letter (A – L) next to the question number (1.2.1 – 1.2.7) in your ANSWER BOOK, e.g. 1.2.6 F.

COLUMN A		COLUMN B	
2.1.1	Small scale farming	A	Types of industries are found close to the source of the raw materials that they require.
2.1.2	Food security	B	These types of industries are located close to the market.
2.1.3	Intensive farming	C	Can be located anywhere without effect from factors such as resources or transport.
2.1.4	Raw Material Orientated Industry	D	The availability of well-balanced meals on a regular basis
2.1.5	Market Orientated Industry	E	Industries that are not located at a particular space on a landscape.
2.1.6	Footloose Industry	F	These industries are located between the raw materials and the market.
2.1.7	Ubiquitous Industry	G	Describes a farming method using very little land and often using very little to no expensive technologies.
		H	Involves increasing capital and labour on the same piece of land being cultivated to increase yield.

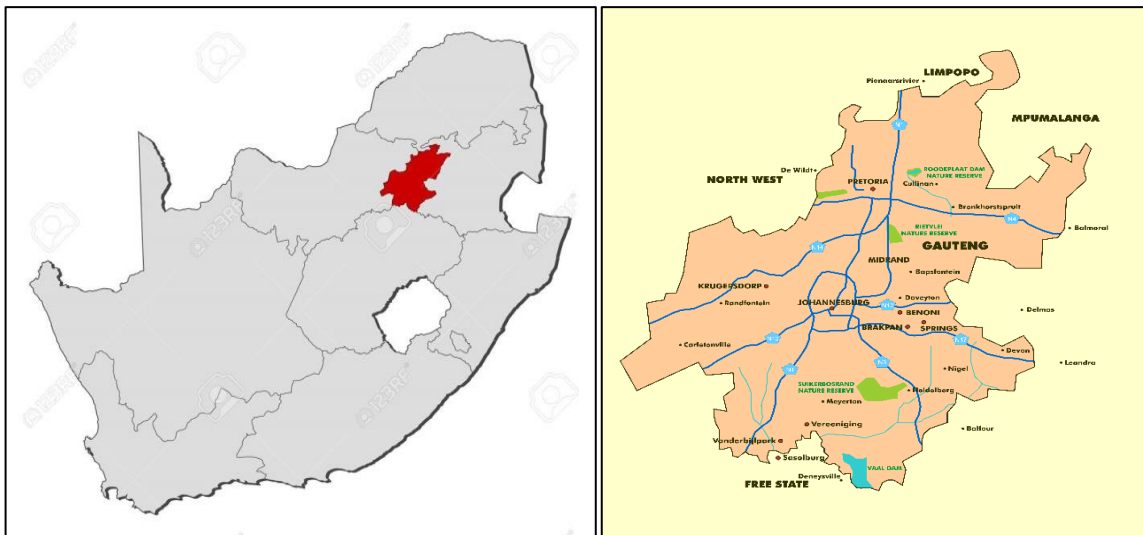
CORE INDUSTRIAL REGIONS IN SOUTH AFRICA



Learners need to know:

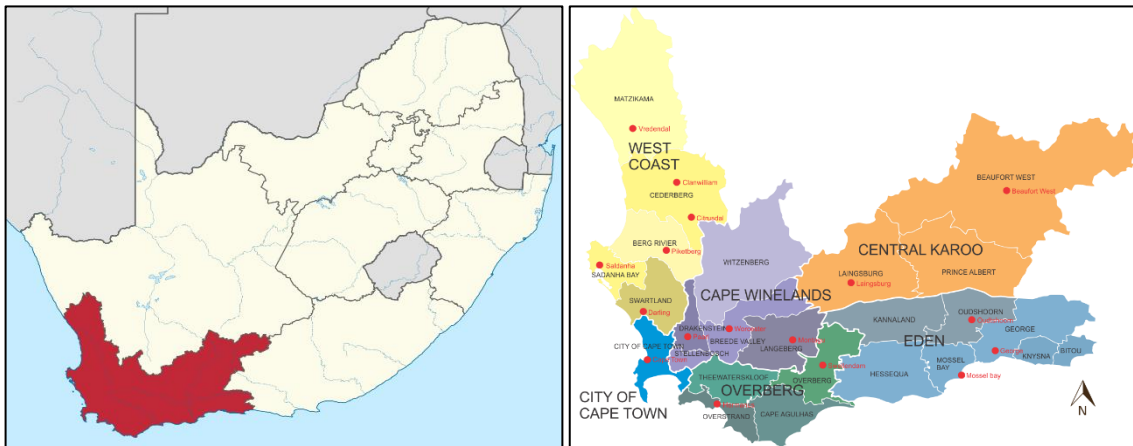
- Factors favouring location and industrial development in industrial regions: PWV/Gauteng Region and South Western Cape.
- Main industries
- Factors hindering the development of: PWV/Gauteng Region and South Western Cape.

Gauteng (PWV) for exam 2024



The industrial region contributes the highest percentage share to the Gross Domestic Product (GDP) in almost all sectors of the South African economy such as manufacturing, construction, trade, finance, mining, with the exception of agriculture.

South Western Cape



The economy of the Western Cape in South Africa is dominated by the city of Cape Town, which accounted for 72% of the Western Cape's economic activity in 2016. The single largest contributor to the region's economy is the financial and business services sector, followed by manufacturing. Close to 30% of the gross regional product comes from foreign trade with agricultural products and wine dominating exports.

Activity 2.2

Study the case study on the PWV industrial region.

THIS IS HOW ESKOM THROTTLES THE ECONOMY IN THE PWV REGION.

Reserve Bank analysis shows the effect of load-shedding on economic growth, particularly on the manufacturing industry.

Smaller businesses can counter the effects of load-shedding for a few hours by using standby generators – at a cost – but large enterprises such as ISCOR/Mittal Steel, simply cannot operate without steady and adequate power.

The ongoing problems at Eskom have had such a huge effect that it urged the Reserve Bank to look into it closely, with an analysis showing that electricity disruptions during the three months to the end of March were the worst ever.

It listed various other factors that probably impacted economic growth, such as a number of long labour strikes, maintenance and weak domestic and global demand, as well as political uncertainty, which affected business and consumer confidence.

Since the beginning of the fourth industrial revolution¹, there seems to be an uncanny correlation between load-shedding and a declining economy.

The results show that as the intensity of load-shedding increases, South Africa's real GDP growth decreased by a statistically significant 0,06%.

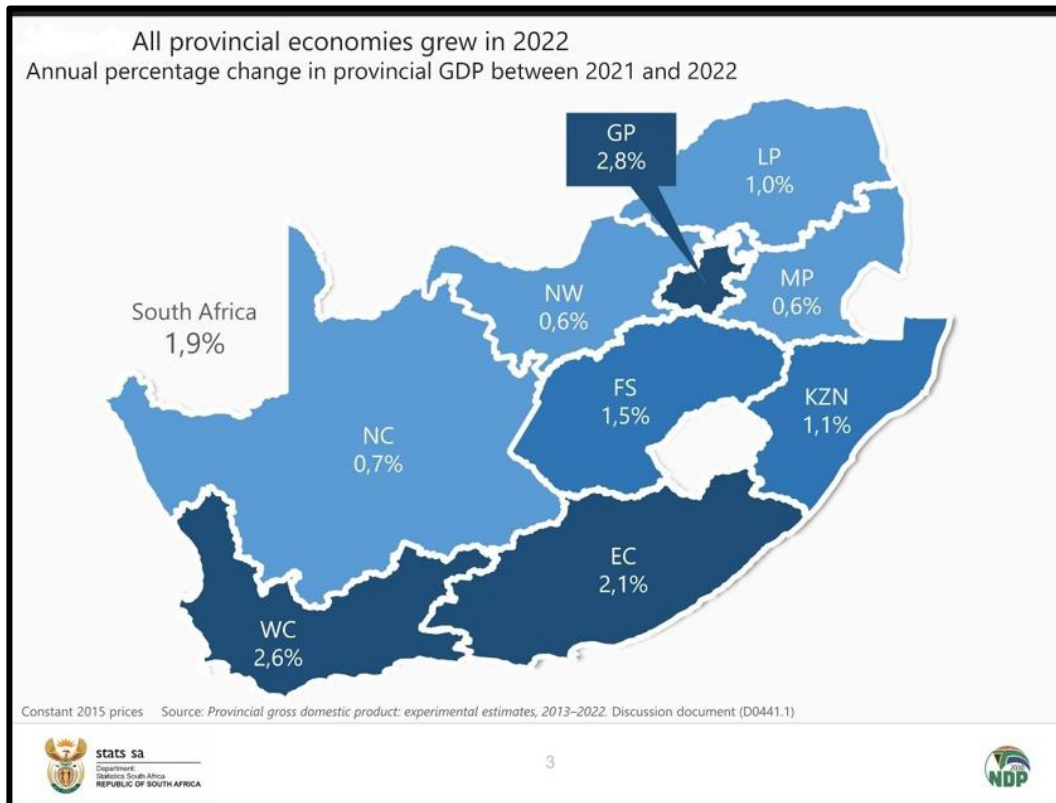
In short, the report proves what everybody already knows – businesses cannot operate without electricity and without operating businesses, the economy cannot grow.

Solving Eskom's problems will solve a lot of other problems too.

¹Fourth industrial revolution: A technological revolution where one or more technologies is replaced by another technology over a short period of time e.g. artificial intelligence such as self-driven cars, drones and robotics.

- 2.2.1 The core industrial region of Gauteng is also referred to as the PWV-region. For what does the abbreviation PWV stand? (1x1) (1)
- 2.2.2 **What** is the relationship between load-shedding and the GDP growth. (2x1) (2)
- 2.2.3 Apart from load-shedding, the reserve bank identifies factors that impacted the GDP of the PWV region. **List** TWO of these factors. (2x1) (2)
- 2.2.4 **Explain how** the fourth industrial revolution influences industries' dependency on electricity supply in the PWV region (2x2) (4)
- 2.2.5 **Discuss how** load-shedding impacts negatively on the multiplier effect of the PWV economy and ISCOR / Mittal Steel (a large enterprise found in the PWV region). (3x2) (6)

Activity 3



- 2.3.1 Out of the four core industrial regions, **identify** the second largest contributor to the GDP in South Africa. (1x1) (1)
- 2.3.2 Which province represents the core industrial region that contributed the least to the GDP in 2022? (1x2) (2)
- 2.3.3 **Discuss** factors that promoted industrial development in the South Western Cape. (2x2) (4)
- 2.3.4 In a paragraph of eight lines **explain how** industrial developed could have a **positive social impact** for the population in the Western Cape. (4x2) (8)
(15)

INDUSTRIAL DEVELOPMENT ZONES

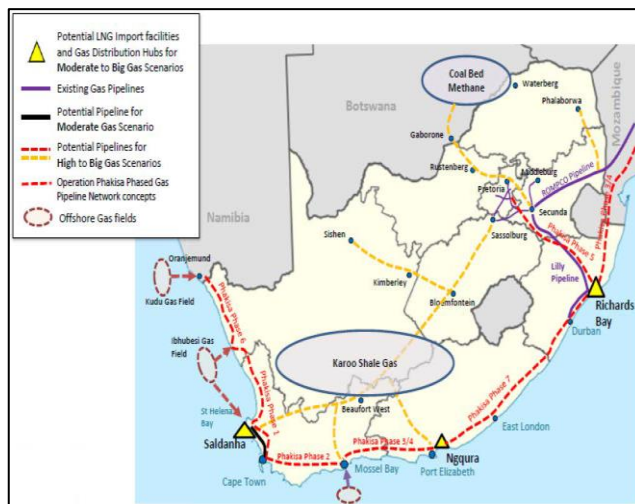
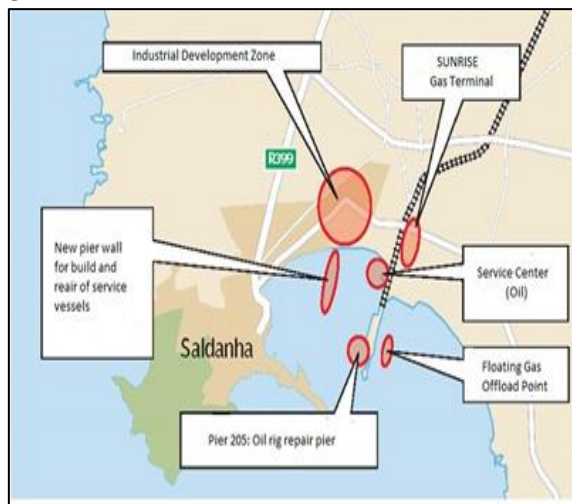
An Industrial Development Zone (IDZ) is a purpose-built industrial estate linked to an international seaport or airport and which is capable of leveraging fixed direct investments in value-added and export-orientated manufacturing industries.

Industrial Development Zones (IDZs) are intended to promote the competitiveness of the manufacturing sector and to encourage beneficiation of locally available resources

Key objectives of the IDZ

- Develop linkages between domestic and zone-based industries.
- Provide world-class industrial infrastructure.
- Attract foreign direct investment (FDI);
- Attract advanced foreign production and technology methods in order to gain experience in global manufacturing and production networks;

SALDAHNA BAY IDZ



The Saldanha Bay IDZ is an industrial area linked to an international sea port which has areas that are suited for the manufacturing and storage of goods to boost beneficiation investment, economic growth and the development of skills and employment.

SPATIAL DEVELOPMENT INITIATIVES

SDI's are transport and communication links between major industrial areas, metropolitan area and harbours

SDI's aims

- To create an attractive environment for private sector investment
- To initiate and support economic activities along transport corridors
- To promote growth in those parts of SA that are underdeveloped but have the potential for growth.
- To develop and improve existing transport infrastructure

West Coast SDI

The SDI is located in the Western Cape Province. The most current local SDF's of the five municipalities within the West Coast SDI are as follows:

- Bergriver
- Cederberg
- Matzikama
- Saldanha Bay
- Swartland

The West Coast District SDF is regarded as the tool to integrate the local municipal strategies, acknowledging linkages between municipalities, proposing spatial growth continuity at a broader scale and addressing district-wide spatial issues and challenges.

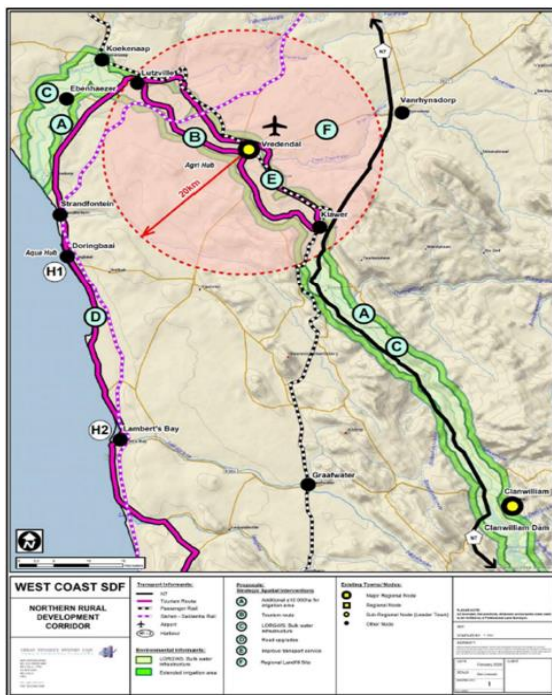


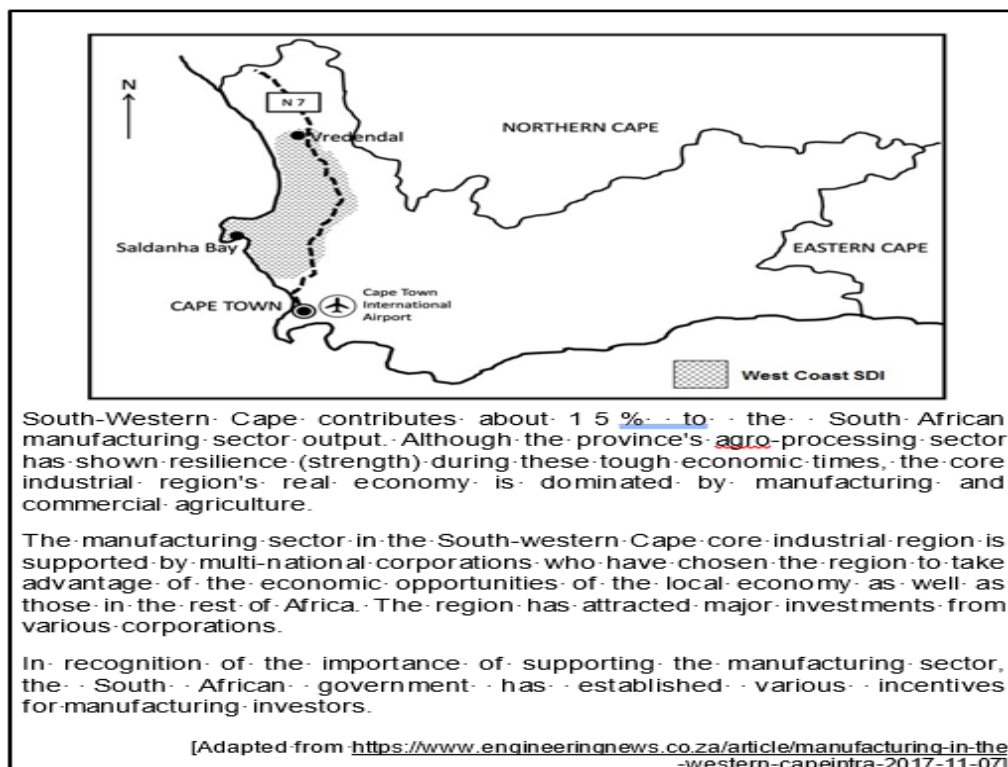
Figure 8.6: Northern Rural Development Corridor



Figure 8.4: Saldanha-Vredenburg Major Development Centre / Corridor

Activity 2.4

Refer to the infographic on the South-western Cape core industrial region and the West Coast Spatial Development Initiative (SDI).

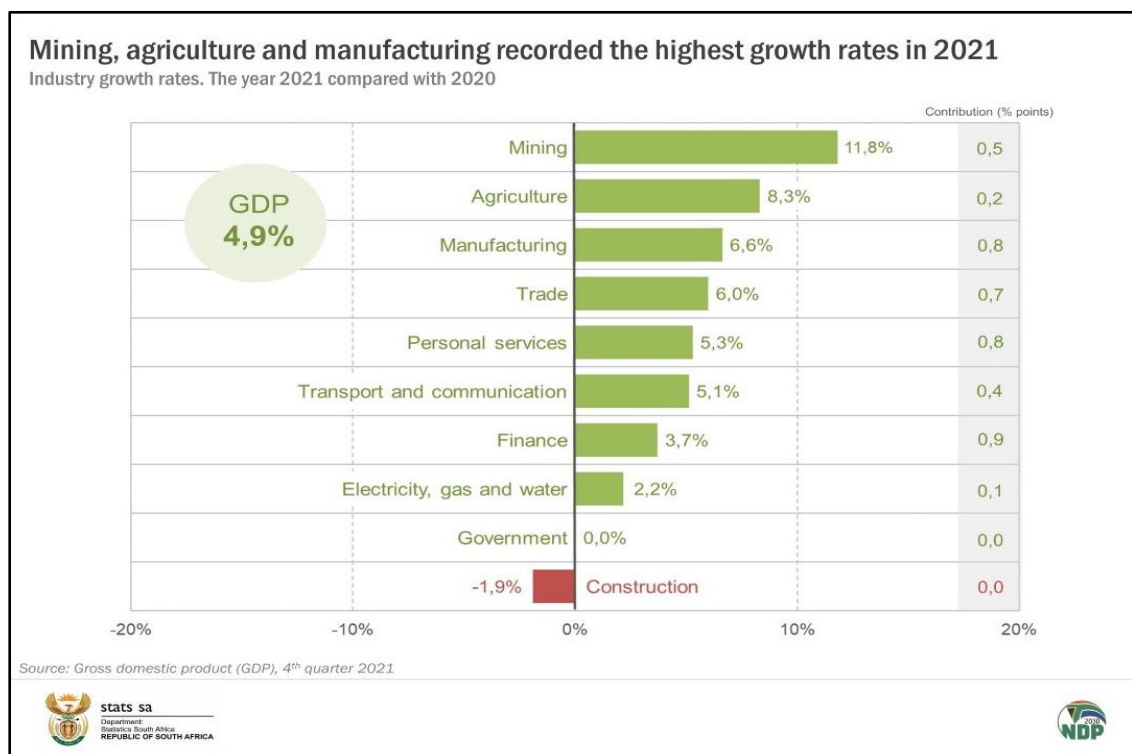


- 2.4.1 Quote evidence from the infographic which shows that the South- western Cape core industrial region contributes to the South African economy (1x1) (1)
- 2.4.2 State TWO modes of transport in the infographic that make the South-western Cape core industrial region attractive to foreign investors. (2x1) (2)
- 2.4.3 The South-western Cape core industrial region is dominated by light industries.
- Why does the South-western Cape core industrial region favour the development of light industries? (2x2) (4)
 - Give TWO factors that have limited the development of heavy industries in the South-western Cape core industrial region. (2x2) (4)
- 2.4.4 Explain how the West Coast Spatial Development Initiative (SDI) creates increased access for the South-western Cape core industrial region to international markets. (2x2) (4)

TERTIARY SECTOR/SERVICES

The tertiary industry is the segment of the economy that provides services to its consumers, including a wide range of businesses such as financial institutions, schools and restaurants. It is also known as the tertiary sector or service sector.

Activity 2. 5 Refer to the infographic below



- 2.5.1 Define the concept gross domestic product. (1x2) (2)
- 2.5.2 Which sector of the South African economy contributed the most in 2021? (1x1) (1)
- 2.5.3 Identify two activities from the graph that contributed more in the sector identified in 2.5.2 (2x1) (2)

- 2.5.4 Calculate the total percentage contributed by the sector identified in 2.5.2. (1x2) (2)
- 2.5.6 Explain how a country has a negative balance of trade. (1x2) (2)
- 2.5.7 Suggest three reasons that led to the decline of construction in 2021. (3x2) (6)


INFORMAL SECTOR

People not employed in the formal sector, not registered, do not pay tax.

Activity 2.6

Refer to the cartoon and extract below on informal trading.

IN DEFENCE OF SOUTH AFRICA'S INFORMAL ECONOMY



Do you have a permit?

No, I can't afford it!

A shadow economy*?

Some call the informal sector the shadow economy. They also complain about the lack of taxes paid by the informal sector. Many of the vendors are trading without permits and are subjected to regular raids by the city's law enforcement, during which their goods are seized and fines are issued.

The claim that official employment data underestimates the informal sector is based on the assumption that many people who undertake activities in the informal sector are mistakenly counted as unemployed.

The vast majority of informal operators (73%) earn well below the income tax threshold of R79 000 per annum set by the South African Revenue Service. In addition, many informal-sector workers, and particularly those in retail, pay VAT on their purchases.

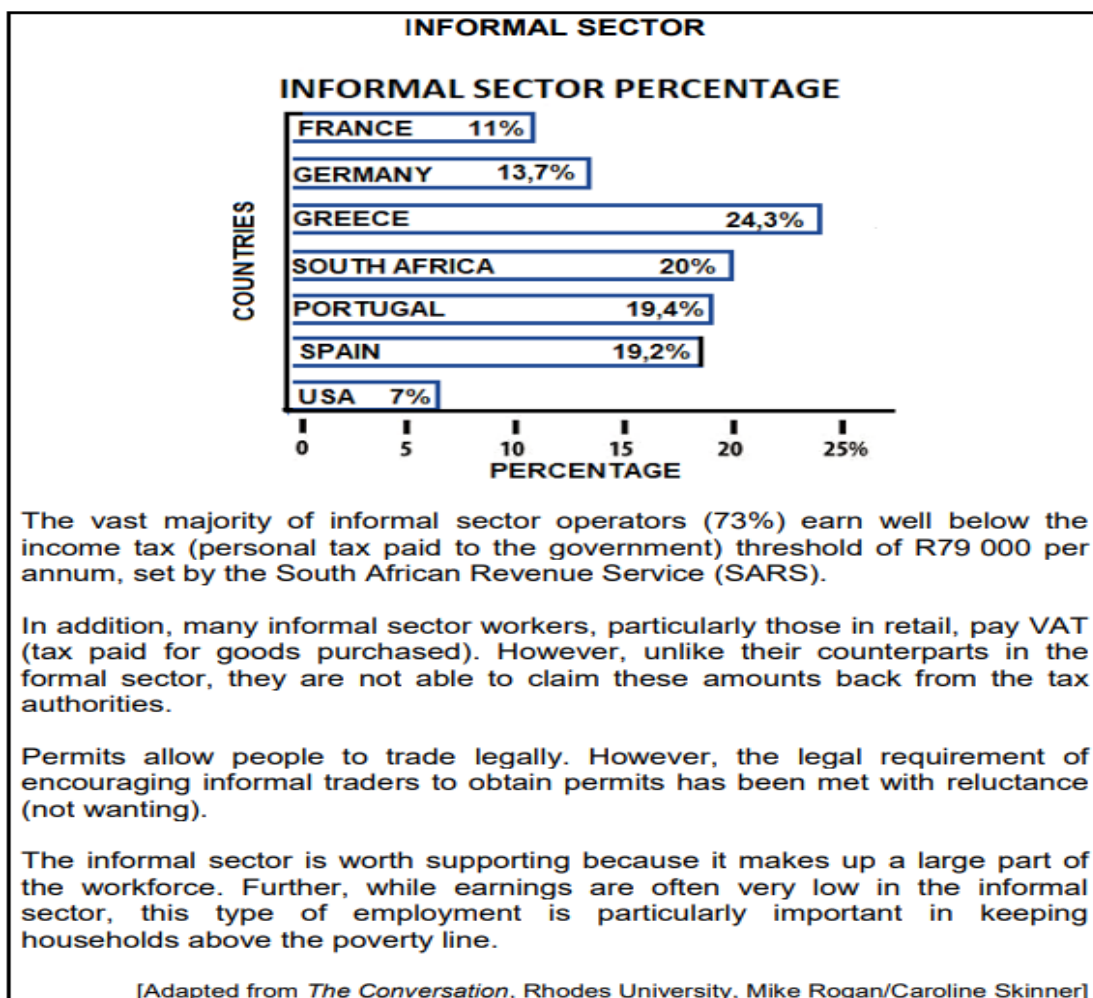
***Shadow economy:** Its contribution is not known.

[Source: news.uct.ac.za/ <https://www.google.com/search?q=informal+trading+cartoon>]

- 2.6.1 **Give** another name for the informal sector from the extract. (1x1) (1)
- 2.6.2 **Why does** the trader in the cartoon not have a permit? (1x1) (1)
- 2.6.3 **Quote** ONE consequence from the extract for the trader who does not have a permit (1x1) (1)
- 2.6.4 **Why** are people in the informal sector mistakenly referred to as unemployed? (1x2) (2)
- 2.6.5 **How** does the economy benefit from the informal sector? (2x2) (4)
- 2.6.6 **Suggest** THREE incentives that the government can provide to regulate the informal sector. (3x2) (6)

15

Refer to the extract and graph on the informal sector below.



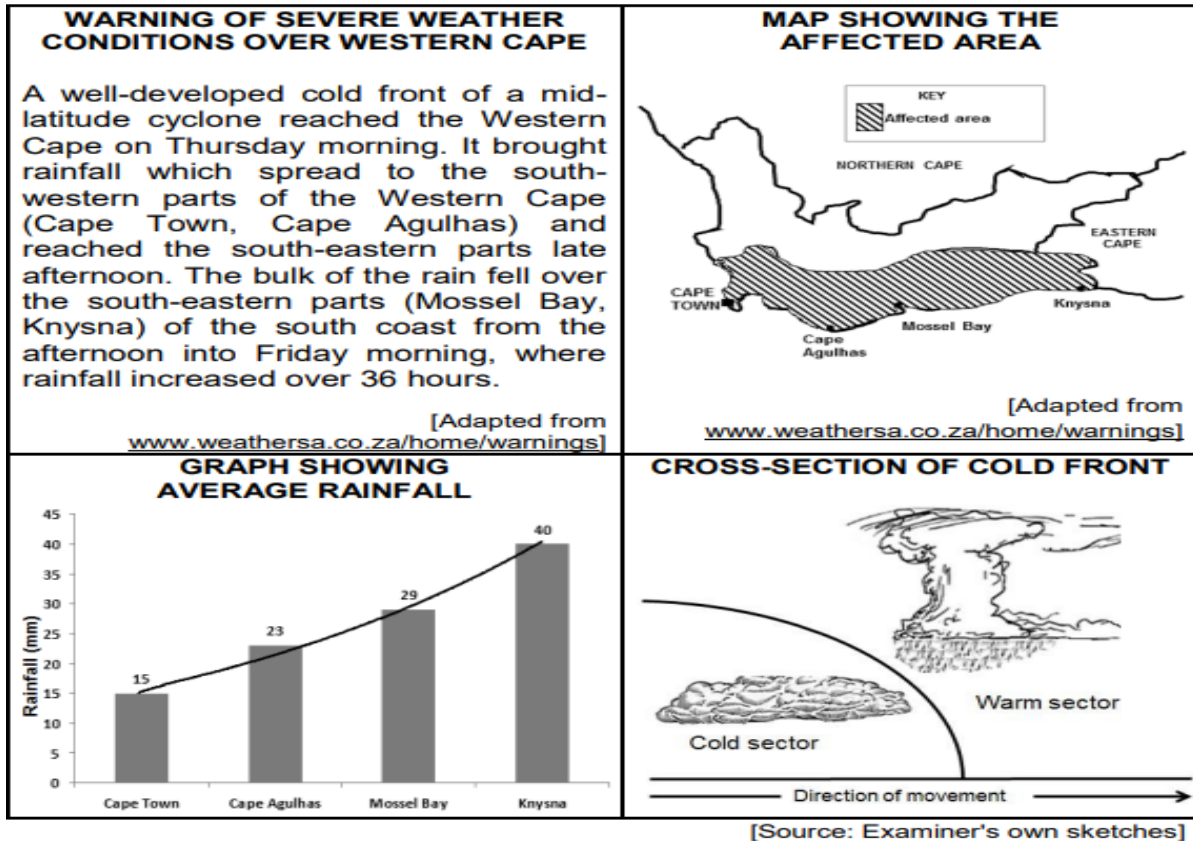
- 2.7.1 **According to the graph**, what percentage of South Africa's population is classified as the informal sector? (1x1) (1)
- 2.7.2 **Give** economic reasons that have led to such a large informal sector in South Africa. (1x2) (2)
- 2.7.3 **Explain** the economic importance of the informal sector. (2x2) (4)
- 2.7.4 In a paragraph of approximately EIGHT lines, **suggest strategies** that could be implemented to improve the informal sector. (2x4) (8)

Last push revision activities

CLIMATOLOGY AND GEOMORPHOLOGY

TOPIC ONE CLIMATOLOGY

1.1 Refer to the infographic below on mid-latitude cyclones



- | | | |
|-------|---|------------------|
| 1.1.1 | The mid-latitude cyclone mentioned in the extract is in the (initial/mature) stage. | (1X1) (1) |
| 1.1.2 | Give a reason for your answer to QUESTION 1.1.1. | (1X2) <u>(2)</u> |
| 1.1.3 | Why did the rainfall mentioned in the extract spread from Cape Town to Mossel Bay and Knysna? | (1X2) <u>(2)</u> |
| 1.1.4 | Refer to the graph and determine the lowest and highest rainfall, in millimetres, recorded in the Western Cape over 36 hours | (1X2) <u>(2)</u> |
| 1.1.5 | With reference to the cross-section, explain how a well-developed cold front results in heavy rainfall over the Western Cape. | (2X2) (4) |
| 1.1.6 | How will the heavy rainfall negatively affect the physical (natural) environment in and around the Western Cape? | (2x2) (4) |

1.2 Refer to the extract below on cold fronts.

**TWO COLD FRONTS TO HIT WESTERN CAPE THIS WEEKEND –
'HEAVY RAINFALL' TO FOLLOW**

Date: 10 June 2022

According to the South African Weather Service (SAWS), two cold fronts are expected to bring rain, strong winds, high waves and a significant drop in temperatures to South Africa.

The first cold front is expected to hit the Western Cape on Sunday evening 12 June. Ahead of this first cold front, strong north-westerly to westerly winds between 50–60 km/h, gusting up to 70–80 km/h, are expected over the southern parts of the Northern Cape and the interior of the Western and Eastern Cape from Sunday.

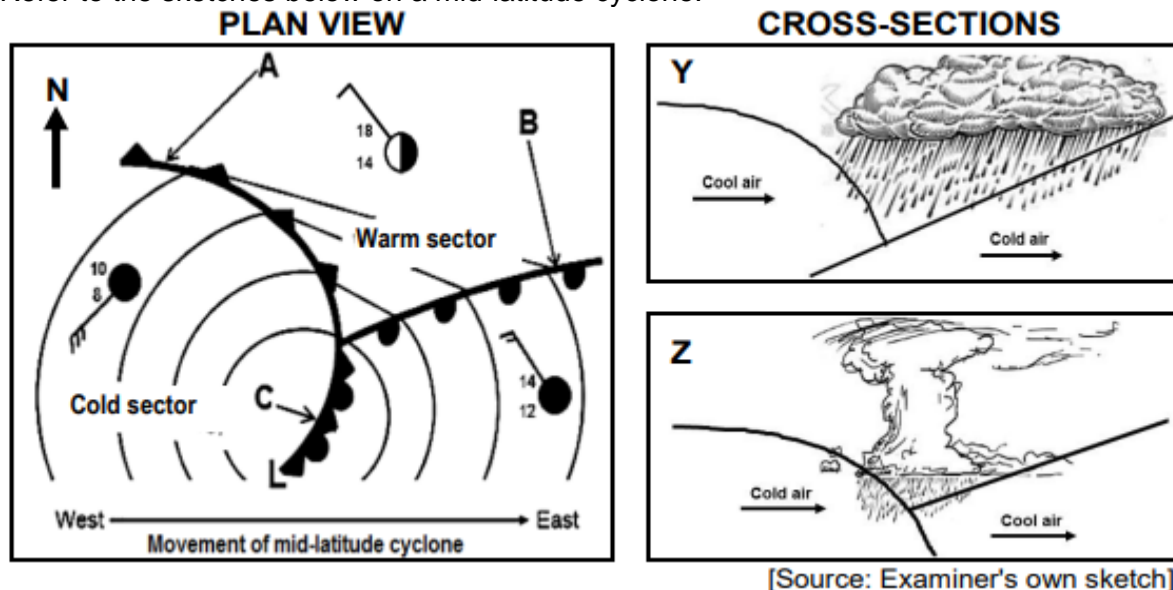
The second cold front is expected to reach the Western Cape by Monday evening 13 June, bringing continued high amounts of rainfall mainly to the south-western parts of the Western Cape, especially from Monday to Wednesday afternoon.

The wind direction associated with the cold front will change from north-west to south-west as the front moves over the Western Cape.

[Adapted from [http://www.First cold front to hit Western Cape this weekend –
'heavy rainfall' to follow \(thesouthafrican.com\)\)](http://www.First cold front to hit Western Cape this weekend – 'heavy rainfall' to follow (thesouthafrican.com)))]

- | | | | |
|-------|--|---------|-------------------|
| 1.2.1 | In which season do the cold fronts mentioned in the extract influence the Western Cape? | (1 x 1) | <u>(1)</u> |
| 1.2.2 | Give evidence from the extract to support your answer to QUESTION 1.2.1. | (1x1) | <u>(1)</u> |
| 1.2.3 | Why do cold fronts have a greater impact on the Western Cape during this season (answer to QUESTION 1.2.1)? | (1x1) | <u>(1)</u> |
| 1.2.4 | The change in wind direction mentioned in the extract is known as (veering/backing) in the Southern Hemisphere. | (1x1) | (1) |
| 1.2.5 | Give a reason from the extract for your answer to QUESTION 1.2.4. | (1x2) | (2) |
| 1.2.6 | In a paragraph of approximately EIGHT lines, suggest positive and negative impacts of heavy rainfall associated with the cold fronts on the physical (natural) environment of the Western Cape | (4x2) | (8) |

1.3 Refer to the sketches below on a mid-latitude cyclone.



- 1.3.1 Name the wind belt that causes the easterly movement of the mid-latitude cyclone (1x1) (1)

Refer to the plan view.

- 1.3.2 Identify front A. (1x1) (1)
- 1.3.3 Which ONE of fronts A or B is moving faster? (1x1) (1)
- 1.3.4 Give a reason for your answer to QUESTION 1.3.3 (1x2) (2)
- 1.3.5 Give evidence from the sketch that the mid-latitude cyclone is found in the Southern Hemisphere. (1x2) (2)

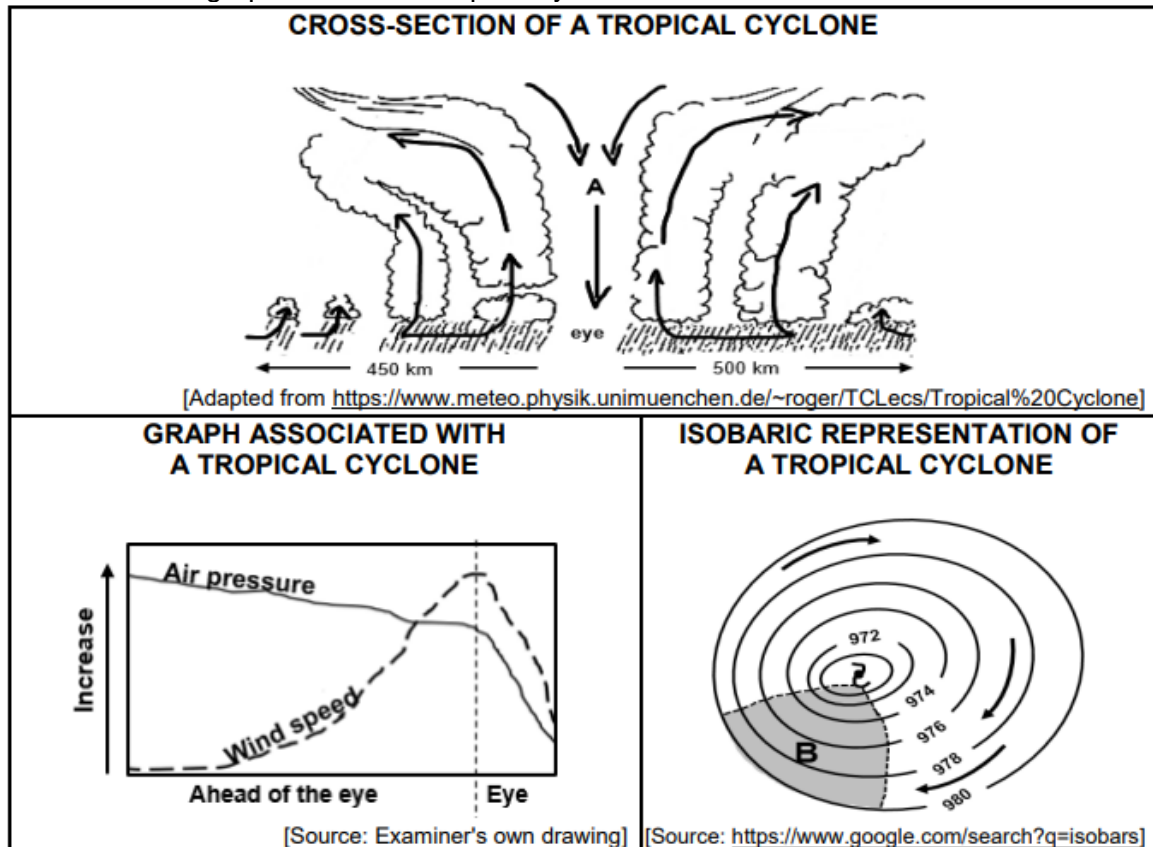
Refer to the cold front occlusion C and the cross-sections.

- 1.3.6 a Which ONE of the cross-sections Y or Z represents the cold front occlusion at C? (1x2) (2)
- b Give evidence that C is a cold front occlusion. (1x2) (2)
- c Explain how the cold front occlusion developed. (2x2) (4)

[15]

TROPICAL CYCLONES

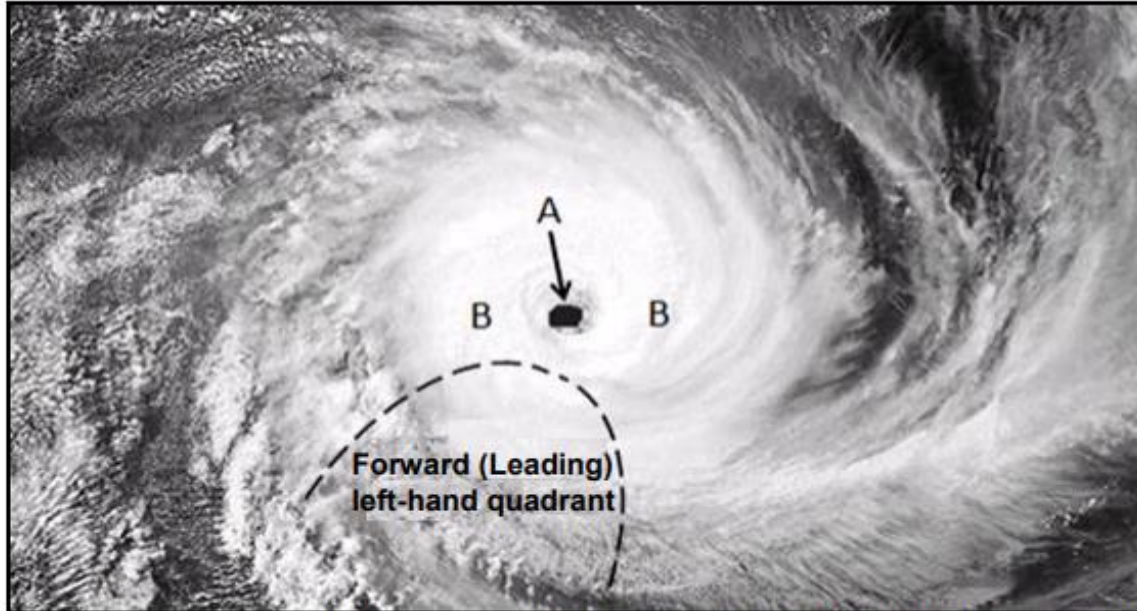
1.4 Refer to the infographic below on tropical cyclones.



- 1.4.1 What evidence indicates that the tropical cyclone developed in the Southern Hemisphere? (1x1) (1)
- 1.4.2 Give TWO reasons from the infographic to indicate that the tropical cyclone is in its mature stage. (2x1) (2)
- 1.4.3 How will the descending air at A influence the cloud cover in the eye? (1x2) (2)
- 1.4.4 Give a reason for your answer to QUESTION 1.4.3. (1x2) (2)
- 1.4.5 What is the relationship between the wind speed and air pressure as indicated on the graph?
- Ahead of the eye (1x2) (2)
 - Within the eye (1x2) (2)
- 1.4.6 Why is area B on the sketch of the isobaric representation referred to as the leading left quadrant (dangerous semicircle)? (1x2) (2)
- 1.4.7 How does the leading left quadrant (dangerous semicircle) develop in tropical cyclones? (1x2) (2)

[15]

1.5 Refer to the satellite image of a tropical cyclone in the mature stage below.



[Adapted from <https://www.google.com/url?sa=i&url=https%3A%2F>

1.5.1 State ONE condition required for the development of the tropical cyclone. (1x1) (1)

1.5.2 In which hemisphere did this cyclone develop?

1.5.3 Give a reason for your answer to QUESTION 1.4.2.

Refer to A and B on the satellite image.

1.5.4 Differentiate between the cloud cover at A and B

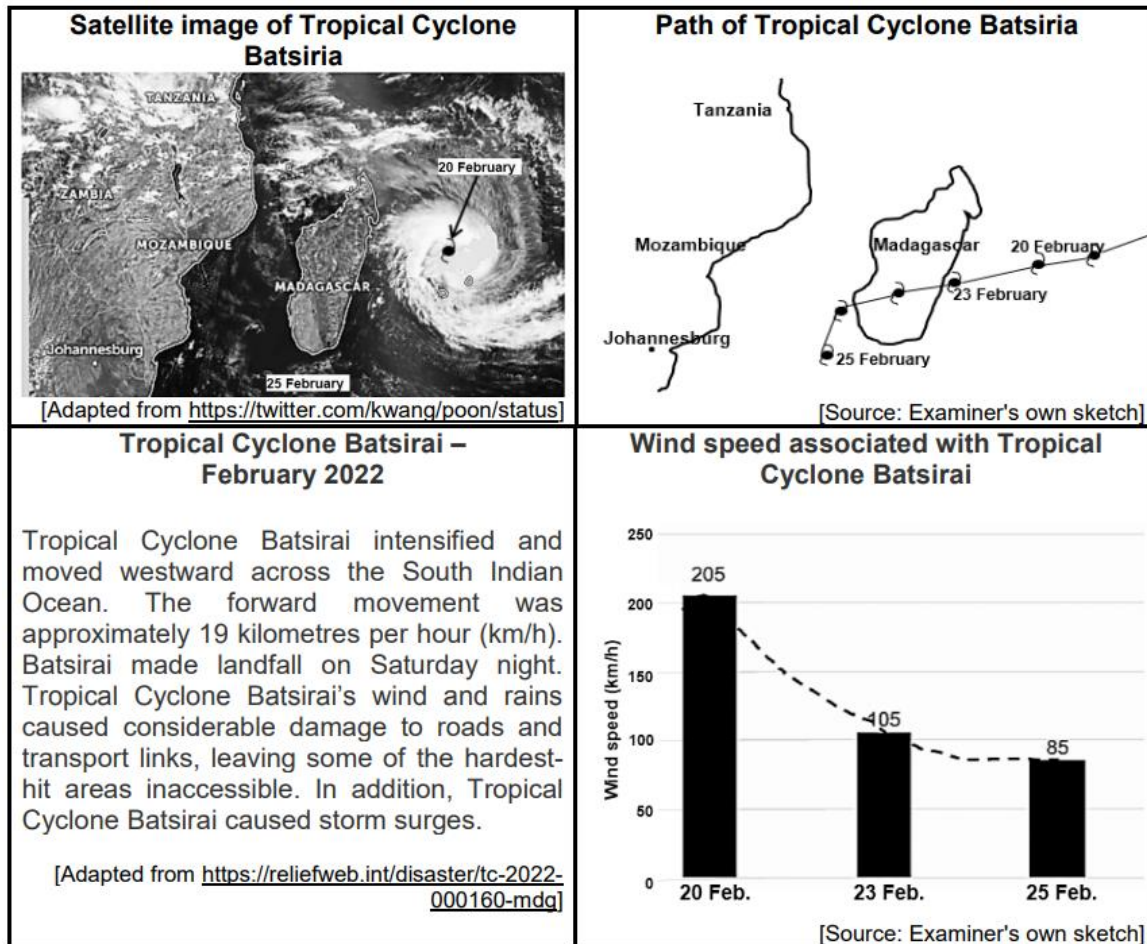
1.5.5 Explain why there is a difference in the cloud cover at A and B.

1.5.6 Why are the strongest winds found in the forward (leading) left-hand quadrant?

1.5.7 Draw a sketch of a tropical cyclone in its mature stage as represented on a synoptic weather map. Indicate the following on the sketch:

- (i) Air pressure reading at the centre of the tropical cyclone
- (ii) At least four isobars indicating the correct spacing
- (iii) Symbol to represent the tropical cyclone

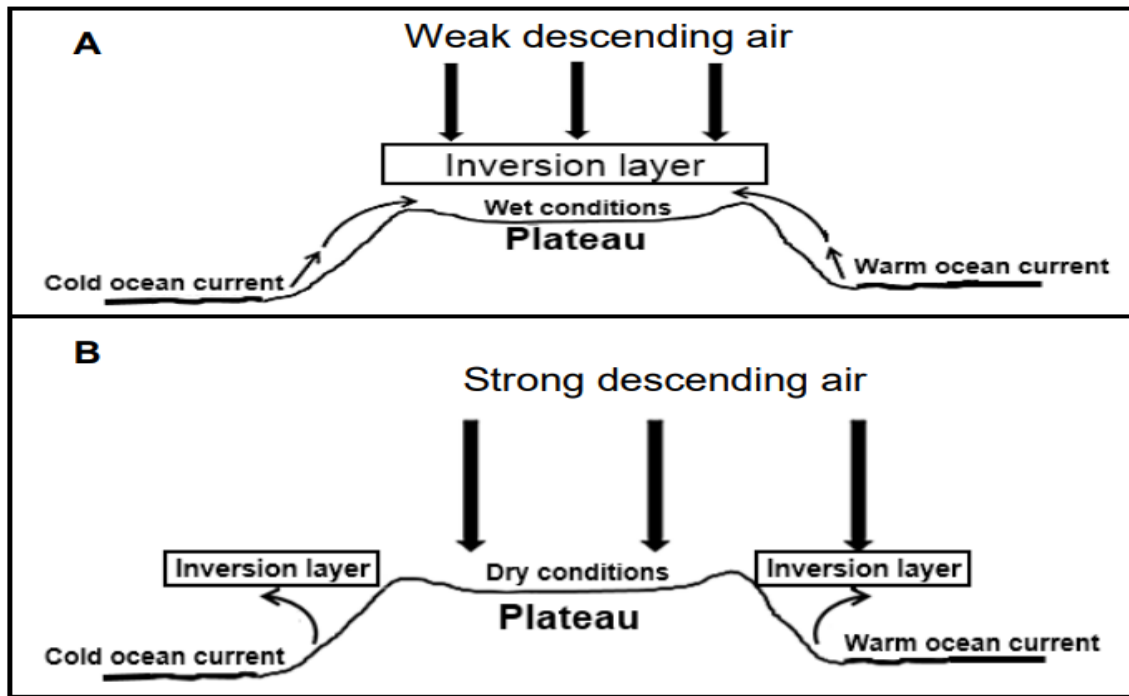
1.6 Refer to the infographic below on Tropical Cyclone Batsirai.



- 1.6.1 Give the date on which Tropical Cyclone Batsirai reached the mature stage. (1x1) (1)
- 1.6.2 According to the infographic, Tropical Cyclone Batsirai moved westward across the South Indian Ocean. Give ONE reason for this movement. (1x2) (2)
- 1.6.3 Suggest TWO reasons for the large decrease in wind speed between 20 and 25 February 2022. (2x2) (4)
- 1.6.4 How could storm surges negatively impact the physical environment on the east coast of Madagascar? (2x2) (4)
- 1.6.5 Explain the importance of monitoring tropical cyclones like Batsirai for Madagascar. (2x2) (4)

[15]

- 1.7 Refer to the sketches below showing the changes in the position of the inversion layer over South Africa.



[Source: Examiner's own sketch]

Refer to sketch A

- 1.7.1 Identify the season illustrated in sketch A. (1x1) (1)
- 1.7.2 Give a reason for your answer to QUESTION 1.7.1. (1x2) (2)

Refer to sketch B.

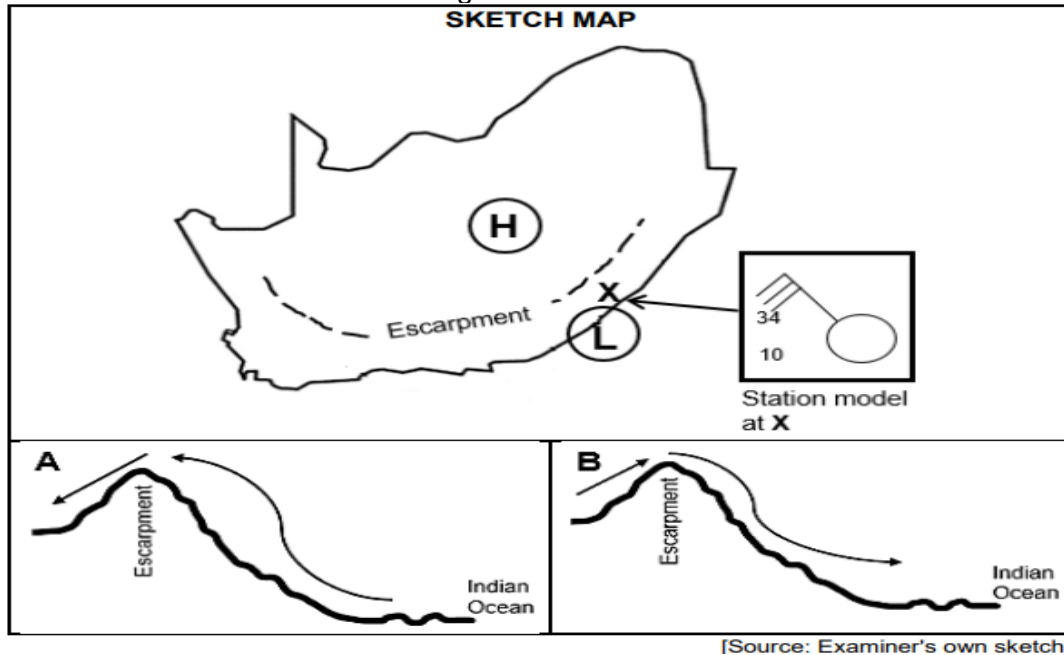
- 1.7.3 Identify TWO factors, visible in the sketch, which influence the climate of South Africa (2x1) (2)
- 1.7.4 Explain the role played by descending air in the development of the inversion layer. (2x1) (2)

Refer to sketches A and B.

- 1.7.5 In a paragraph of approximately EIGHT lines, describe how the position of the inversion layer in sketches A and B influences the amount of rainfall in the interior of South Africa. (4x2) (8)

[15]

1.8 Refer to the sketches below on berg winds.

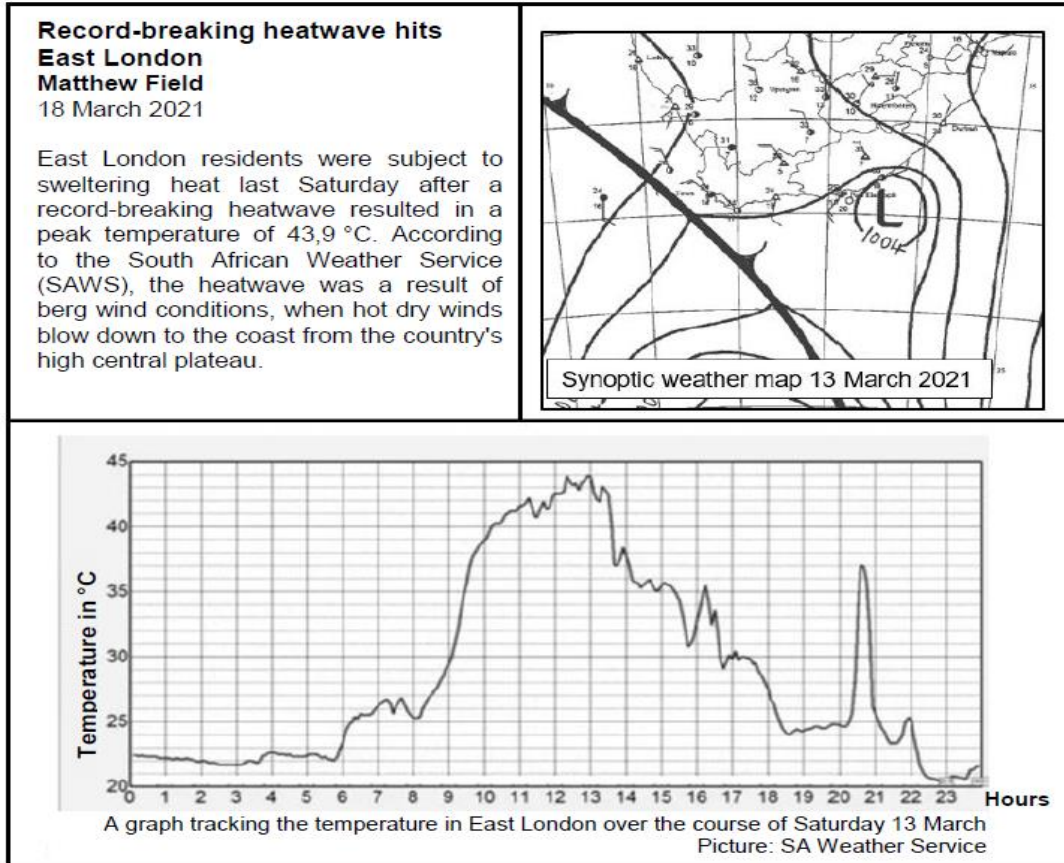


[Source: Examiner's own sketch]

- | | | | |
|-------|--|-------|-----|
| 1.8.1 | Name the high-pressure cell and low-pressure cell indicated on the sketch map that leads to the development of berg winds. | (1x1) | (1) |
| 1.8.2 | Which sketch (A or B) represents the formation of berg winds? | (1x1) | (1) |
| 1.8.3 | Give a reason for your answer to QUESTION 1.8.2. | (1x2) | (2) |
| 1.8.4 | Explain why cloudless conditions are indicated by the station model at X on the sketch map. | (1x2) | (2) |
| 1.8.5 | In a paragraph of approximately EIGHT lines, explain how berg winds impact negatively on the natural vegetation and suggest strategies that can be put in place to limit this negative impact. | (4x2) | (8) |

[15]

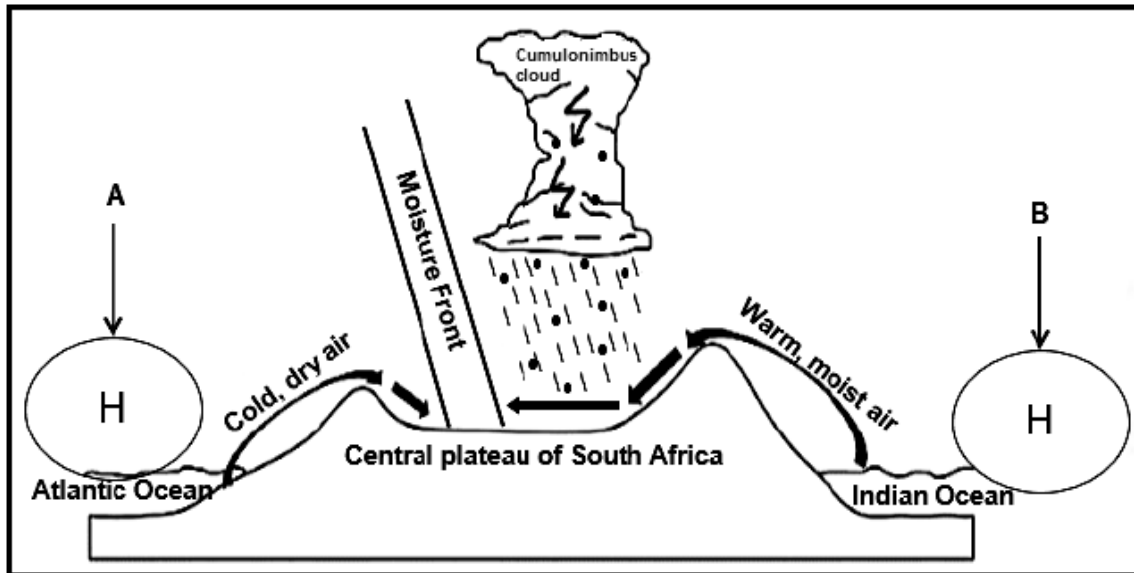
1.9 Refer to the infographic on the South African berg wind.



- 1.9.1 Name TWO pressure systems that are necessary for berg winds to develop. (2x1) (2)
- 1.9.2 Determine the highest temperature that was recorded on 13 March 2021. (1x1) (1)
- 1.9.3 What role did the escarpment play in increasing the temperature of the berg wind between 10:00 and 14:00? (2x2) (2)
- 1.9.4 In a paragraph of approximately EIGHT lines, explain the impact of berg wind conditions on the physical (natural) environment. (4x2) (8)

[15]

1.10 Refer to the sketch below on line thunderstorms.

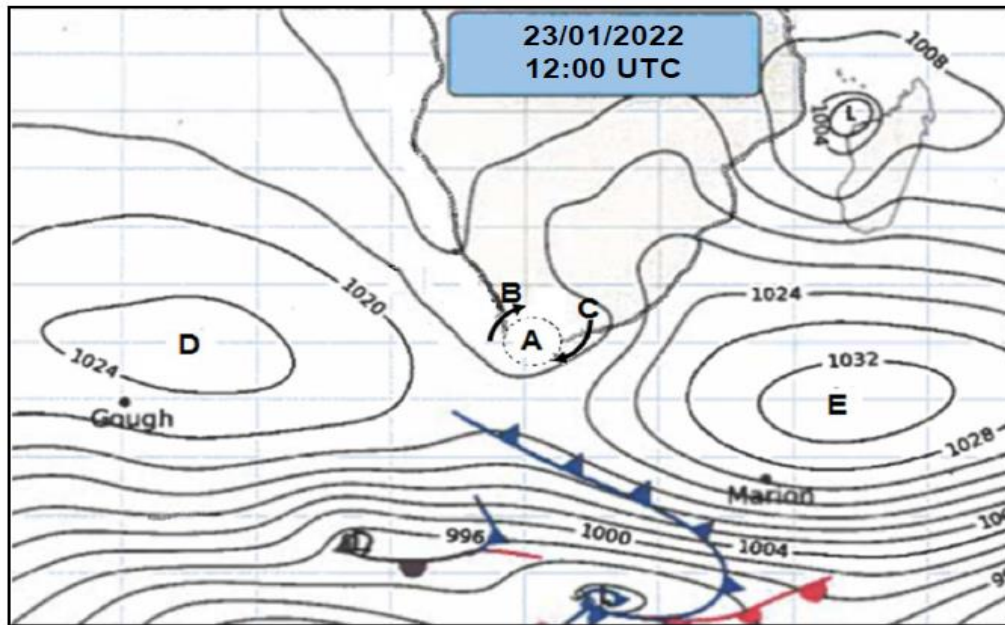


[Source: Examiner's own sketch]

- 1.10.1 Identify high-pressure cells A and B. (2x1) (2)
- 1.10.2 Which season is represented by the sketch? (1x1) (1)
- 1.10.3 Give ONE reason from the sketch for your answer to QUESTION 1.9.2. (1x2) (2)
- 1.10.4 What is a moisture front? (1x2) (2)
- 1.10.5 Name TWO forms of precipitation associated with a line thunderstorm. (2x1) (2)
- 1.10.6 Describe the processes involved in the formation of line thunderstorms. (3x2) (6)

[15]

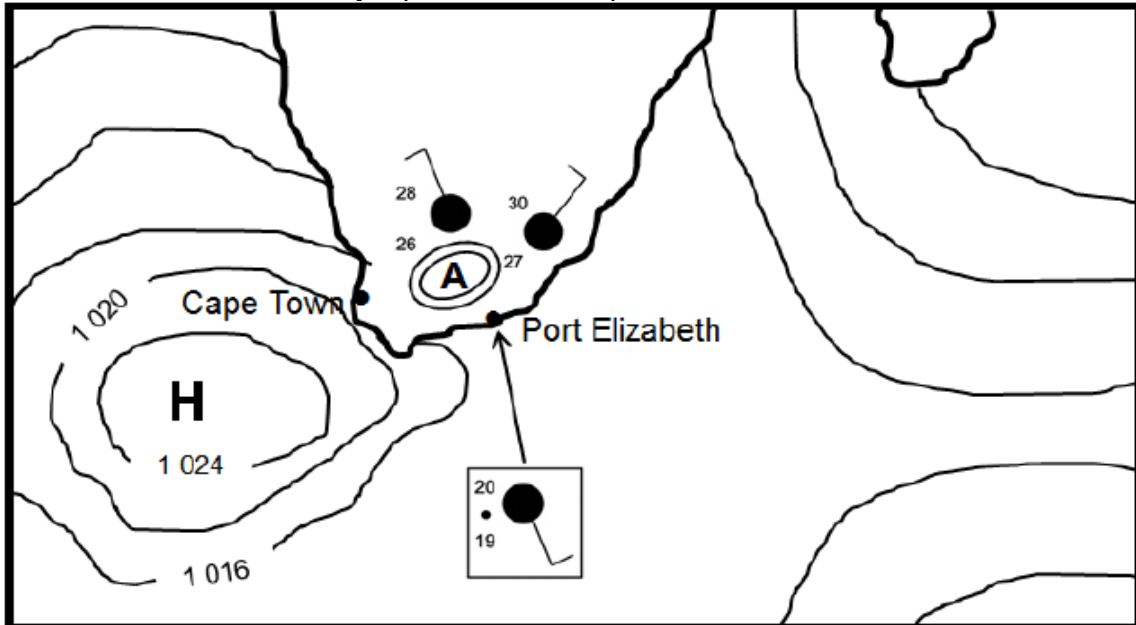
1.11 Refer to the South African synoptic weather map.



[Source: South African Weather Service]

- | | | | |
|--------|--|-------|------|
| 1.11.1 | Name low-pressure cell A. | (1x1) | (1) |
| 1.11.2 | Why is pressure cell A known as a travelling disturbance? | (1x2) | (2) |
| 1.11.3 | Why is there a greater possibility of precipitation at B than at C? | (2x2) | (4) |
| 1.11.4 | Give evidence that this synoptic weather map represents typical summer conditions. | (2x2) | (4) |
| 1.11.5 | a. Which anticyclone, D or E, has a greater subsidence (descending) of air? | (1x2) | (2) |
| | b. Use the pressure readings on the synoptic weather map to support your answer to QUESTION 1.11.5(a). | (1x2) | (2) |
| | | | [15] |

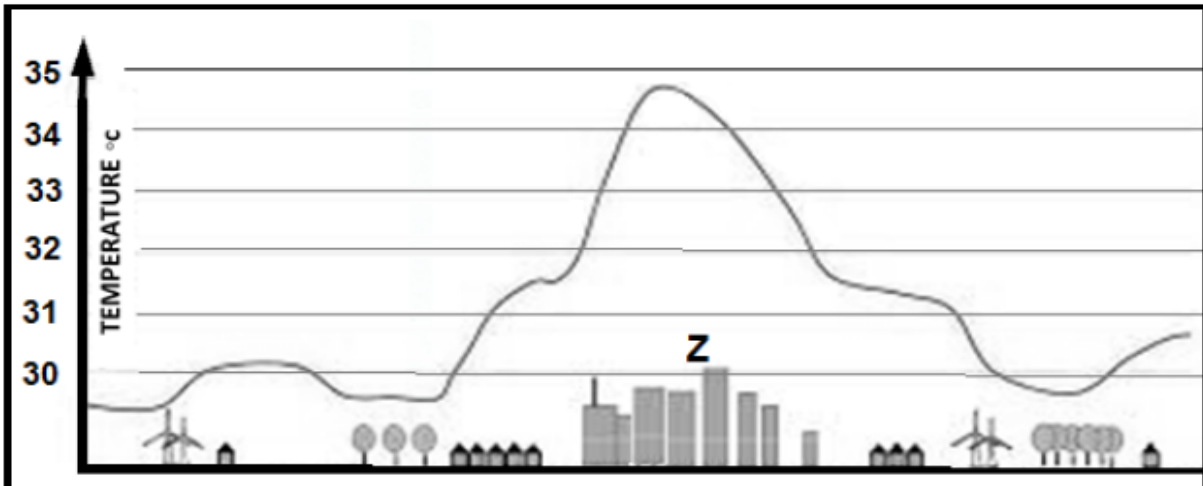
1.12 Refer to the South African synoptic weather map.



- 1.12.1 Identify low-pressure system A on the synoptic weather map. (1x1) (1)
- 1.12.2 Give a reason for the formation of this low-pressure system over the interior. (1x2) (2)
- 1.12.3 Give evidence from the synoptic weather map that the South Atlantic high is ridging. (1x2) (2)
- 1.12.4 Why does the ridging of the South Atlantic high result in onshore winds? (2x2) (4)
- 1.12.5 Describe the weather conditions at Port Elizabeth as a result of the onshore winds. (3x2) (6)

[15]

1.13 Refer to the graph showing the difference between rural and urban temperatures.

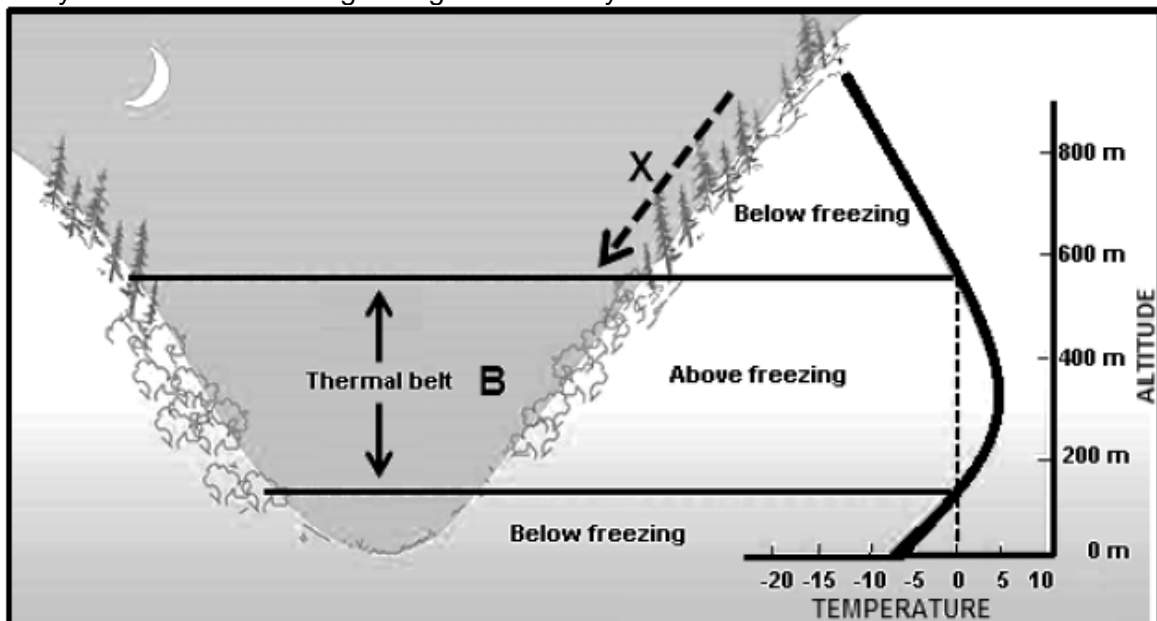


Source: <https://www.google.com/url?sa=i&url=https%3A%environment%2F2021-heat-island>

- 1.13.1 Define the concept urban heat island. (1x1) (1)
- 1.13.2 Give the highest temperature recorded. (1x2) (2)
- 1.13.3 Explain TWO ways in which the buildings at Z contribute to the high temperatures. (2x2) (4)
- 1.13.4 In a paragraph of approximately EIGHT lines, suggest sustainable building strategies to reduce the urban heat island effect. (4x2) (8)

[15]

1.14 Study FIGURE 1.4 showing a diagram on valley climates.



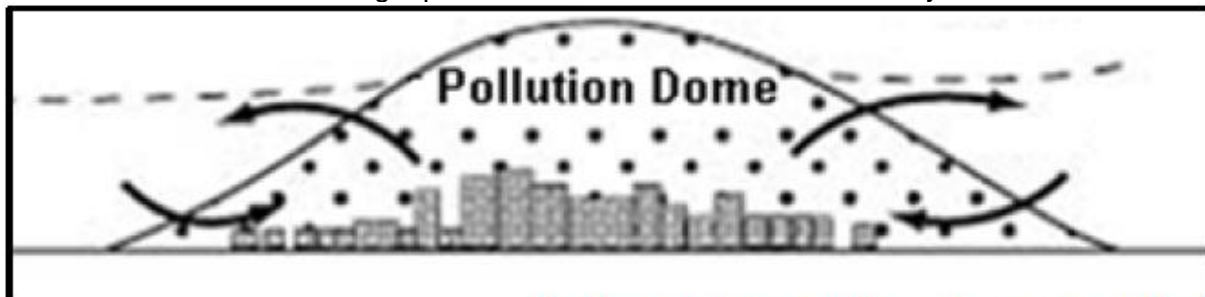
[Adapted from <http://apollo.lsc.vsc.edu/classes/met130/notes/chapter3/drainage3.html>]

- 1.14.1 Is the slope wind at X an anabatic or a katabatic wind? (1x1) (1)
- 1.14.2 Other than the label, what evidence indicates that B is the thermal belt? (1x1) (1)
- 1.14.3 What is the term used to describe an increase in the temperature as the height increases in the valley? (1x1) (1)
- 1.14.4 Explain why slope wind X will be more intense in winter. (2x2) (4)

1.14.5 Account for the low temperature that is likely to be experienced on the valley floor during winter. (2x2) (4)

1.14.6 How will farmers have to adapt their farming techniques (methods) due to the temperature change on the valley floor? (2x2) (4)
[15]

1.15 Refer to FIGURE 2.4 showing a pollution dome over a South African city.



[Source: <http://www.metlink.org/secondary/key-stage->]

1.15.1 What is a pollution dome? (1x1) (1)

1.15.2 Why is a pollution dome associated with an urban area? (1x2) (2)

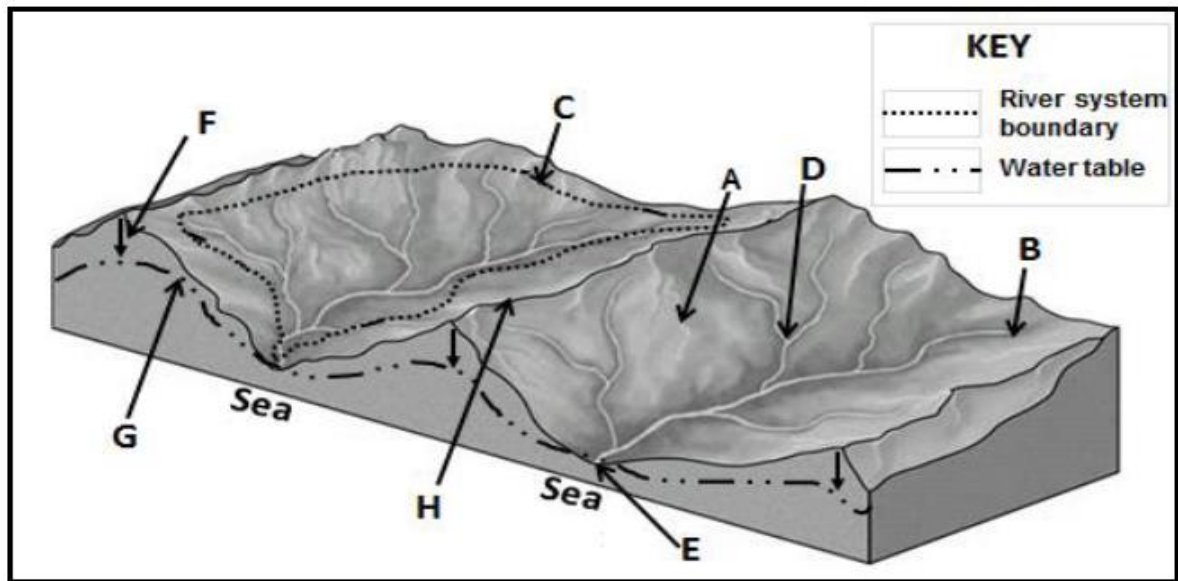
1.15.3 Explain why the pollution dome is more concentrated at night. (2x2) (4)

1.15.4 Write a paragraph of approximately EIGHT lines explaining how pollution domes increase the maintenance costs of the built environment for people living in the city. (4x2) (8)

[15]

GEOMOPHOOGY

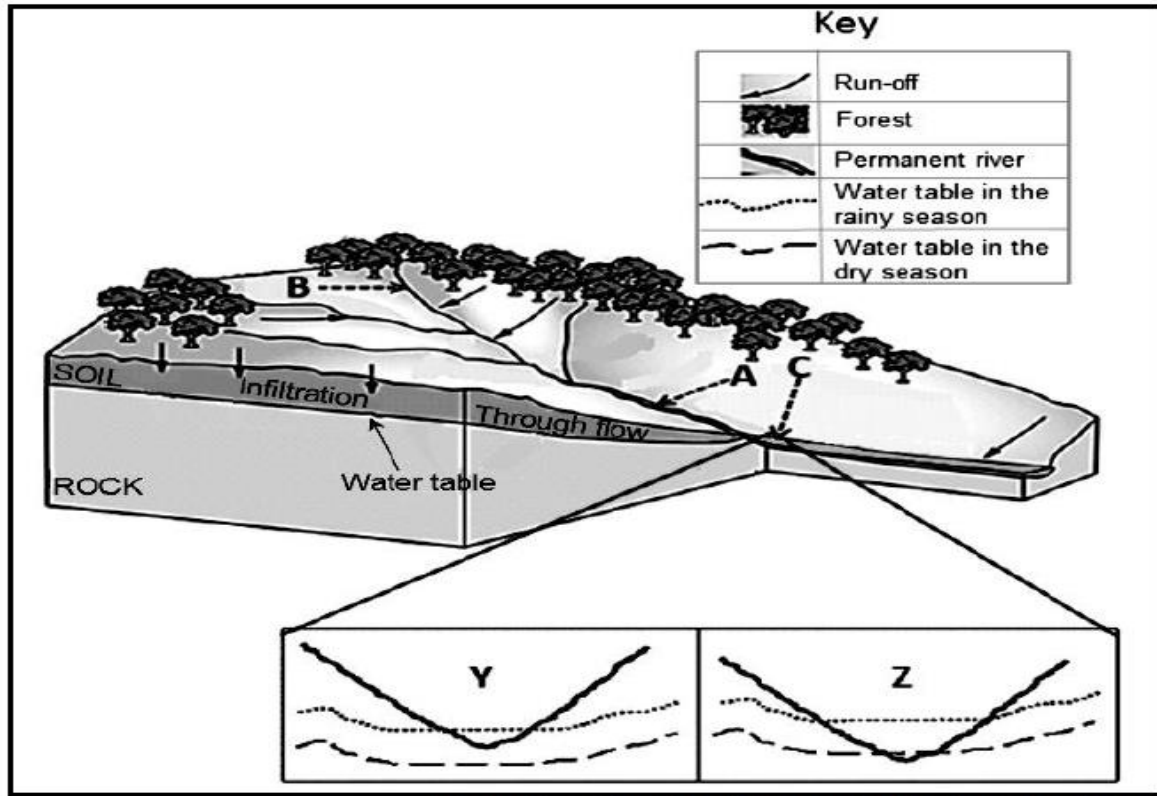
2.1 Match the concepts below with the letters in the diagram.



[Adapted from <https://worldrivers.net/2020/03/25/drainage-basins/>]

- | | | | |
|-------|-------------------------|-------|-----|
| 2.1.1 | Source of the river | (1x1) | (1) |
| 2.1.2 | The water table | (1x1) | (1) |
| 2.1.3 | An interfluve | (1x1) | (1) |
| 2.1.4 | A drainage basin | (1x1) | (1) |
| 2.1.5 | The river mouth | (1x1) | (1) |
| 2.1.6 | The watershed | (1x1) | (1) |
| 2.1.7 | A confluence | (1x1) | (1) |
| 2.1.8 | Process of infiltration | (1x1) | (1) |
| | | | [8] |

2.3 Refer to the drainage basin below.

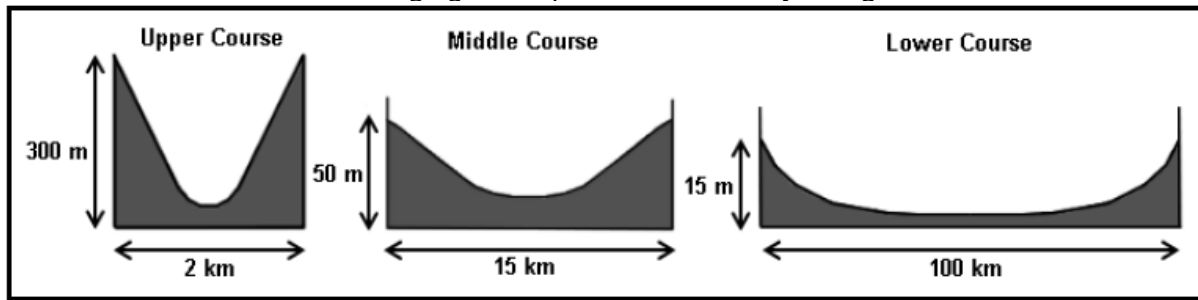


[Adapted from <https://www.buddinggeographers.com/rivers/>]

- 2.2.1 The river illustrated in the sketch is (permanent/periodic). (1x1) (1)
- 2.2.2 State TWO characteristics of the river system evident in the sketch. (2x1) (2)
- 2.2.3 Give evidence from the sketch that the surface run-off is greater at A than at B. (2x2) (4)
- 2.2.4 Refer to C.
- Which ONE of the cross-sections Y or Z represents the river at point C? (1x2) (2)
 - Give a reason for your answer to QUESTION 2.3.4(a). (1x2) (2)
- 2.2.5 How will a decrease in precipitation affect the following:
- Water table (1x2) (2)
 - Type of river (1x2) (2)

[15]

2.3 FIGURE below shows the changing cross-profile of the valley along the river's course.

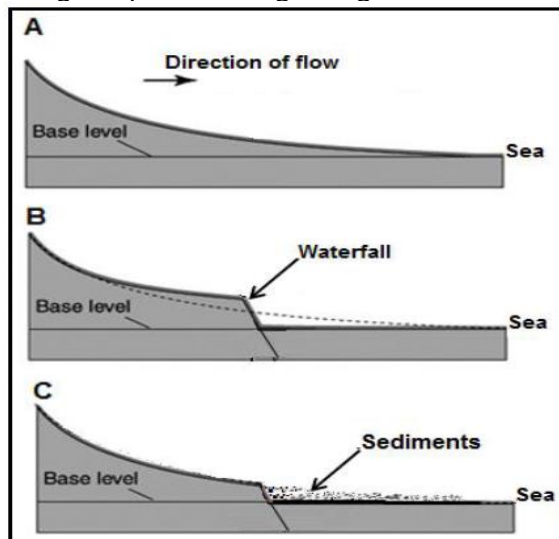


[Adapted from <http://www.geography.learnontheinternet.co.uk/topics/longprofile.html>]

- 2.3.1 In which course is the source of the river? (1x1) (1)
- 2.3.2 Name TWO elements of the cross-profile that changed from the upper to the lower course in sketch above (2x1) (2)
- 2.3.3 Differentiate between the fluvial processes that shaped the cross-profiles of the upper course and lower course of the river. (2x2) (4)
- 2.3.4 Describe the reasons for the change in the shape of the cross-profile of the middle course. (2x2) (4)
- 2.3.5 Explain why the shape of the cross-profile in the upper course of the river will make it the most suitable place to build a dam. (2x2) (4)

[15]

2.4 Refer to the sketches showing the profile and grading of a river.



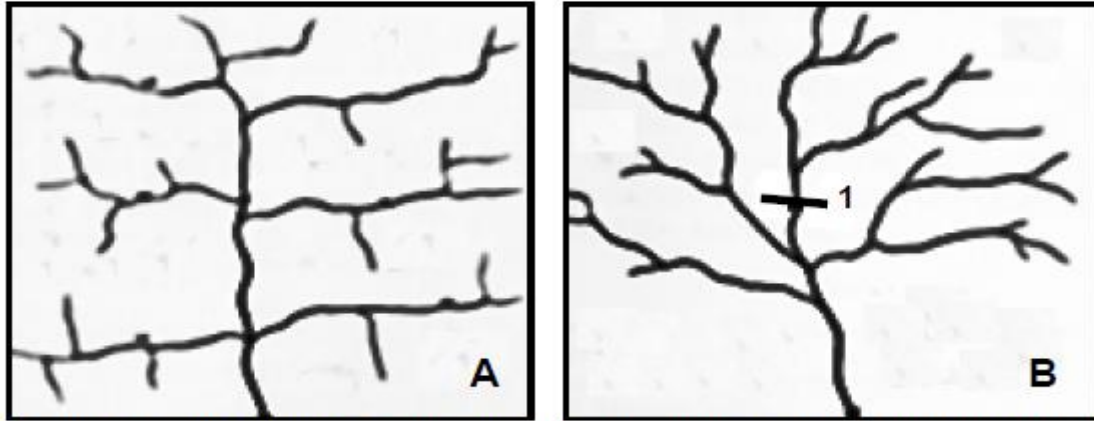
[Adapted from <file:///T:/Fluvial%20Landforms.pdf>]

Refer to sketch A.

- 2.4.1 Define the concept longitudinal profile. (1x2) (2)
- 2.4.2 State TWO characteristics of the longitudinal profile evident in sketch A. (2x1) (2)
- 2.4.3 Does sketch A represent a graded or an ungraded river? (1x1) (1)
- 2.4.4 Give a reason for your answer to QUESTION 2.4.3. (1x2) (2)
- Refer to sketches B and C.
- 2.4.5 Identify a temporary and a permanent base level of erosion in sketch B. (2x1) (2)
- 2.4.6 Describe the processes that the river in sketches B and C would undergo to reach a graded state. (3x2) (6)

[15]

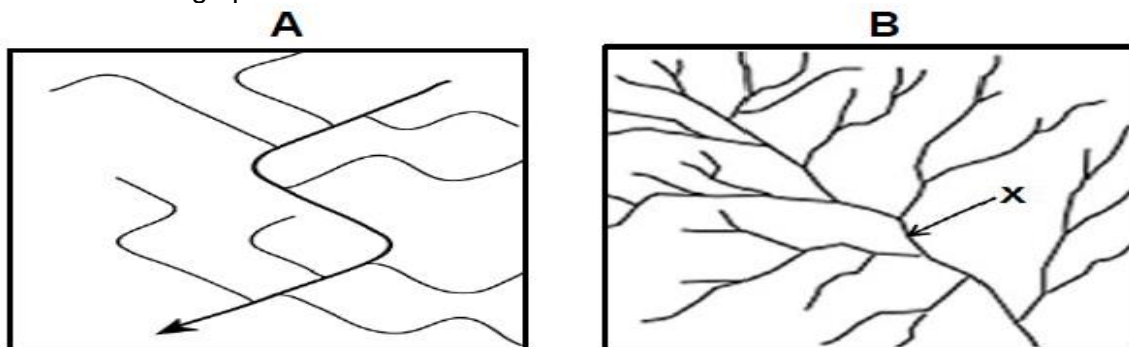
2.5 Refer to the diagrams showing drainage patterns.



ed from <https://www.google.com/search?q=trellis+and+dendritic+drainage+patterns>

- 2.5.1 Identify drainage patterns A and B. (2x1) (2)
- 2.5.2 Differentiate between the underlying rock structure of drainage patterns A and B respectively. (2x2) (4)
- 2.5.3 Why are the tributaries of the main stream parallel to each other in drainage pattern A? (1x2) (2)
- 2.5.4 Determine the stream order at point 1 in drainage pattern B. (1x2) (2)
- 2.5.5 Choose the CORRECT word between brackets to make the statement TRUE.
The higher the stream order, the (higher/lower) the drainage density. (1x2) (2)
- 2.5.6 Refer to drainage pattern B and describe the relationship between;
- a. Drainage density and low rainfall (1x2) (2)
- b. Drainage density and steep gradient (1x2) (2)
- [16]

2.6 Refer to the drainage patterns illustrated in sketches A and B below.



[Adapted from <https://www.google.com/search?q=drainage+pattern&tbm>]

- 2.6.1 Identify drainage patterns in sketches A and B. (2x1) (2)
- 2.6.2 State the underlying rock structure and rock type on which the drainage pattern in A developed. (1+2) (2)
- 2.6.3 Explain how the underlying rock structure influenced the drainage pattern in A. (1x2) (2)
- 2.6.4 The drainage density in B is (high/low). (1x1) (1)
- 2.6.5 Determine the stream order at X. (1x2) (2)

2.6.6 Explain the relationship between stream order and drainage density in B. (1x1) (1)

2.6.7 Explain how the slope (gradient) and permeability of underlying rock influence the drainage density in B. (2x2) (4)
[15]

2.7 Refer to the photograph of a valley below to answer QUESTIONS 2.6.1 and 2.6.2.

VALLEY



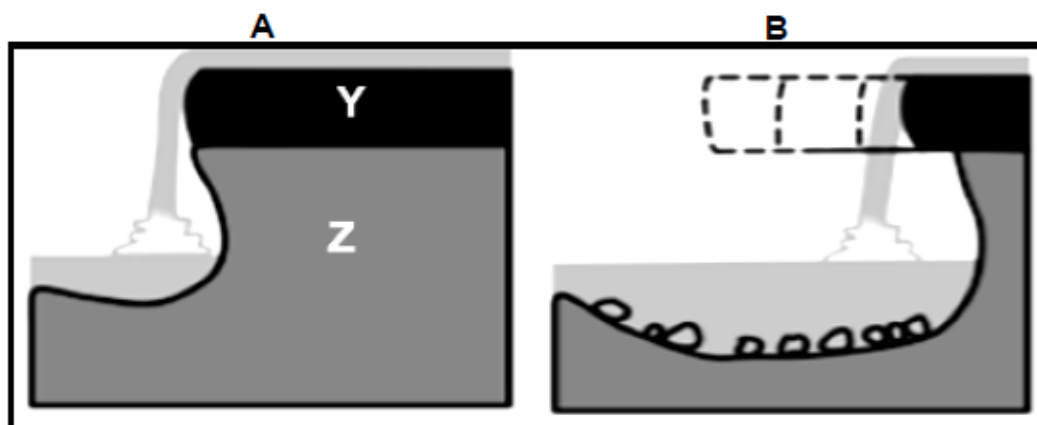
[Source: <https://www.gettyimages.ac/valleys>]

2.7.1 The valley in the photograph is generally found in the (upper/middle) course. (1x1) (1)

2.7.2 Identify TWO characteristics visible in the photograph to support your answer to QUESTION 2.7.1. (1x2) (2)

Refer to sketches A and B below of a waterfall to answer QUESTIONS 2.7.3 to 2.7.5.

WATERFALL



[Adapted from www.internetgeography.net]

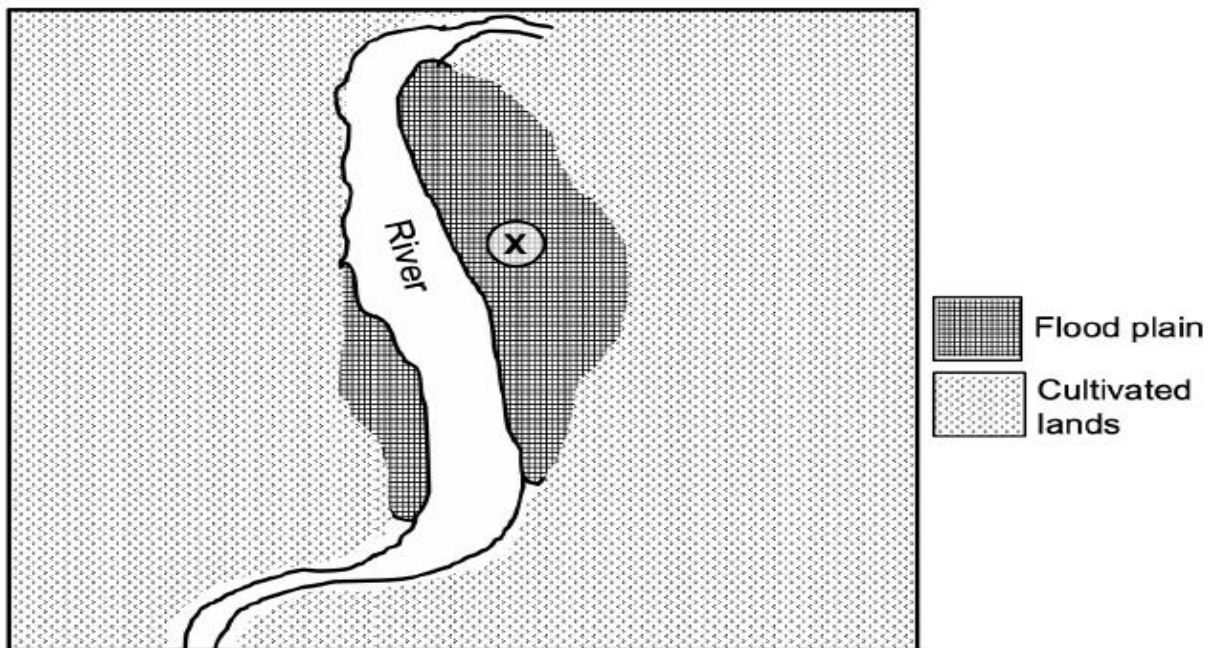
2.7.3 What is a waterfall? (1x2) (2)

2.7.4 Match Y and Z in sketch A with the concepts resistant (hard) rock and less resistant (soft) rock. (2x1) (2)

2.7.5 How does erosion in sketch B cause the waterfall to retreat (move) upstream? (3x2) (6)

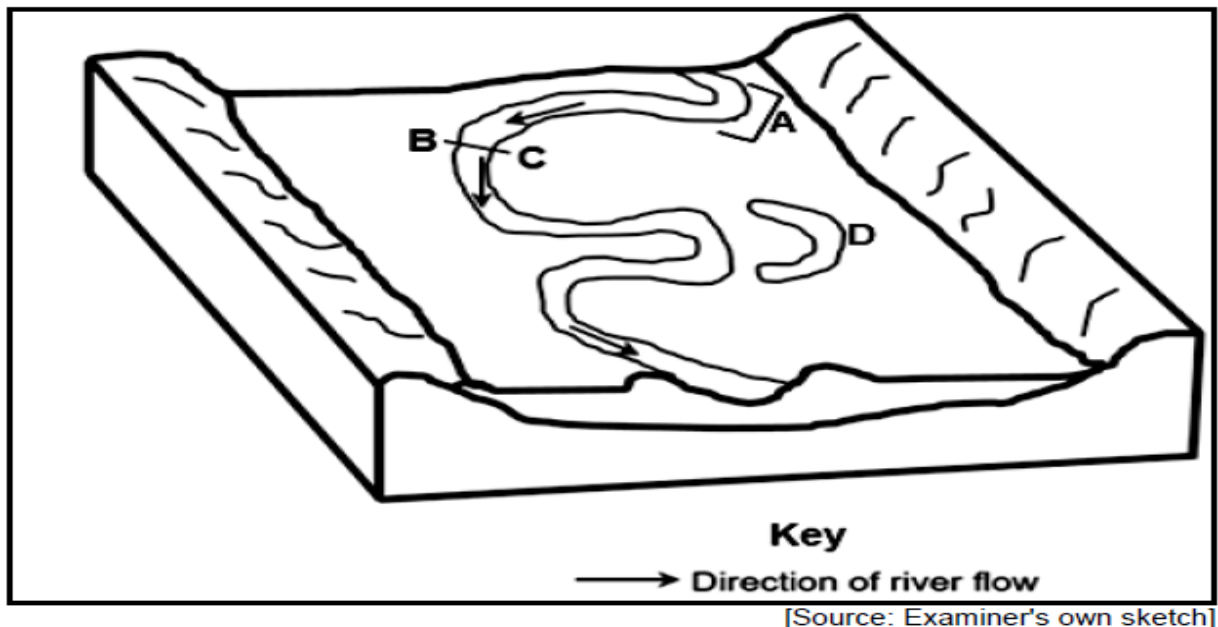
[15]

2.8 Refer to the diagram of a flood plain.



- 2.8.1 State the geomorphological process that gave rise to the formation of the flood plain. (1x1) (1)
- 2.8.2 Describe the gradient at X. (1x2) (2)
- 2.8.3 Suggest TWO reasons for the wide flood plain at X. (1x2) (2)
- 2.8.4 In a paragraph of approximately EIGHT lines, explain the physical (natural) impact of flooding on the flood plain. (4x2) (8)

2.9 Refer to the sketch on fluvial landforms below.



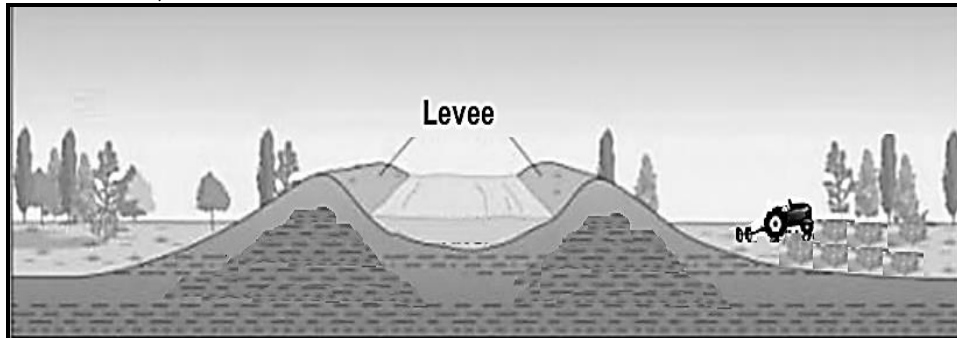
- 2.9.1 The fluvial landforms, illustrated in the sketch, are mainly found in the (middle/lower) course. (1x1) (1)
- 2.9.2 Identify fluvial landform A on the sketch. (1x2) (2)

- 2.9.3 a. Draw a rough cross-section from B to C. (2x1) (2)
- b. Will erosion take place at B or C? (1x1) (1)
- c. Give a reason for your answer to QUESTION 2.9.3(b). (1x2) (2)

- 2.9.4 In a paragraph of approximately EIGHT lines, describe the processes that resulted in the change of fluvial landform A to an ox-bow lake at D. (4x2) (8)

[15]

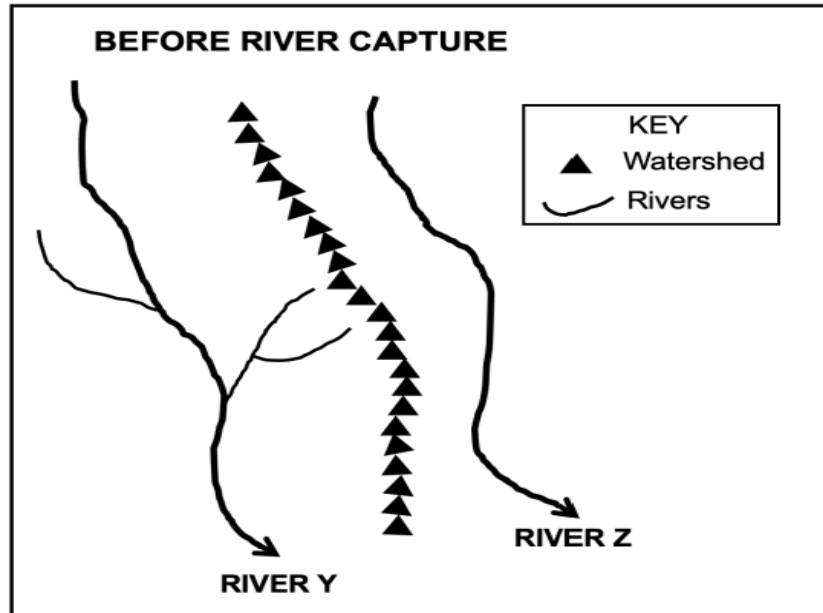
2.10 Refer to FIGURE 2.10, which illustrates Natural Levee



- 2.10.1 Define the term natural levee (1x2) (1)
- 2.10.2 Will coarse sediment or fine sediment be deposited first when flooding occurs? (1x2) (2)
- 2.10.3 Account for the different layers of silt found on the floodplain (1x2) (2)
- 2.10.4 Why is the deposition of silt positive for the farming community? (1x2) (2)
- 2.10.5 Although natural levees often prevent flooding, floods still occur in the event of great discharge. Discuss the negative influence of flooding on the farming community (3x2) (6)

[15]

2.11 Refer to the sketch map of rivers Y and Z before river capture has taken place.



[Source: Examiner's own sketch]

2.11.1 Define the concept river capture. (1x2) (1)

2.11.2 State ONE condition needed for river capture to take place.

2.11.3 Draw a sketch to illustrate the area after river capture has taken place. (1x2) (2)

Marks will be awarded for the accuracy of the sketch and indicating the following labels:

- Elbow of capture
- Misfit stream
- Wind gap

(1+3) (4)

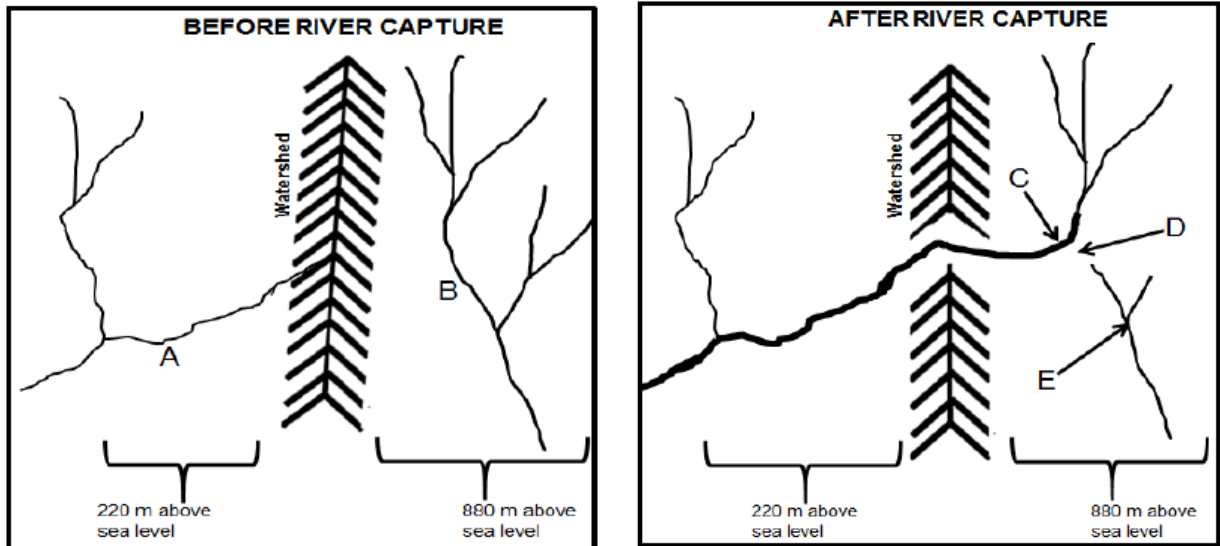
2.11.4 Will river Y or Z experience rejuvenation after river capture? (1x1) (1)

2.11.5 Give a reason for your answer to QUESTION 2.11.3. (1x2) (2)

2.11.6 Refer to your answer to QUESTION 2.5.5 and explain the impact of the change on the captor stream.

[15]

2.12 Refer to the sketches below on river capture (stream piracy).

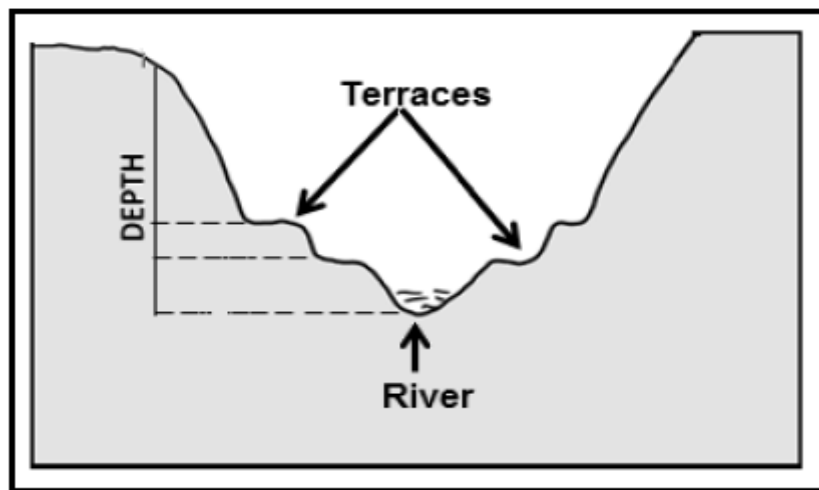


[Source: Examiner's own sketches]

- 2.12.1 Which river (A or B) has more erosive power? (1x1) (1)
- 2.12.2 Give ONE reason evident in the sketches to support your answer to QUESTION 2.12.1. (1x2) (2)
- 2.12.3 Identify features C and D. (2x1) (2)
- 2.12.4 Give ONE characteristic of feature D. (1x2) (2)
- 2.12.5 In a paragraph of approximately EIGHT lines, describe the changes that river E will experience after river capture has taken place. (4x2) (8)

[15]

2.13 Refer to the sketch on river rejuvenation.



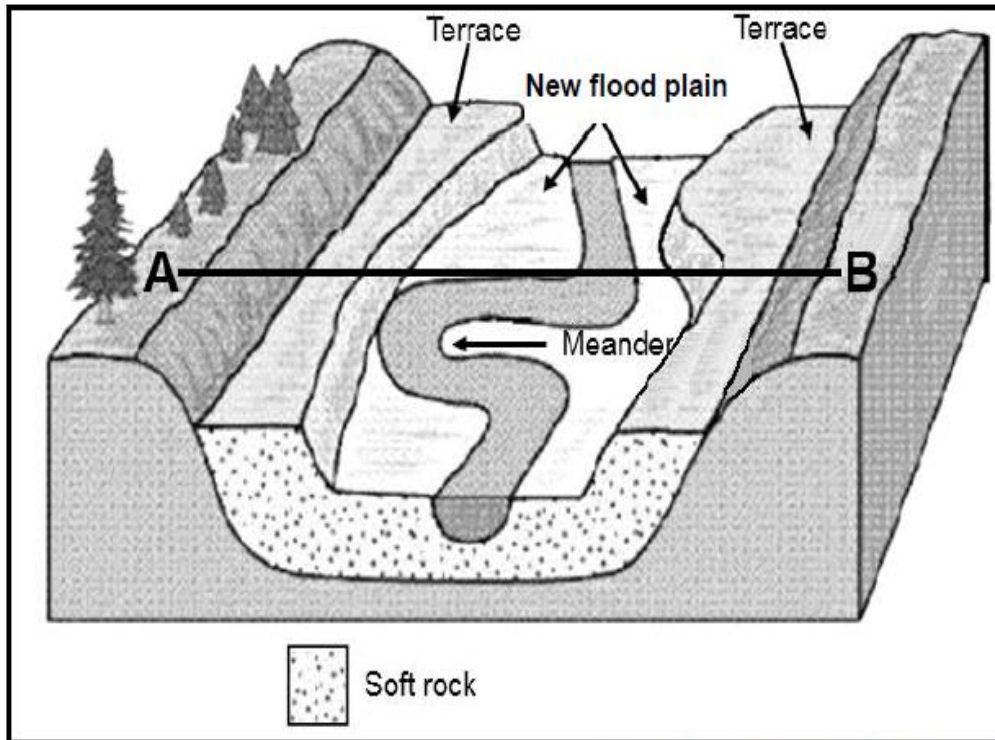
[Source: Examiner's own sketch]

- 2.13.1 Define the concept river rejuvenation. (1x2) (1)
- 2.13.2 State ONE factor that causes river rejuvenation. (1x1) (1)
- 2.13.3 Describe the relationship between vertical erosion and the depth of the valley. (1x2) (2)
- 2.13.4 Identify TWO features of river rejuvenation evident in the sketch. (2x1) (2)

2.13.5 Explain how river rejuvenation is responsible for the formation of the features identified in QUESTION 2.13.4. (2x2) (4)

2.13.6 What negative impact will a rejuvenated river have on the physical environment? (2x2) (4)
[15]

2.14 Refer to the sketch below on river rejuvenation.



[Adapted from www.studyblue.com]

2.15.1 What is river rejuvenation? (1x1) (1)

2.15.2 State TWO possible causes of river rejuvenation. (1x2) (2)

2.15.3 Draw a labelled free-hand cross-section from A to B of the illustrated river rejuvenation (1x2) (2)

Marks will be allocated for:

a. Shape of the rejuvenated valley (1x1) (1)

b. Indication of the new flood plain (1x1) (1)

c. Indication of terraces (1x1) (1)

2.15.4 How did the river terraces (illustrated in the sketch) form? (2x2) (4)

2.15.5 Explain how the illustrated landscape will negatively impact on infrastructure development. (2x2) (4)

[16]

