



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**GEOGRAPHY P1**

**NOVEMBER 2014**

**MARKS: 225**

**TIME: 3 hours**

**This question paper consists of 12 pages and an 11-page annexure.**

**INSTRUCTIONS AND INFORMATION**

1. The question paper consists of four questions.
2. Answer ANY THREE questions of 75 marks each.
3. All diagrams are included in the ANNEXURE.
4. Leave a line between subsections of questions answered.
5. Start EACH question at the top of a NEW page.
6. Number the answers correctly according to the numbering system used in this question paper. Number the answers in the centre of the line.
7. ENCIRCLE the questions that you have answered on the front cover of the ANSWER BOOK.
8. Do NOT write in the margins of the ANSWER BOOK.
9. Illustrate your answers with labelled diagrams, where possible.
10. Write neatly and legibly.

**SECTION A: CLIMATE, WEATHER AND GEOMORPHOLOGY**

Answer at least ONE question from this section. If you answer ONE question from SECTION A you must answer TWO questions from SECTION B.

**QUESTION 1**

- 1.1 Study FIGURE 1.1 based on a cross-section of a tropical cyclone and answer the questions that follow.
- 1.1.1 Name cloud type **A**.
  - 1.1.2 What is the name given to area **B** in the tropical cyclone?
  - 1.1.3 Is the air pressure high or low in area **B**?
  - 1.1.4 In which general direction do tropical cyclones travel in the Southern Hemisphere?
  - 1.1.5 State the precipitation associated with cloud **A**.
  - 1.1.6 Name the air movement in area **B**.
  - 1.1.7 Is the air converging or diverging in area **C**?
  - 1.1.8 What is the name given to the stage of development when a tropical cyclone moves inland? (8 x 1) (8)
- 1.2 Refer to the drainage basin in FIGURE 1.2 and answer the questions that follow.
- 1.2.1 Name the drainage pattern shown in the diagram.
  - 1.2.2 At which angle do the tributaries join the main stream?
  - 1.2.3 State whether this drainage pattern is associated with a surface that has a uniform or varied resistance to erosion.
  - 1.2.4 Is the dominant process at **A** on the sketch erosion or deposition?
  - 1.2.5 State the stream order at point **A**.
  - 1.2.6 Is area **B** an interfluve or a watershed?
  - 1.2.7 Is the discharge of the river greater at **A** or at **C**? (7 x 1) (7)

- 1.3 Study the sketch in FIGURE 1.3 showing a temperature inversion in a valley and answer the questions that follow.
- 1.3.1 Define the term *temperature inversion* indicated by **B** and **C**.  
(1 x 1) (1)
- 1.3.2 Name the wind at **A**.  
(1 x 1) (1)
- 1.3.3 Explain why the wind in QUESTION 1.3.2 commonly occurs at night in valleys.  
(1 x 2) (2)
- 1.3.4 Explain why radiation fog is likely to develop in the valley at night time.  
(2 x 2) (4)
- 1.3.5 In a paragraph of approximately EIGHT lines, evaluate the likely impact of the wind at **A** on farming and settlements on the valley floor.  
(4 x 2) (8)
- 1.4 FIGURE 1.4 shows berg wind conditions.
- 1.4.1 Name high pressure cell **A**.  
(1 x 1) (1)
- 1.4.2 In which season do berg winds generally occur?  
(1 x 1) (1)
- 1.4.3 With reference to the diagram, state TWO conditions under which berg winds originate.  
(2 x 2) (4)
- 1.4.4 Give ONE reason for the change in the temperature of berg winds as they blow from the interior (**A**) to the coast (**B**).  
(1 x 2) (2)
- 1.4.5 Refer to the weather station at **C** and give ONE reason for the clear skies.  
(1 x 2) (2)
- 1.4.6 Why are berg winds associated with veld fires in winter?  
(2 x 2) (4)
- 1.5 FIGURE 1.5 shows a longitudinal river profile.
- 1.5.1 Explain the term *longitudinal profile*.  
(1 x 1) (1)
- 1.5.2 Name a temporary base level of erosion evident on the sketch.  
(1 x 1) (1)
- 1.5.3 Draw a labelled free-hand sketch of a graded longitudinal profile.  
(1 x 3) (3)
- 1.5.4 State ONE characteristic of the river bed of a graded river. (1 x 2) (2)
- 1.5.5 In a paragraph of approximately EIGHT lines, explain the processes that the profile in FIGURE 1.5 must undergo to change from an ungraded to a graded profile.  
(4 x 2) (8)

- 1.6 Refer to FIGURE 1.6 showing a levee.
- |       |   |         |     |
|-------|---|---------|-----|
| 1.6.1 | Identify the fluvial landform on which crops are grown.                                       | (1 x 1) | (1) |
| 1.6.2 | Why is the landform in QUESTION 1.6.1 more likely to flood in the lower course?               | (2 x 2) | (4) |
| 1.6.3 | Identify the natural feature <b>A</b> that protects crops from flooding.                      | (1 x 2) | (2) |
| 1.6.4 | Briefly describe the formation of the natural feature in QUESTION 1.6.3.                      | (2 x 2) | (4) |
| 1.6.5 | Discuss the negative impacts on the farmer, should the river break through feature <b>A</b> . | (2 x 2) | (4) |
- [75]**

## QUESTION 2

- 2.1 Refer to FIGURE 2.1 showing two coastal lows, **A** and **B**. Choose ONE term in brackets to make each of the following statements TRUE:
- |       |  |         |     |
|-------|--|---------|-----|
| 2.1.1 | Air circulation in pressure cells <b>A</b> and <b>B</b> is (clockwise/anticlockwise).            |         |     |
| 2.1.2 | Air (converges/diverges) at pressure cells <b>A</b> and <b>B</b> .                               |         |     |
| 2.1.3 | Pressure cell <b>A</b> will have a (lower/higher) moisture content than pressure cell <b>B</b> . |         |     |
| 2.1.4 | Pressure cell <b>A</b> is associated with (fog/drizzle).   |         |     |
| 2.1.5 | The air pressure at <b>B</b> will be (lower/higher) than at <b>A</b> .                           |         |     |
| 2.1.6 | Place <b>M</b> will soon be affected by weather system ( <b>A/B</b> ).                           |         |     |
| 2.1.7 | Place ( <b>K/Q</b> ) will experience berg winds.   | (7 x 1) | (7) |
- 2.2 Refer to FIGURE 2.2 showing river flow patterns. Indicate whether each of the following statements refer to turbulent or laminar flow in a river. You may use the same answer for more than one question.
- |       |  |
|-------|--|
| 2.2.1 | Associated with a river bed that is level and even |
| 2.2.2 | Associated with an irregular and swirling flow     |
| 2.2.3 | Effective in eroding and transporting sediment     |
| 2.2.4 | Commonly occurs in the upper course of a river     |
| 2.2.5 | Water flows in thin layers                         |

- 2.2.6 Associated with a higher river velocity
- 2.2.7 Occurs where rapids are visible in the river's course
- 2.2.8 Has a larger stream load-carrying capacity (8 x 1) (8)
- 2.3 Study the synoptic weather map in FIGURE 2.3 and answer the questions that follow.
- 2.3.1 Give the term used to describe the linked mid-latitude cyclones on the synoptic weather map. (1 x 1) (1)
- 2.3.2 Refer to mid-latitude cyclone **A**.
- (a) Draw a labelled cross-section of front **E**. (4 x 1) (4)
- (b) Describe ONE weather change associated with the passing of front **E**. (1 x 2) (2)
- 2.3.3 Refer to the weather station at Windhoek (**B**). In a paragraph of approximately EIGHT lines, describe and give reasons for any TWO weather conditions recorded at the weather station. (4 x 2) (8)
- 2.4 Study FIGURE 2.4 which shows a heat island over a South African city.
- 2.4.1 What is the name given to the lines that show the temperature readings over the city? (1 x 1) (1)
- 2.4.2 What is the temperature difference between the CBD and the rural area? (1 x 2) (2)
- 2.4.3 How do high-rise buildings contribute to the CBD having a higher temperature? (1 x 2) (2)
- 2.4.4 Suggest TWO possible reasons why the temperature lines mentioned in QUESTION 2.4.1 are not circular. (2 x 2) (4)
- 2.4.5 Each statement below describes a typical urban microclimate. Give a reason why each of these conditions are experienced in an urban area.
- (a) Relative humidity is lower above the city than above the surrounding rural area. (1 x 2) (2)
- (b) The city has more days on which precipitation occurs than the surrounding rural area. (1 x 2) (2)
- (c) Wind speed in the CBD is stronger than in the surrounding countryside. (1 x 2) (2)

- 2.5 Refer to FIGURE 2.5 and read the research article on improving water productivity.
- 2.5.1 Give the meaning of the term *water resource management*. (1 x 1) (1)
- 2.5.2 Name ONE settlement in the article that has a negative impact on the Upper Modder River. (1 x 1) (1)
- 2.5.3 State TWO ways in which humans are interfering with water productivity from the Upper Modder River. (2 x 1) (2)
- 2.5.4 Name TWO factors that cause the high water run-off. (2 x 2) (4)
- 2.5.5 In a paragraph of approximately EIGHT lines, explain how human interference along a river impacts on those that live further downstream. (4 x 2) (8)
- 2.6 FIGURE 2.6 illustrates the concept of river rejuvenation.
- 2.6.1 Define the term *river rejuvenation*. (1 x 1) (1)
- 2.6.2 Identify the feature of river rejuvenation evident in the illustration. (1 x 1) (1)
- 2.6.3 State TWO conditions under which river rejuvenation is likely to take place. (2 x 2) (4)
- 2.6.4 Explain how the feature in QUESTION 2.6.2 is formed. (2 x 2) (4)
- 2.6.5 Explain why the landscape in FIGURE 2.6 is not suitable for infrastructure development. (2 x 2) (4)
- [75]**

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

Answer at least ONE question from this section. If you answer ONE question from SECTION B, you must answer TWO questions from SECTION A.

**QUESTION 3**

3.1 Refer to FIGURE 3.1 which shows two types of settlements (**A** and **B**). Match the settlement types **A** and **B** to the statements below.

- 3.1.1 This type of settlement is unifunctional
- 3.1.2 Associated with tertiary activities
- 3.1.3 The smallest of all the settlement types
- 3.1.4 These settlements are always nucleated
- 3.1.5 This settlement has a dispersed pattern
- 3.1.6 An overconcentration of activities
- 3.1.7 A metropolis is an example of this type of settlement
- 3.1.8 An example of a central place (8 x 1) (8)

3.2 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (3.2.1–3.2.7).

3.2.1 In which ONE of the following economic sectors are raw materials extracted from nature?

- A Primary
- B Secondary
- C Quaternary
- D Tertiary

3.2.2 A term that describes the movement of industries out of core areas:

- A Nationalisation
- B Agglomeration
- C Decentralisation
- D Centralisation



3.2.3 Which ONE of the following core industrial areas is located inland?

- A South Western Cape
- B PWV
- C Port Elizabeth-Uitenhage
- D Durban-Pinetown

3.2.4 Factors that favour mining in South Africa:

- A Geology, labour and investments
- B Climate, distance and foreign dependency
- C Soils, land ownership and trade
- D Climate, soils and trade

3.2.5 Tertiary economic activities are also known as ... industries.

- A extractive
- B service
- C processing
- D technological

3.2.6 Research can be classified as a ... economic activity.

- A primary
- B secondary
- C tertiary
- D quaternary

3.2.7 A ... is an example of a footloose industry.

- A sawmill
- B motor assembly plant
- C steel industry
- D dairy

(7 x 1) (7)

3.3 FIGURE 3.3 shows a feature that has resulted from rapid urbanisation in South African cities.

3.3.1 Identify the feature shown in FIGURE 3.3.

(1 x 1) (1)

3.3.2 Name TWO building materials used to construct the shelters/houses in FIGURE 3.3.

(2 x 1) (2)

3.3.3 Give TWO reasons why the building materials in QUESTION 3.3.2 were used.

(2 x 2) (4)

3.3.4 Write a paragraph of approximately EIGHT lines to advise the local authorities on how to improve living conditions in these settlements.

(4 x 2) (8)

- 3.4 Read the newspaper article in FIGURE 3.4 on the challenges that South African city planners face.
- 3.4.1 Which sector of the population has been most affected by the lack of planning? (1 x 1) (1)
- 3.4.2 Give TWO reasons why the sector of the population in QUESTION 3.4.1 has been most affected by the lack of planning in terms of transportation. (2 x 2) (4)
- 3.4.3 How will the increased travelling cost impact on household budgets? (2 x 2) (4)
- 3.4.4 Suggest THREE measures that urban planners can implement (put in place) to reduce traffic congestion between people's homes and places of work. (3 x 2) (6)
- 3.5 Refer to FIGURE 3.5 showing the contribution of agricultural products to South Africa's economy.
- 3.5.1 Did South Africa import or export more agricultural products in 2011/2012? (1 x 1) (1)
- 3.5.2 Under which economic sector does agricultural production fall? (1 x 1) (1)
- 3.5.3 By what percentage did South Africa's exports of agricultural products increase between 2010/2011 and 2011/2012? (1 x 1) (1)
- 3.5.4 State TWO benefits for the South African economy of a strong home market in terms of agricultural production. (2 x 2) (4)
- 3.5.5 Suggest TWO ways in which agricultural activities contribute to the development of infrastructure in South Africa. (2 x 2) (4)
- 3.5.6 Evaluate how unreliable rainfall contributes to food insecurity. (2 x 2) (4)
- 3.6 Read the extract in FIGURE 3.6 on spatial development initiatives (SDIs).
- 3.6.1 What is a *spatial development initiative (SDI)*? (1 x 1) (1)
- 3.6.2 Discuss the importance of SDIs for economic development in South Africa. (2 x 2) (4)
- 3.6.3 Give ONE reason why the infrastructure around the newly developed SDIs needed to be upgraded. (1 x 2) (2)
- 3.6.4 With reference to ONE SDI that you have studied, explain in a paragraph of approximately EIGHT lines how improved infrastructure supported tourism and how it has led to the upliftment of the local community. (4 x 2) (8)

**[75]**

**QUESTION 4**

- 4.1 Study FIGURE 4.1 which shows different settlement patterns.
- 4.1.1 What is the name given to settlement **A** which is located away from water because water is seen as a threat?
  - 4.1.2 Name the settlement pattern at **B**.
  - 4.1.3 Why is settlement **C** referred to as a nucleated settlement?
  - 4.1.4 What evidence suggests that settlement **D** is a wet point settlement?
  - 4.1.5 Give the name of settlement **E**.
  - 4.1.6 Identify the factor that has influenced the shape of settlement **F**.
  - 4.1.7 Describe the shape of settlement **G**. (7 x 1) (7)
- 4.2 Study FIGURE 4.2 which represents two different types of farming in South Africa.
- 4.2.1 Give ONE term that best describes the type of farming at **A**. (1 x 1) (1)
  - 4.2.2 Give ONE term that best describes the type of farming at **B**. (1 x 1) (1)
  - 4.2.3 Indicate whether EACH of the following statements refers to farming type **A** or farming type **B**. You may use the same answer for more than one question.
    - (a) Uses scientific farming methods
    - (b) Contributes most to the GDP
    - (c) Produces a variety of crops in small quantities
    - (d) Uses machinery
    - (e) Limited capital outlay
    - (f) Aimed at the export market (6 x 1) (6)
- 4.3 Refer to the newspaper extract in FIGURE 4.3 on urban problems and answer the questions that follow.
- 4.3.1 Give a phrase from the extract that explains the meaning of urban renewal. (1 x 1) (1)
  - 4.3.2 With reference to the newspaper extract, explain why the inner city of Johannesburg has become overcrowded. (2 x 2) (4)
  - 4.3.3 Suggest TWO reasons why the provision and the quality of services to the inner city of Johannesburg is steadily declining. (2 x 2) (4)
  - 4.3.4 What do the 'green lungs' in the extract refer to? (1 x 2) (2)
  - 4.3.5 Suggest TWO advantages of 'green lungs' in a city. (2 x 2) (4)

4.4 FIGURE 4.4 is a cartoon on rural-urban migration.

- |       |   |         |     |
|-------|---|---------|-----|
| 4.4.1 | Define the term <i>rural-urban migration</i> .  | (1 x 1) | (1) |
| 4.4.2 | Give TWO push factors that result in rural-urban migration.   | (2 x 2) | (4) |
| 4.4.3 | Propose ONE way of preventing rural towns from becoming 'ghost towns'.  | (1 x 2) | (2) |
| 4.4.4 | There is a view that quality housing and employment opportunities are pull factors to urban areas. In a paragraph of approximately EIGHT lines, critically evaluate the extent to which this is true. | (4 x 2) | (8) |

4.5 South Africa's informal sector is growing at a rate of 7,7%, making it the fastest growing economic sector. This is closely linked to unemployment.

- |       |   |         |     |
|-------|---|---------|-----|
| 4.5.1 | Define the concept <i>informal sector</i> .   | (1 x 1) | (1) |
| 4.5.2 | State the percentage by which the informal sector is growing in South Africa.   | (1 x 1) | (1) |
| 4.5.3 | Give ONE example of informal trading.   | (1 x 1) | (1) |
| 4.5.4 | Give a possible reason why there has been such a rapid increase in the informal sector in South Africa recently.                              | (1 x 2) | (2) |
| 4.5.5 | Why are people in the informal sector reluctant to apply for trading permits?   | (1 x 2) | (2) |
| 4.5.6 | In a paragraph of approximately EIGHT lines, prepare a response from the City Council to explain why it is necessary to have trading permits. | (4 x 2) | (8) |

4.6 FIGURE 4.6 captures the instability at Lonmin's Marikana mine. The instability has had a negative impact on South Africa's GDP.

- |       |   |         |             |
|-------|---|---------|-------------|
| 4.6.1 | What initiated the Marikana strike?   | (1 x 1) | (1)         |
| 4.6.2 | State TWO safety hazards that the miners are exposed to.  | (2 x 1) | (2)         |
| 4.6.3 | Besides industrial activities, discuss why the instability at Lonmin's Marikana mine will impact negatively on the GDP. | (3 x 2) | (6)         |
| 4.6.4 | How can the owners (Lonmin) of the Marikana mine improve working conditions at the mine?                                | (3 x 2) | (6)         |
|       |   |         | <b>[75]</b> |

**TOTAL: 225**



# basic education

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## **NATIONAL SENIOR CERTIFICATE**

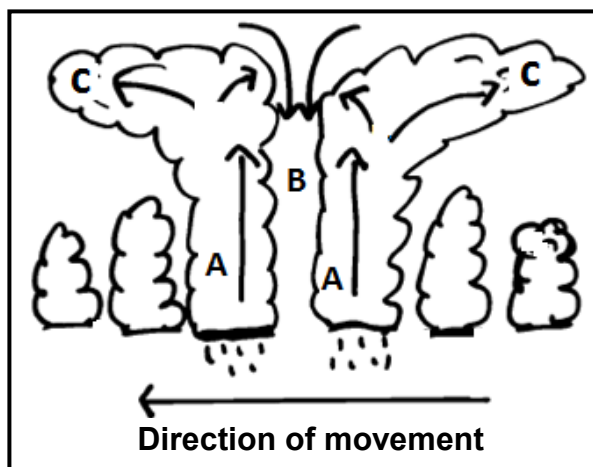
**GRADE 12**

**GEOGRAPHY P1**

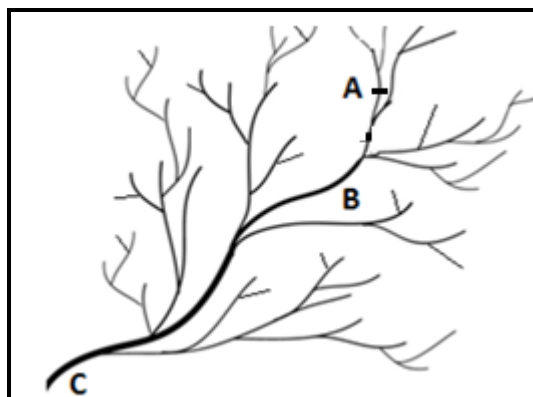
**NOVEMBER 2014**

**ANNEXURE**

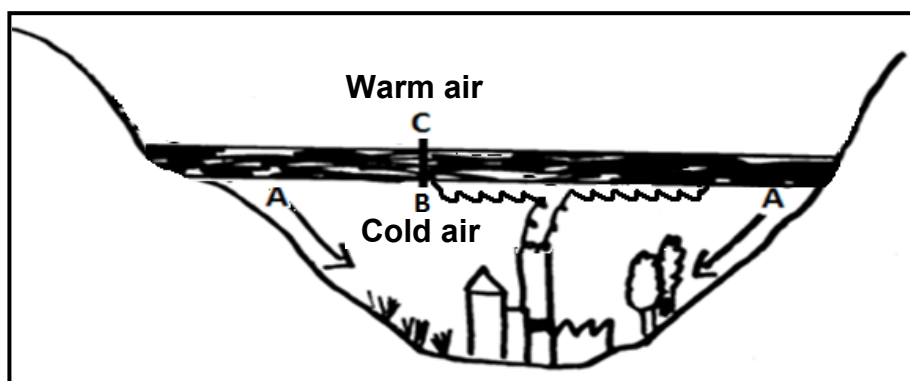
**This annexure consists of 11 pages.**

**FIGURE 1.1: CROSS-SECTION OF A TROPICAL CYCLONE**

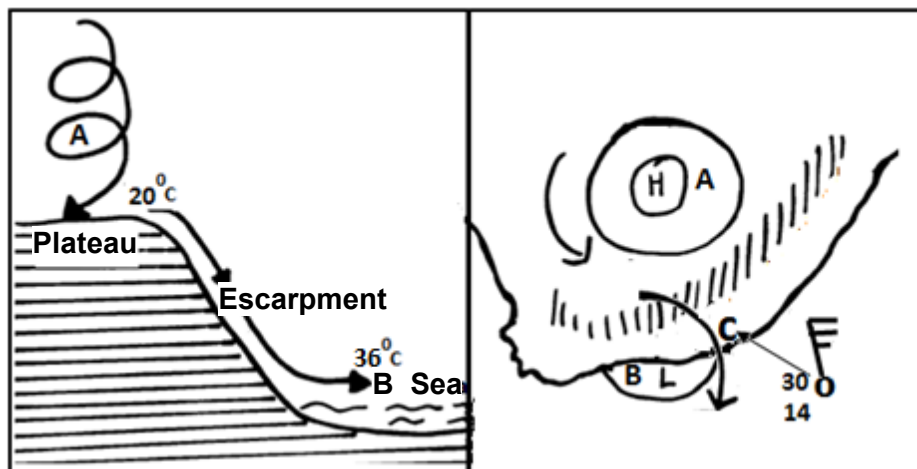
[Source: Examiner's own sketch]

**FIGURE 1.2: DRAINAGE BASIN**

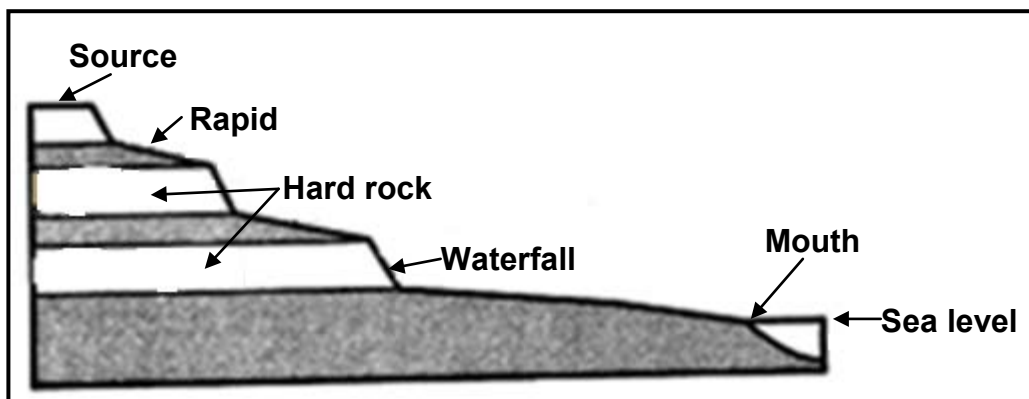
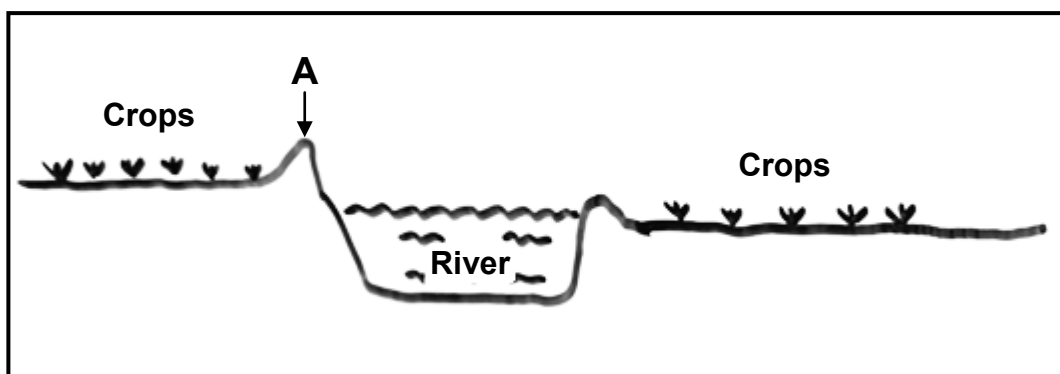
[Source: [sageography.myschoolstuff.co.za](http://sageography.myschoolstuff.co.za)]

**FIGURE 1.3: TEMPERATURE INVERSION**

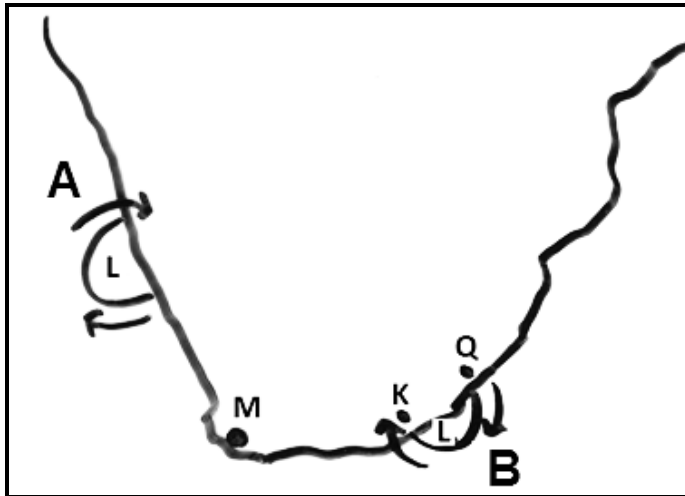
[Source: Examiner's own sketch]

**FIGURE 1.4: BERG WIND CONDITIONS**

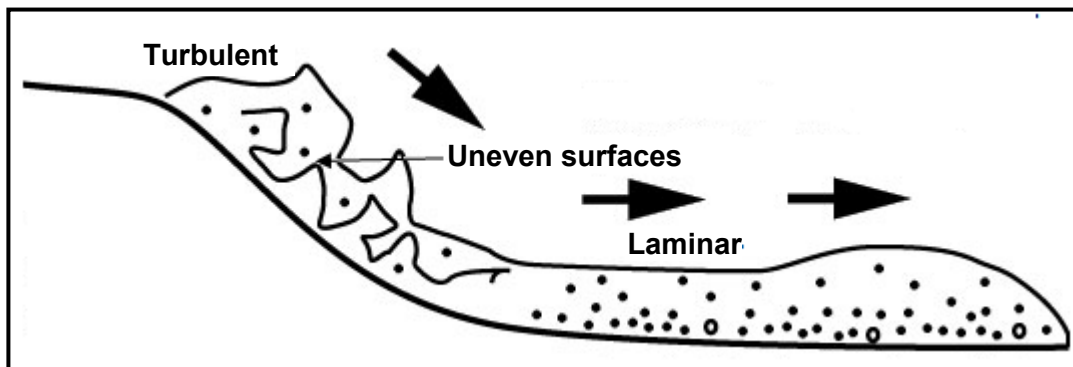
[Source: Examiner's own sketch]

**FIGURE 1.5: LONGITUDINAL RIVER PROFILE**[Source: [www.cliffsnotes.com](http://www.cliffsnotes.com)]**FIGURE 1.6: LEVEE**

[Source: Examiner's own sketch]

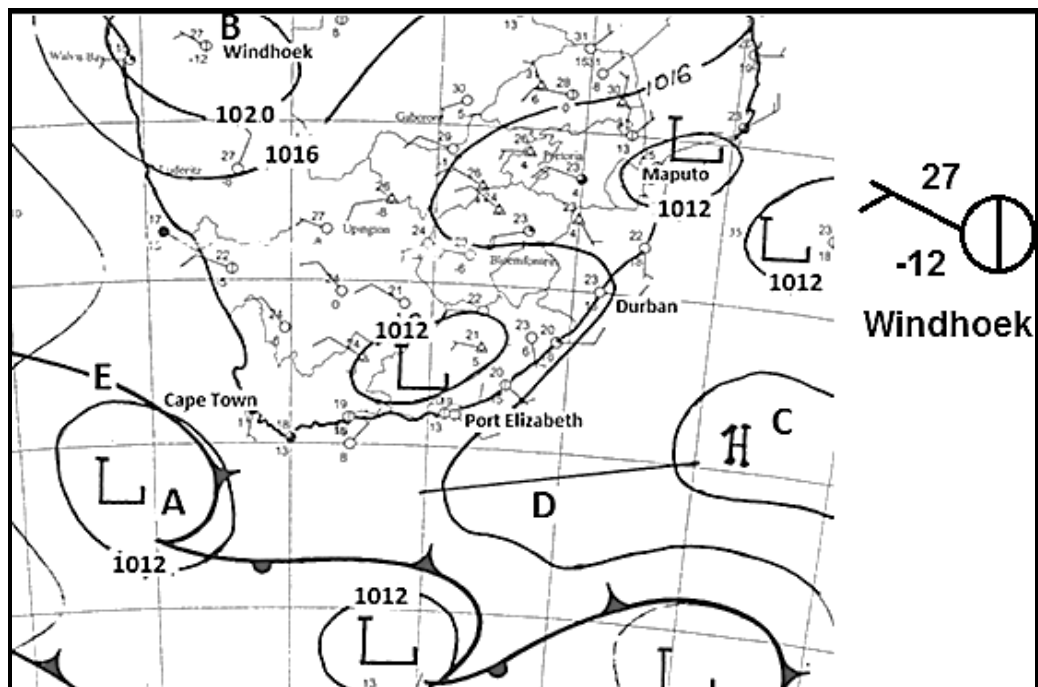
**FIGURE 2.1: COASTAL LOW-PRESSURE CELLS**

[Source: Examiner's own sketch]

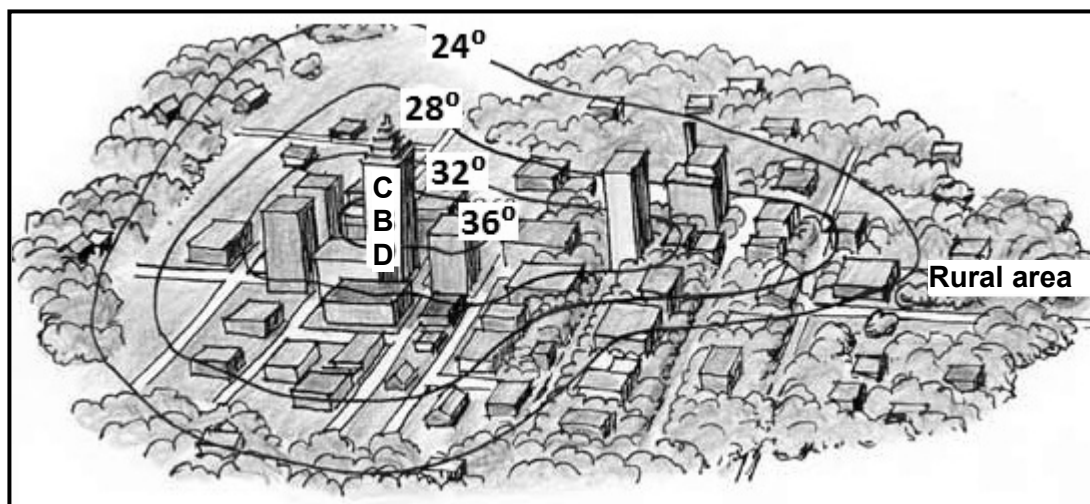
**FIGURE 2.2: RIVER FLOW PATTERNS**

[Adapted from [www.indiaa.edu](http://www.indiaa.edu)]



**FIGURE 2.3: SYNOPTIC WEATHER MAP**

[Source: South African Weather Bureau]

**FIGURE 2.4: URBAN HEAT ISLAND**

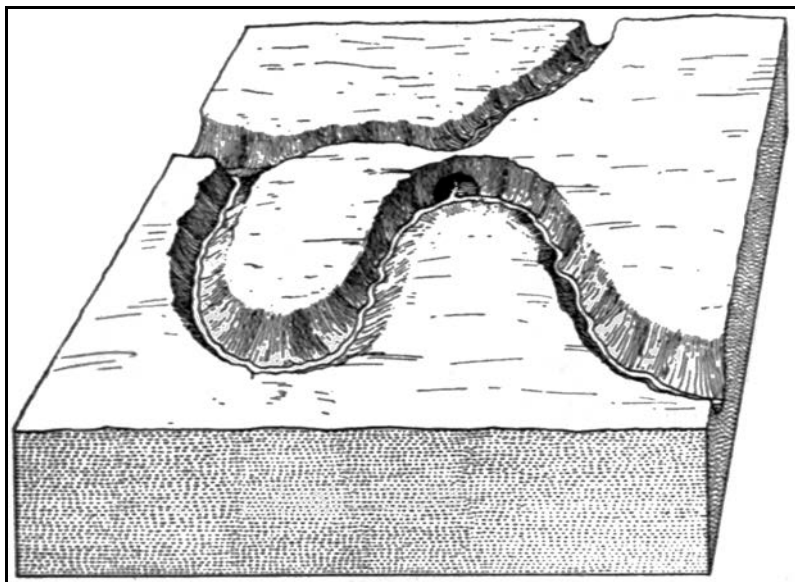
[Source: GSCE Examination Series]

**FIGURE 2.5: IMPROVING WATER PRODUCTIVITY****STRATEGY FOR IMPROVING WATER PRODUCTIVITY**

There has been a change in thinking concerning water resource management. Attention is being paid to activities that affect the upstream area of a river (catchment area) and the impact that this has on the lower reaches of the river. Some of the ways in which humans interfere with the river include building dams, water transfer, regulation, pollution, purification, et cetera. This changes the natural flow of the river. All of the above have one common effect, and that is that they impact on those who live downstream.

The Upper Modder River is close to the relatively densely populated and industrialised greater Mangaung municipal area that includes Bloemfontein, Botshabelo and Thaba Nchu. The area is known to be marginal for crop production due to low and erratic rainfall. This, combined with clay soils, results in high water losses caused by run-off and evaporation.

[Source: YE Woyessa, M Hensley and LD van Rensburg (Department of Soil, Crop and Climate Sciences, University of the Free State)]

**FIGURE 2.6: RIVER REJUVENATION**

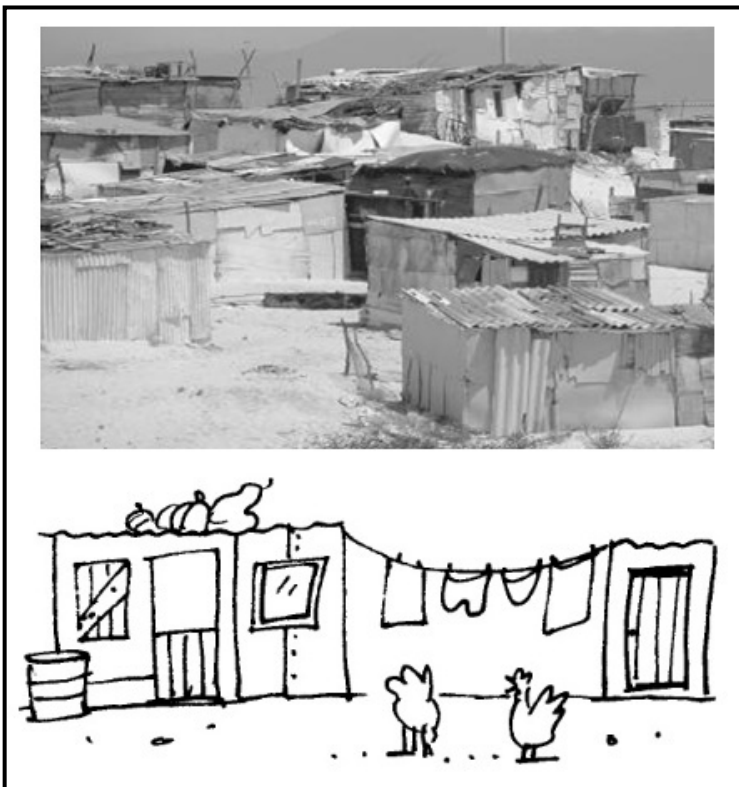
[Source: [www.ac.geography.com](http://www.ac.geography.com)]

**FIGURE 3.1: TYPES OF SETTLEMENTS**



[Source: [toxtown.nlm.nih.gov](http://toxtown.nlm.nih.gov)]

**FIGURE 3.3: URBANISATION FEATURE**



[Adapted from Google Images]

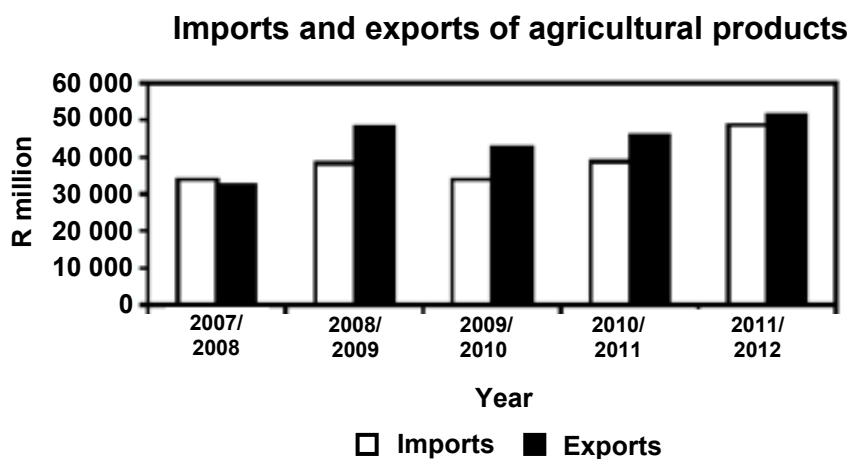
**FIGURE 3.4: URBANISATION****SOUTH AFRICAN CITY PLANNERS FACE MANY CHALLENGES**

[By Suren Naidoo]

Durban – South Africa and the African continent are likely to experience high levels of urbanisation in the next few decades.

It was reported that around half of the world's population is already living in cities, and the number looks set to rise. In South Africa we estimate that 8 million more people will live in cities by 2030.

Our settlement patterns place a large financial burden (strain) on the poorest members of society. This pattern increases the cost of getting to or searching for work and lengthens travelling times.

[Source: *The Mercury*, 18 September 2012]**FIGURE 3.5: CONTRIBUTION OF AGRICULTURAL PRODUCTS TO SOUTH AFRICA'S ECONOMY**

The estimated value of imports for 2011/2012 amounted to R48 790 million, an increase of 25,7% from R38 815 for 2010/2011. The value of exports increased by 12,3% from R45 721 million in 2010/2011 to R51 357 million in 2011/2012.

[Source: [www.nda.agric.za](http://www.nda.agric.za)]

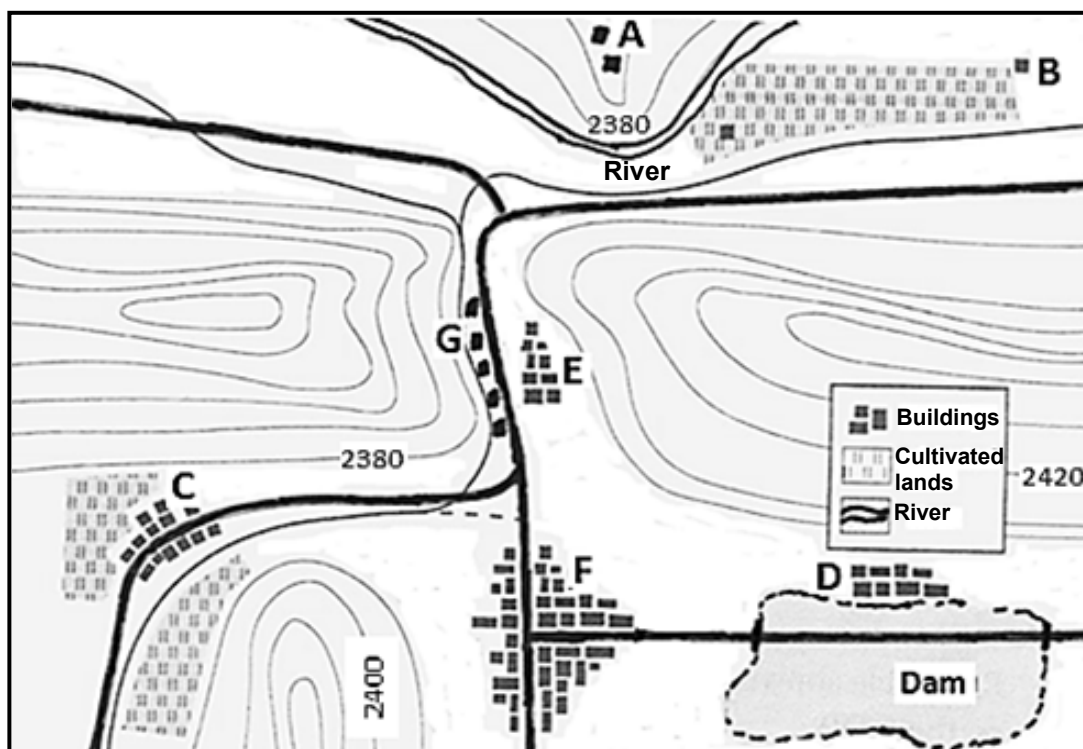
**FIGURE 3.6: SPATIAL DEVELOPMENT INITIATIVES**

Spatial Development Initiatives (SDIs) were introduced in post-apartheid South Africa.

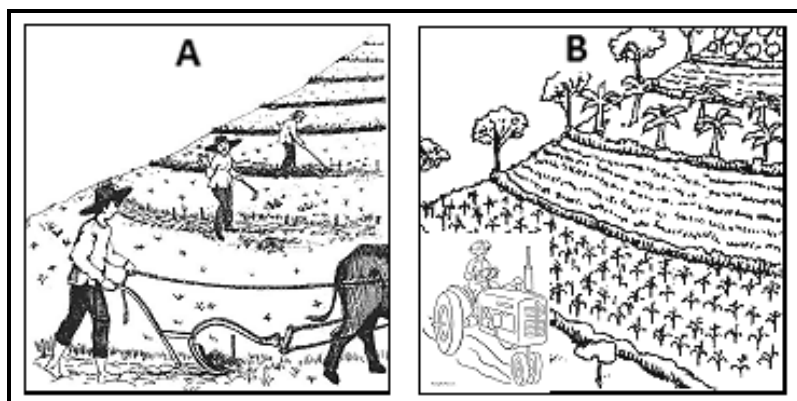
The SDI programme was developed by the Cabinet in 1995 in order to improve the functioning of government in certain regions of the country, especially in those areas where the greatest potential for growth existed.

Eleven SDIs throughout South Africa were planned in the first phase: the Maputo Development Corridor, the Phalaborwa SDI, the Platinum SDI, the West Coast Investment Initiative, the Gariep SDI, the Fish River SDI, the Wild Coast SDI, the Richards Bay SDI, the Durban and Pietermaritzburg nodes, the Lubombo SDI and the Gauteng Special Economic Zones.

[Source: [www.rosalux.co.za](http://www.rosalux.co.za)]

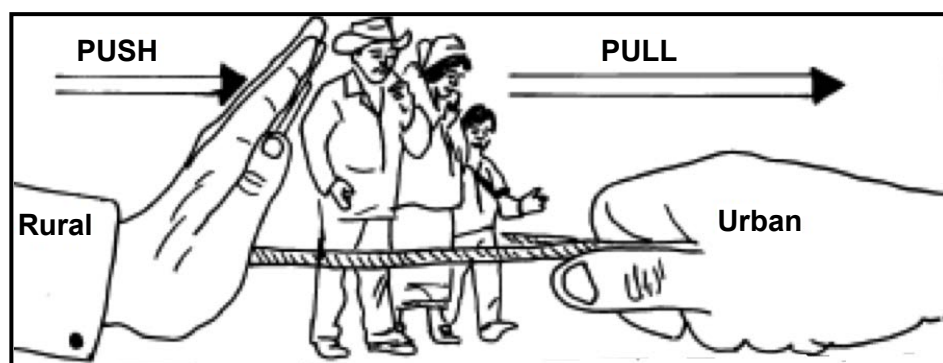
**FIGURE 4.1: SETTLEMENT PATTERNS**

[Source: *Success with Exams*]

**FIGURE 4.2: TYPES OF FARMING**[Source: [www.cnx.org](http://www.cnx.org)]**FIGURE 4.3: URBAN PROBLEMS****JOHANNESBURG BURSTING AT THE SEAMS**

Johannesburg is in the midst of urban renewal. An amount of R2 billion has been allocated to get rid of the rot and grime in the inner city. Currently the inner city is the main entrance point for immigrants, with more than 200 000 now living there. A task team will look at rehabilitating buildings, waste management and by-law enforcement. Provision has also been made for inner city 'green lungs'.

[Adapted from an article by David Jackson]

**FIGURE 4.4: RURAL-URBAN MIGRATION**

[Source: Examiner's own sketch]

**FIGURE 4.6: MINING****MARIKANA MINERS' STRIKE**

\*Lonmin owns a platinum mine near Marikana in Rustenburg. A recent strike for increased wages has led to a breakdown of trust between the union and workers. There has been much violence and killing of workers over the past few months.

According to the Bench Marks Foundation, the benefits of mining are not reaching the workers or the surrounding community. They claim that workers are exploited and exposed to safety hazards such as falling rocks, dust, high noise levels and dangerous fumes.

\*Lonmin is the British producer of platinum group metals.

[Source: Adapted by examiner]



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**GEOGRAPHY P1**

**NOVEMBER 2014**

**MEMORANDUM**

**MARKS: 225**

**This memorandum consists of 18 pages.**



**QUESTION 1**

- 1.1 1.1.1 Cumulonimbus (Cb) (1)
- 1.1.2 Eye/Eye of the storm (1)
- 1.1.3 Low (1)
- 1.1.4 From east to west/Westwards/Westerly direction (1)
- 1.1.5 Heavy rainfall/Thunderstorms/Hail/Torrential rainfall (1)
- 1.1.6 Subsiding/Descending/Sinking air movement/downwards (1)
- 1.1.7 Diverging (1)
- 1.1.8 Dissipating/Degenerating/Decaying/Dying out (8 x 1) (8)
- 1.2 1.2.1 Dendritic (1)
- 1.2.2 Acute angles/Small angles/Mention any angle less than 90° (1)
- 1.2.3 Uniform (1)
- 1.2.4 Erosion (1)
- 1.2.5 Stream Order 2 (1)
- 1.2.6 Interfluve (1)
- 1.2.7 C (1) (7 x 1) (7)
- 1.3 1.3.1 Air temperature INCREASES with an INCREASE in altitude (height) (1)  
WARM air is found above the COLD air in the valley (1)  
[CONCEPT] (1 x 1) (1)
- 1.3.2 Katabatic wind/Downslope wind/Gravity winds (1 x 1) (1)
- 1.3.3 After sunset, the valley slopes cool down through terrestrial radiation throughout the night (2)  
Air in contact with the valley slopes cools down (2)  
Cold air sinks under the influence of the force of gravity (2)  
Cold heavy dense air will sink (2)  
[ANY ONE] (1 x 2) (2)
- 1.3.4 Cool air subsides to the valley floor (2)  
Warm air that rises is cooled down to dew point temperature (2)  
Air at the bottom of the valley condenses (2)  
[ANY TWO] (2 x 2) (4)

### 1.3.5 Impact on Farming

Katabatic wind at night causes cold air to move down slope, causing a frost pocket to develop in the valley (2)

Frost resistant crops are grown on the valley floor (2)

The cold conditions and FROST kill pests (2)

Cold conditions suits the growing conditions of these crops (2)

The crops that are not frost resistant cannot be planted on the valley floor/  
die (2)

Acid rain can damage crops (2)

## Impact on Settlements

Valley floor is cold and damp and therefore not suitable for settlement development (2)

Smog (pollution) is trapped by the descending colder air (2)

This leads to respiratory problems (such as asthma) (2)

Visibility is reduced (2)

The rate of accidents increase (2)

## Acid rain can damage buildings (2)

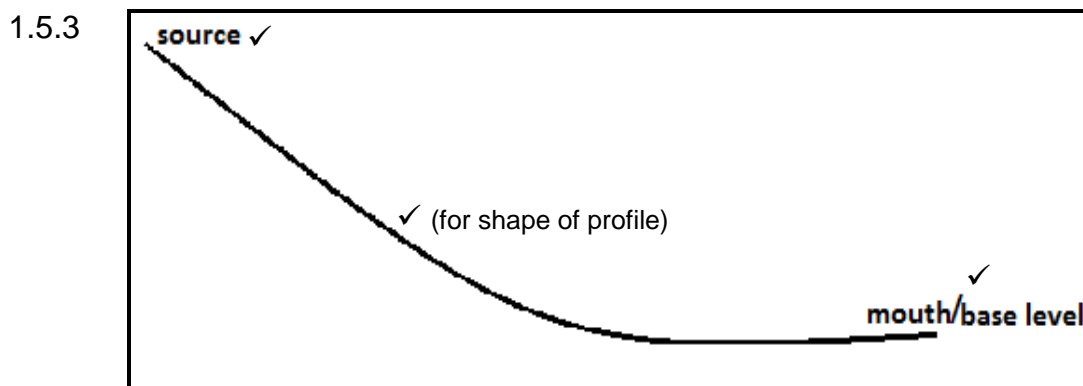
[ANY FOUR. MUST REFER TO BOTH ASPECTS. CAN INCLUDE POSITIVE ASPECTS. ACCEPT OTHER REASONABLE ANSWERS]

(4 x 2) (8)

- |     |       |   |             |
|-----|-------|---|-------------|
| 1.4 | 1.4.1 | Kalahari High Pressure/Continental High Pressure (1)  | (1 x 1) (1) |
|     | 1.4.2 | Winter (1)  | (1 x 1) (1) |
|     | 1.4.3 | The dominance of the (Kalahari/Continental) High Pressure over the interior of the subcontinent, during winter (2)<br>A low pressure cell (coastal low/mid-latitude cyclone) along the southern or eastern coast (2)<br>Wind that moves down slope as a result of pressure gradient along the escarpment (2)<br>[ANY TWO]                 | (2 x 2) (4) |
|     | 1.4.4 | Air subsiding down the escarpment heats up at the DALR (2)<br>1°C temperature increases per 100 m of descent (2)<br>[ANY ONE]   | (1 x 2) (2) |
|     | 1.4.5 | Clear skies at <b>C</b> are as a result of moisture evaporating when air warms up adiabatically (through compression) (2)<br>16°C/Large difference between air temperature and dew point temperature, therefore air is dry (2)<br>Relative humidity is low (2)<br>Stable conditions are experienced due to subsiding air (2)<br>[ANY ONE] | (1 x 2) (2) |
|     | 1.4.6 | During Winter the vegetation is dry (2)<br>Berg winds are warm, dry winds (2)<br>Veld fires can easily be sparked (2)<br>Strong winds fan these fires (2)<br>[ANY TWO]  | (2 x 2) (4) |

- 1.5 1.5.1 Shows the side view of a river from its source to its mouth (1)  
It is the changing gradient of a river from its source to its mouth (1)  
It is the representation of the gradient down which a river flows (1)  
[CONCEPT] (1 x 1) (1)

- 1.5.2 Waterfall (1) rapid (1) hard rocks (1) (1 x 1) (1)



Must be a **graded profile** with correct labels.

Award 1 mark for shape only

(1 x 3) (3)

- 1.5.4 Almost smooth river bed (2)  
Concave shaped profile (2)  
[ANY ONE] (1 x 2) (2)

- 1.5.5 **Processes that the river profile must undergo to be graded**  
Downward erosion must increase in the upper and middle course (2)  
The upper course must assume a steeper slope (2)  
In the upper course discharge must increase and overcome friction (2)  
Headward erosion must increase to remove temporary base levels of erosion (2)  
Retreat of waterfalls to remove temporary base levels of erosion (2)  
Flattening of rapids remove temporary base levels of erosion (2)  
Filling in of lakes remove temporary base levels of erosion (2)  
Stream carrying capacity must increase to carry additional stream load (eroded particles) (2)  
Gradient in the lower course must decrease in order for carrying capacity to decrease (2)  
In the lower course the stream discharge must be reduced (2)  
Deposition occurs in the lower course lowering the gradient (2)  
The river now assumes a steep gradient in the upper course and a gentle gradient in the lower course (2)  
[ANY FOUR] (4 x 2) (8)

- 1.6 1.6.1 Flood plain (1) (1 x 1) (1)
- 1.6.2 The gradient is more gradual/reduced velocity of the water in the river (2)  
Shallow river channel makes it easier for the river to burst its banks (2)  
The volume of water increases in the lower course of the river (2)  
[ANY TWO] (2 x 2) (4)
- 1.6.3 Levée (2)  
Raised embankment (2)  
Raised river bank (2)  
Natural dyke (2)  
[ANY ONE] (1 x 2) (2)
- 1.6.4 When a river overflows its banks (floods) (2)  
Heavy material is deposited on the river banks (2)  
Successive flooding results in this feature increasing in height (2)  
[ANY TWO] (2 x 2) (4)
- 1.6.5 Damage to crops from flooding (2)  
Loss of fertile soil through soil erosion (2)  
Oversaturated soil (2)  
Swamp conditions start to develop (2)  
No longer suitable for original crops that were grown (2)  
Loss of income (2)  
Small scale and/or subsistence farmers will have no food (2)  
[ANY TWO] (2 x 2) (4)

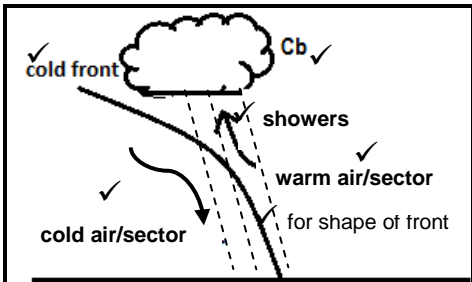
**[75]**

**QUESTION 2**

- 2.1 2.1.1 Clockwise (1)
- 2.1.2 Converges (1)
- 2.1.3 Lower (1)
- 2.1.4 Fog (1)
- 2.1.5 Lower (1)
- 2.1.6 A (1)
- 2.1.7 Q (1) (7 x 1) (7)

- 2.2. 2.2.1 Laminar (1)
- 2.2.2 Turbulent (1)
- 2.2.3 Turbulent (1)
- 2.2.4 Turbulent (1)
- 2.2.5 Laminar (1)
- 2.2.6 Laminar (1)
- 2.2.7 Turbulent (1)
- 2.2.8 Laminar (1) (8 x 1) (8)

- 2.3 2.3.1 Cyclone family (1)  
Family of depressions (1)  
[ANY ONE] (1 x 1) (1)

- 2.3.2 (a)  [ANY FOUR]

(4 x 1) (4)

- (b) Decrease in temperature (2)  
Change in the wind direction (backing) (2)  
Heavy rainfall with thunder and lightning (2)  
Increase in air pressure (2)  
Increase in cloud cover (cumulonimbus clouds) (2)  
Increase in wind speed (2)  
Decrease in humidity (2)  
Possibility of snowfall (2)  
[ANY ONE]

(1 x 2) (2)

**2.3.3 Weather conditions and reasons**Air temperature: 27°C (2)

Cold air descending from the high pressure warms adiabatically to create a high temperature on the surface (2)

Dew point temperature: -12°C (2)

Dry area/winter therefore less evaporation (2)

Subsiding air reduces humidity (2)

Wind direction: NW/WNW (2)

Air diverging in an anticlockwise direction around the high pressure (2)

Wind speed: 5 knots (2)

Gentle pressure gradient (the isobars are far apart) (2)

Cloud cover: (1/8) (2)

Very little cloud cover as the area is dry and had low levels of moisture (2)

Subsiding air heats up and does not condense (2)

Low relative humidity (2)

Precipitation No precipitation (2)

Subsiding air does not condense (2)

Limited cloud cover (2)

Large difference between air temperature and dew point temperature (2)

[ANY TWO WEATHER CONDITIONS AND REASONS] (4 x 2) (8)

2.4 2.4.1 Isotherms (1) (1 x 1) (1)

2.4.2 Warmer/ Higher in the CBD (2)

Cooler/ Lower in the rural area (2)

Between 8°C and 12°C (2)

[ANY ONE] (1 x 2) (2)

2.4.3 Larger surface area that can be heated (2)

Heat trapped between buildings due to high building density (2)

Tall buildings prevents wind from removing heat out of the city (2)

Early in the morning/late afternoon sun's rays hit buildings at 90° angle concentrating heat on the buildings (2)

Material used to construct tall buildings absorb more heat (2)

More heat is trapped inside the buildings (2)

Air conditioning and lighting generate more heat (2)

[EMPHASIS ON TALL BUILDINGS]

[ANY ONE] (1 x 2) (2)

2.4.4 There is a cluster of high rise buildings away from the original CBD which results in an irregular shape (2)

More vegetation in the surrounding rural area which lowers the temperatures as you move away from the original CBD (2)

Isotherms follows the profile of the city (2)

[ANY TWO] (2 x 2) (4)

- 2.4.5 (a) Cities have less water bodies (dams/lakes/rivers etc.) (2)  
Fewer plants/vegetation in urban areas thus less evapo-transpiration (2)  
Water removed from cities by storm water drainage (2)  
Artificial surfaces drain water out of cities (2)  
[ANY ONE] (1 x 2) (2)
- (b) More heat in cities thus more convection which encourages the build-up of precipitation (2)  
More pollution in cities allows for more hygroscopic nuclei in cities (2)  
Higher pressure in surrounding rural areas will result in convergence of air in CBD with lower pressure (2)  
Large scale upliftment of warm air results in convergence thunderstorms (2)  
[ANY ONE] (1 x 2) (2)
- (c) Wind speed and direction affected by layout and orientation of high-rise buildings (2)  
Buildings can channel prevailing winds in certain directions (2)  
**If indicated winds are stronger in the rural area, reasons must be given (2)**  
[ANY ONE] (1 x 2) (2)
- 2.5 2.5.1 Water Resource Management: the sustainable and responsible use of water  
[CONCEPT] (1 x 1) (1)
- 2.5.2 Mangaung (1)  
Bloemfontein (1)  
Botshabelo (1)  
Thaba Nchu (1)  
[ANY ONE] (1 x 1) (1)
- 2.5.3 Building dams (1)  
Water transfer (1)  
Water regulations (1)  
Water pollution (1)  
Water purification (1)  
[ANY TWO] (2 x 1) (2)
- 2.5.4 Clay soil (2)  
Settlement development (2)  
Sparse vegetation (2)  
[ANY TWO] (2 x 2) (4)

**2.5.5 Human interference along a river**

Reduces the amount of clean water available for domestic use in rural area (2)

The possibility of water pollution increases/water quality decreases (2)

An increase in the amount of water borne diseases e.g. cholera (2)

Reduces amount of water available for crop cultivation in the lower reaches/

Food insecurity (2)

Disturbance of aquatic life (2)

Increase the costs of water due to higher demand (2)

More controlled flooding (2)

Impact negatively on their income (2)

More costly to buy clean water in the informal settlement (2)

Natural flow of river is reduced (2)

More costly to irrigate downstream (2)

Less water for recreational activities (2)

Less water for industrial purposes (2)

Greater reliance on groundwater (2)

[ANY FOUR ACCEPT OTHER REASONABLE ANSWERS] (4 x 2) (8)

- 2.6 2.6.1 River rejuvenation refers to the revival of the river's erosive ability/Process whereby a river has reached base level and regains energy, beginning to erode actively downwards once again (1)

[CONCEPT] (1 x 1) (1)

- 2.6.2 Incised meanders/entrenched meanders (1) (1 x 1) (1)

- 2.6.3 Change in ultimate base level/drop in sea level (2)

Isostatic uplift (2)

Internal forces (faulting, folding, warping, earthquakes) or onset of ice age (2)

Higher rainfall as a result of climate change, will increase the erosive potential of a river (2)

Increased volume of water in the river as a result of river capture (2)

Fast flowing tributary joins the main stream (2)

[ANY TWO] (2 x 2) (4)

- 2.6.4 The river has more energy (2)

Starts to erode vertically (downwards) (2)

Starts to erode vertically (downwards) (2)

A meandering river cuts a deep valley into the underlying bedrock (2)

[ANY TWO] (2 x 2) (4)

- 2.6.5 The landscape is associated with steep valley sides/deep gorge (2)

Entrenched valleys wide near the surface (2)

High costs incurred during construction of roads and railways and bridges (2)

Dangerous for people working on construction sites (2)

Costly drawing up engineering plans (2)

[ANY TWO ACCEPT OTHER REASONABLE ANSWERS] (2 x 2) (4)

**[75]**



**QUESTION 3**

- 3.1    3.1.1    A (1)
- 3.1.2    B (1)
- 3.1.3    A (1)
- 3.1.4    B (1)
- 3.1.5    A (1)
- 3.1.6    B (1)
- 3.1.7    B (1)
- 3.1.8    B (1) (8 x 1) (8)
- 
- 3.2    3.2.1    A (1)
- 3.2.2    C (1)
- 3.2.3    B (1)
- 3.2.4    A (1)
- 3.2.5    B (1)
- 3.2.6    D (1)
- 3.2.7    B (1) (7 x 1) (7)
- 
- 3.3    3.3.1    Informal settlement (1)  
                 Squatter settlement (1)  
                 Shanty town (1)  
                 Shacks (1)  
                 [ANY ONE] (1 x 1) (1)
- 3.3.2    Bits of wood/Planks(1)  
                 Corrugated iron/Zinc (1)  
                 Cardboard/Paper(1)  
                 Plastic (1)  
                 Mud (1)  
                 [ANY TWO. ANY OTHER] (2 x 1) (2)
- 3.3.3    The materials are readily/easily available (2)  
                 Easy to assemble using this material (2)  
                 Most informal dwellers cannot afford to purchase proper building materials (2)  
                 Lack of transport to transport materials (2)  
                 Easy to take down and move to a different area (2)  
                 [ANY TWO. ACCEPT OTHER] (2 x 2) (4)

**3.3.4 Improvement of living conditions in informal settlements**

Provide basic services such as water/sewerage/electricity/waste disposal (2)

Construct low cost (RDP) houses for the inhabitants (2)

Giving informal settlers legal ownership of the land they are living on (2)

Increase access to amenities (2)

Improvement of transport/roads (2)

Provision of employment opportunities to the people (2)

Create open spaces/parks (2)

Promote gardening (2)

[ANY FOUR. CAN DISCUSS ONE OR MORE IN DETAIL. ACCEPT OTHER]

(4 x 2) (8)

3.4 3.4.1 The poorest members of our society (1)

(1 x 1) (1)

3.4.2 Residential areas are on the outskirts of urban areas (2)

Living further from work (2)

Takes longer to get to work (2)

Higher transport costs (2)

Causes traffic congestion (2)

Lack of proper public transport systems (2)

[ANY TWO. ACCEPT ANY OTHER QUALIFIED REASONABLE ANSWER]

(2 x 2) (4)

3.4.3 Increases financial burden on household budget (2)

More of the budget will be used for travelling costs (2)

Less money for basic necessities/examples (2)

[ANY TWO]

(2 x 2) (4)

3.4.4 Build more housing nearer to people's place of work, this would reduce travelling times, costs and the carbon footprint (2)

Create better quality public transport to allow people to more efficiently and more easily get to work e.g. BRT (Bus Rapid Transport) and Gautrain (2)

Create more jobs in or close to densely populated, urban townships (2)

Create more cycle lanes (2)

Planned irregular street pattern to facilitate easier flow of traffic (2)

Create flexi times (2)

Ring roads (2)

One way streets (2)

Synchronised traffic lights (2)

Bus lanes (2)

Park-and-ride (2)

Lift clubs (2)

Bridges and flyovers (2)

[ANY THREE. ACCEPT ANY OTHER REASONABLE ANSWERS] (3 x 2) (6)

- 3.5 3.5.1 Export (1) (1 x 1) (1)
- 3.5.2 Primary (1) (1 x 1) (1)
- 3.5.3 12,3% (1) (1 x 1) (1)
- 3.5.4 Cheaper food (2)  
Greater variety of food (2)  
Development of rural areas (2)  
Provides raw materials for the manufacturing industry (2)  
Development of processing industries (2)  
Employment opportunities (2)  
Food security (2)  
Promotes small-scale farming (2)  
Promotes more exports (2)  
Improves the GDP/Balance of trade (2)  
Provides nutritious/fresh products (2)  
Empowerment of women in rural areas (2)  
[ANY TWO. ACCEPT OTHER REASONABLE ANSWERS] (2 x 2) (4)
- 3.5.5 New transport networks created (2)  
Transport networks have been improved (2)  
Specialised transport facilities created (2)  
Water irrigation schemes were developed (2)  
Electricity grids developed (2)  
Specialist harbour facilities (2)  
[ANY TWO] (2 x 2) (4)
- 3.5.6 Unreliable rainfall increases the risks of soil erosion (2)  
Unreliable rainfall creates a risk in crop yields (2)  
Farmers become unreliable suppliers of food to the markets (2)  
Causes increased food costs (2)  
Increases cost of food production (2)  
Results in food shortages (2)  
Increases food imports (2)  
[ANY TWO ACCEPT OTHER REASONABLE ANSWERS] (2 x 2) (4)
- 3.6 3.6.1 A Spatial Development Initiative is a programme developed by the cabinet to improve the functioning of government in certain regions of the country, especially in those regions where there is a potential for growth (1)  
[CONCEPT] (1 x 1) (1)
- 3.6.2 SDIs are important because they increase the productivity and wealth of marginal areas in South Africa (2)  
SDIs raise the standard of living in the local area (2)  
SDIs help to upgrade the local infrastructure (2)  
Increased public and private sector investment (2)  
Increase employment (2)  
Reduce rural-urban migration (2)  
Foreign investment through tourism (2)  
[ANY TWO. ACCEPT OTHER] (2 x 2) (4)

- 3.6.3 To improve internal trade for export (2)  
 Transportation networks improve accessibility for trade between SDIs (2)  
 Networking (2)  
 Movement of raw materials by road and rail (2)  
 Movement of finished goods by road and rail (2)  
 Accessibility to markets- virtual and actual (2)  
 Money transfers (2)  
 SDI's were developed in underdeveloped areas (2)  
 More people so a greater need for infrastructure (2)  
 Improved technology (2)  
 Will attract more tourists (2)  
 [ANY ONE] (1 x 2) (2)

- 3.4.6 **Tourism**  
 Growth in tourism is enabled by efficient infrastructure (2)  
 Effective transportation networks enable access to tourism destinations (2)  
 Effective communication networks enable tourist destinations to become more accessible on the internet (2)  
 Access to remote locations enables tourists to travel further into the SDI (2)  
 Promoting safe travelling (2)  
**Upliftment of Community**  
 Transportation networks improve accessibility for trade to the SDI (2)  
 Communication networks enable growth of the SDI through technology (2)  
 Generates economic growth where local communities are able to sell their wares (2)  
 Generates employment opportunities in local communities (2)  
 Enables the growth of SMME (Small Medium Micro Enterprises) (2)  
 Upgrades local infrastructure (2)  
 Different ethnic groups working together in the SDIs to support tourism have been united promoting more cooperation amongst them (2)  
 Greater income for local communities (2)  
 Money generated is used to develop community projects (2)  
 Develop ethnic/cultural pride (2)  
 [ANY FOUR. MUST REFER TO BOTH ASPECTS. LEARNERS CAN INCLUDE A DISCUSSION ON A SPECIFIC SDI ACCEPT OTHER] (4 x 2) (8)

[75]

**QUESTION 4**

- 4.1 4.1.1 Dry Point Settlement (1)
- 4.1.2 Isolated/Dispersed (1)
- 4.1.3 Buildings are grouped together and located close to one another (1)
- 4.1.4 It is located next to a water source (the dam) (1)
- 4.1.5 Gap Town/Gateway (1)  
Village (1)  
Nucleated/compact (1)  
Any example of a gap town (1)  
[ANY ONE] (1 x 1) (1)
- 4.1.6 The road network (a T-junction) (1)
- 4.1.7 Linear (1) (7 x 1) (7)
- 4.2 4.2.1 Small scale farming/communal/subsistence (1) (1 x 1) (1)
- 4.2.2 Large-scale farming/commercial (1) (1 x 1) (1)
- 4.2.3 (a) B (Large-scale farming/commercial) (1)  
(b) B (Large-scale farming/commercial) (1)  
(c) A (Small scale farming/communal/subsistence) (1)  
(d) B (Large-scale farming/commercial) (1)  
(e) A (Small scale farming/communal/subsistence) (1)  
(f) B (Large-scale farming/commercial) (1) (6 x 1) (6)
- 4.3 4.3.1 To get rid of the rot and grime (1)  
Rehabilitating buildings (1)  
[ANY ONE] (1 x 1) (1)
- 4.3.2 Accessibility to jobs (2)  
Rural – Urban migration (2)  
The inner city is overcrowded; due to an influx of many immigrants/migrants (2)  
Sub-rental of rooms within apartments (2)  
Low rentals as a result of dilapidated nature of buildings (2)  
High levels of multi-occupancy in buildings (2)  
[ANY TWO. ACCEPT OTHER] (2 x 2) (4)

- 4.3.3 The city of Johannesburg suffers from water and power shortages due to the increasing population (2)  
 Old infrastructure cannot support the growing population (2)  
 The cost of basic services is increasing in the city – people don't pay, which causes a further decline in services (2)  
 Illegal electricity connections compromises services (2)  
 Demand is greater than supply (2)  
 The lack of employment opportunities means services cannot be paid for (2)  
 [ANY TWO. ACCEPT OTHER] (2 x 2) (4)
- 4.3.4 Open spaces/parks within the inner city that serve as green belts (2)  
 Areas with the inner city that are not reserved for commercial development (2)  
 [CONCEPT]  
 [ANY ONE] (1 x 2) (2)
- 4.3.5 Reduces carbon dioxide(2)  
 Reduces pollution dome (2)  
 Supplies more oxygen to urban areas (2)  
 Beautifies the city/aesthetic purposes (2)  
 Clean environment attracts tourists (2)  
 Creates recreational areas (2)  
 Absorbs noise (2)  
 Reduces urban heat island effect/temperatures(2)  
 Creates habitat for other living organisms (2)  
 Reduces urban sprawl (2)  
 [ANY TWO] (2 x 2) (4)
- 4.4 4.4.1 The movement of people from rural to urban areas (1)  
 [CONCEPT] (1 x 1) (1)
- 4.4.2 Natural disasters (floods and droughts) (2)  
 Overgrazing, poor farming methods and soil erosion (2)  
 Lack of jobs (2)  
 Lack of entertainment (2)  
 Lack of services such as electricity, housing, transport, health, education (2)  
 Mechanisation of farms (2)  
 Lower standard of living (2)  
 High production costs (2)  
 Low economic outputs (2)  
 Crime in rural areas (2)  
 [ANY TWO. ACCEPT OTHER REASONABLE ANSWERS] (2 x 2) (4)

- 4.4.3 Implementation of the RDP (Programme that provides essential services to the rural areas) (2)  
Industrial decentralisation to provide people in the rural areas with work (2)  
Tourism and recreational areas to encourage people to visit and stay in rural areas (2)  
Basic Needs Philosophy provides rural people with their basic needs, such as water, housing, education, health, etc. (2)  
Implementation of GEAR (Growth, Employment, and Redistribution) in rural areas (2)  
Implementation of NDP (National Development Plan)  
Provide training courses to improve skills in farming (2)  
Attract retired people to live here (2)  
Attract commuters to live here (2)  
Festivals in rural towns (2)  
Attract people who do not want to work in an office in the city (2)  
[ANY ONE. ACCEPT OTHER REASONABLE ANSWERS] (1 x 2) (2)

4.4.4 **Housing**

- People assume quality housing exists in cities (2)  
Local government cannot provide enough quality housing (2)  
Many informal settlements exist (2)  
Houses of inferior quality in informal settlements (2)  
Overcrowding in available accommodation (2)

**Employment opportunities**

- People assume more employment opportunities are found in cities (2)  
Immigrants not qualified for existing jobs (2)  
Forced into the informal sector (2)  
Often only low income jobs available (2)  
Competition for jobs as a result of influx into cities (2)  
Forced into prostitution/crime/gangsterism (2)  
[ANY FOUR. ACCEPT OTHER REASONABLE ANSWERS. MUST REFER TO BOTH ASPECTS. MUST ACCEPT ANSWERS FOR TRUE FACTORS] (4 x 2) (8)

- 4.5 4.5.1 Informal sector is whereby someone makes a living through an unregistered business, or who provides services without a licence (1)  
[CONCEPT] (1 x 1) (1)
- 4.5.2 7,7% (1) (1 x 1) (1)
- 4.5.3 Street vending – selling vegetables (1)  
Flea Market – selling variety of goods (1)  
[ANY ONE ACCEPT OTHER RELEVANT ANSWERS TO TRADING] (1 x 1) (1)
- 4.5.4 Poor socio-economic status faced by most of the South Africans (2)  
High unemployment rate/ Retrenchments (2)  
Relaxed bylaws (2)  
Lack of skills/ School drop-outs (2)  
Mechanisation of farming operations and climatic hazards has caused unskilled rural people to abandon farming and join informal sector (2)  
Many large businesses has contributed to the growth of informal trade by sub-contracting to the informal sector (2)  
Immigrants are not able to find legal employment and enter into the informal trade to survive (2)  
[ANY ONE. ACCEPT OTHER RELEVANT ANSWERS] (1 x 2) (2)
- 4.5.5 They don't want to pay tax (2)  
They don't want to be recognised as illegal immigrants (2)  
Non-compliance with regulations (2)  
Costly to apply for permits (2)  
[ANY ONE] (1 x 2) (2)
- 4.5.6

**Trading permits are required in order to**

- Regulate the business (2)  
Allocate the businesses specific areas for trading (2)  
Encourage partnership between private sector and the informal trader (2)  
Provide infrastructure (hawker stall/carts) in areas zoned for informal trading (2)  
Assist small businesses to play an active role in providing training (2)  
Provide easier access to bank loans (2)  
For insurance purposes (2)  
Provide storage facilities (2)  
Contribute to the income of the city by paying taxes (2)  
Provide ablution facilities (2)  
Ensure clean/hygienic facilities (2)  
Statistical analysis for planning (2)  
Prevention of harassment by city officials/ law enforcement officials (2)  
[ANY FOUR. ACCEPT OTHER LOGICAL ANSWERS] (4 x 2) (8)



- 4.6 4.6.1 Workers need for an increase in wages/salary/conditions of service/the need for better working conditions/rivalry between two unions/deadlock between employer and employees (1)  
[ANY ONE] (1 x 1) (1)
- 4.6.2 Falling rocks (1)  
Exposure to dust (1)  
High noise levels (1)  
Dangerous fumes (1)  
[ANY TWO] (2 x 1) (2)
- 4.6.3 Fewer raw materials to be exported (2)  
Loss of income (2)  
Loss of production (2)  
Negative balance of trade (2)  
Loss of tax revenue (2)  
Striking employees could lose jobs resulting in unemployment (2)  
South Africa will attract less foreign investment thus lowering the GDP (2)  
The currency will be devalued thus creating economic instability (2)  
There will be a lack of infrastructural development which also decreases South Africa's economic growth(2)  
[ANY THREE ACCEPT OTHER] (3 x 2) (6)
- 4.6.4 Improved communication is required between mine managers and workers (2)  
Improved relations between mine managers and unions (2)  
Better working conditions for workers especially high risk employees (2)  
Investment in the local community especially in areas of education and social development (2)  
Profit sharing options to mine workers (2)  
Compliance to safety regulations (2)  
Bring about gender parity (2)  
Skills development and training facilities in order for miners to be skilled in their work environment (2)  
[ANY THREE. ACCEPT OTHER] (3 x 2) (6)

**[75]****GRAND TOTAL: 225**



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## NATIONAL SENIOR CERTIFICATE

**GRADE 12**

**GEOGRAPHY P2**

**NOVEMBER 2014**

**MARKS: 75**

**TIME: 1½ hours**

<b>EXAMINATION NUMBER:</b>													
<b>CENTRE NUMBER:</b>													

QUESTION NUMBER	Q1	Q2	Q3	Q4	TOT
MARKER					
MODERATOR					
MARK SCORED					
TOTAL	15	20	25	15	75

**This question paper consists of 14 pages and  
1 page for rough work and calculations.**

**RESOURCE MATERIAL**

1. An extract from topographical map 2528DA CULLINAN.
2. Orthophoto map 2528DA16 CULLINAN.
3. **NOTE:** The resource material must be collected by schools for their own use.

**INSTRUCTIONS AND INFORMATION**

1. Write your EXAMINATION NUMBER and CENTRE NUMBER in the spaces on the cover page.
2. Answer ALL the questions in the spaces provided in this question paper.
3. You are supplied with a 1 : 50 000 topographical map 2528DA of CULLINAN and an orthophoto map of a part of the mapped area.
4. You must hand the topographical map and the orthophoto map to the invigilator at the end of this examination session.
5. You may use the blank page at the back of this question paper for all rough work and calculations. Do NOT detach this page from the question paper.
6. Show ALL calculations, where applicable. Marks will be allocated for these.
7. You may use a non-programmable calculator.
8. The area demarcated in RED on the topographical map represents the area covered by the orthophoto map.
9. The following English terms and their Afrikaans translations are shown on the topographical map.

**ENGLISH**

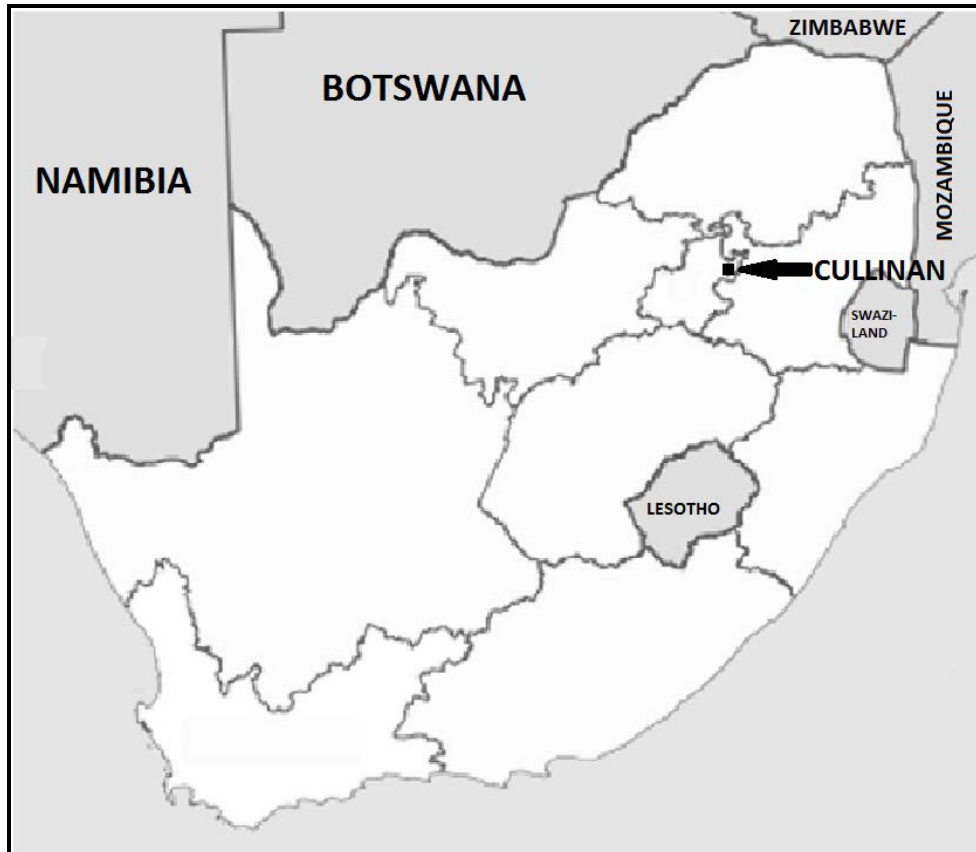
Diggings  
Conveyor belt  
Golf course  
River  
Diamond mine  
Sewage works  
Waterworks  
Sewage disposal works  
Rifle range  
Landing strip  
Brickworks  
Furrow  
Refuse dump

**AFRIKAANS**

Uitgrawings  
Vervoerband  
Gholfbaan  
Rivier  
Diamantmyn  
Rioolwerke  
Waterwerke  
Riolverwyderingswerke  
Skietbaan  
Landingstrook  
Steenwerke  
Voor  
Vullisstortingsterrein

**GENERAL INFORMATION ON CULLINAN**

Cullinan is situated in the Highveld region of South Africa. The town has an elevation of 1 476 m. The closest city is Pretoria, which is 40 km away, while Johannesburg is 100 km away. On 25 June 1905 the famed Cullinan Diamond, the largest in the world at 3 106 carats (621 g), was discovered by Frederick George Stanley Wells, a surface manager at the Premier Diamond Mining Company. The town of Cullinan owes its existence to diamond mining in the area. Cullinan's opencast mine is among the biggest in the world, three times the size of the more famous Kimberley Diamond Mine.

**FIGURE 1**

**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

The questions below are based on the 1 : 50 000 topographical map 2528DA CULLINAN, as well as the orthophoto map of a part of the mapped area. Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) in the block next to each question.

1.1 The map index/reference of the topographical map to the south-east of Cullinan is ...

- A 2528BD.
- B 2528AD.
- C 2528DD.
- D 2528DB.

1.2 The direction of **P** in block **B8** from **O** in block **C6** is ...

- A north-east.
- B north-north-east.
- C east-north-east.
- D east.

1.3 Cullinan is a/an ... town.

- A industrial
- B recreational
- C dormitory
- D mining

1.4 The street pattern at Refilwe in block **B2** is ...

- A unplanned.
- B irregular.
- C radial.
- D a gridiron.

1.5 The contour interval on the orthophoto map is ... metres.

- A 5
- B 10
- C 15
- D 20

1.6 The orthophoto map is an example of a ... photograph.

- A high-angle oblique
- B low-angle oblique
- C horizontal
- D vertical aerial

1.7 The dam wall (**Y**) in block **F8** is ... metres above sea level.

- A 1 500
- B 20
- C 150
- D 1 400

1.8 The human-made feature at **4** on the orthophoto map is a ...

- A park.
- B cemetery.
- C golf course.
- D conservation area.

1.9 The natural feature at **7** on the orthophoto map is a ...

- A valley.
- B spur.
- C gorge.
- D gap.

1.10 The row of trees in block **H5** is used as a ...

- A firebreak.
- B farm boundary.
- C plantation.
- D windbreak.

1.11 The true bearing of spot height 1452 (**K**) in block **F1** from trigonometrical station 44 (**J**) in block **E2** is ...

- A 24°.
- B 294°.
- C 204°.
- D 94°.

1.12 The major land-use zone in block **E4** is the ...

- A rural-urban fringe.
- B heavy industrial area.
- C residential area.
- D light industrial area.

1.13 Feature **6** on the orthophoto map is a ...

- A mine.
- B dam.
- C excavation.
- D mine dump.

1.14 The stream order at **X** in block **C5** is ...

- A 4.
- B 3.
- C 1.
- D 2.

1.15 The grid reference/coordinates/position of the dam in block **F7** is ...

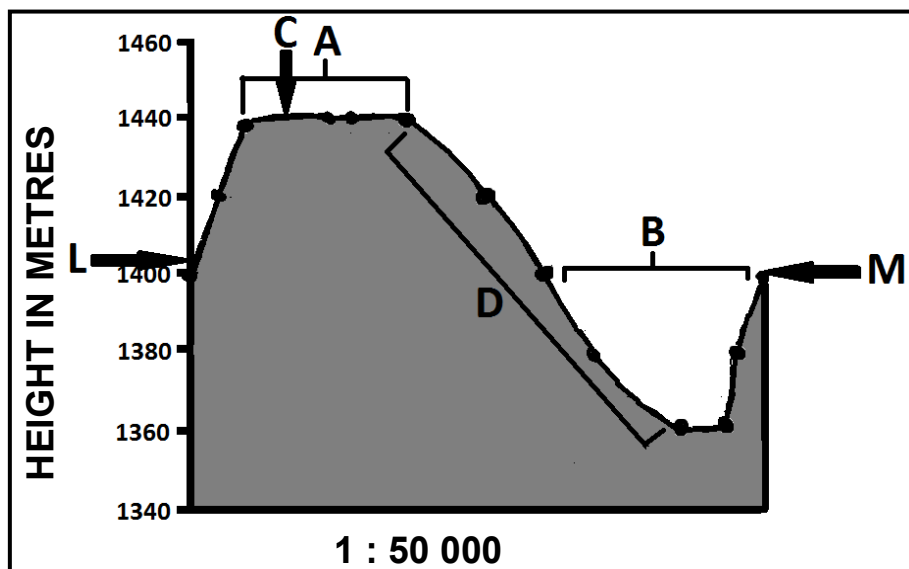
- A 25°42'48"S 28°36'30"E/25°42,8'S 28°36,5'E.
- B 28°42'30"S 25°36'48"E/28°42,5'S 25°36,8'E.
- C 25°42'30"E 28°36'48"S/25°42,5'E 28°36,8'S.
- D 25°42'30"S 28°36'48"E/25°42,5'S 28°36,8'E.

(15 x 1)

[15]

## QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the cross-section below from **L** in block **A2** to **M** in block **B5** on the topographical map and answer the questions that follow. The vertical scale for the cross-section is 1 cm represents 20 m.



2.1.1 Identify landforms **A** and **B** on the cross-section above.

A: \_\_\_\_\_

B: \_\_\_\_\_

(2 x 1)

(2)

- 2.1.2 (a) Identify the conventional sign at **C** that shows height.

\_\_\_\_\_ (1 x 1) (1)

- (b) State the height of the conventional sign at **C**.

\_\_\_\_\_ (1 x 1) (1)

- 2.1.3 (a) Which average gradient will apply to slope **D** on the cross-section? Circle the correct answer (**A** or **B**) below.

**A** 1 : 22

**B** 1 : 122 (1 x 1) (1)

- (b) Give a reason for your answer to QUESTION 2.1.3(a).

\_\_\_\_\_ (1 x 1) (1)

- 2.1.4 Calculate the vertical exaggeration of the cross-section. Show ALL calculations. Marks will be awarded for calculations.

$$\text{Vertical exaggeration} = \frac{\text{vertical scale}}{\text{horizontal scale}}$$

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (4 x 1) (4)



- 2.2 Calculate the magnetic declination of topographical map 2528DA CULLINAN for 2014. Show ALL calculations. Marks will be awarded for calculations.

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(5 x 1) (5)

- 2.3 Refer to the demarcated area in RED on the topographical map which represents the orthophoto map. Use the demarcated area to calculate the surface area of the orthophoto map in km<sup>2</sup>. Show ALL calculations. Marks will be awarded for calculations.

**Area = length × breadth**

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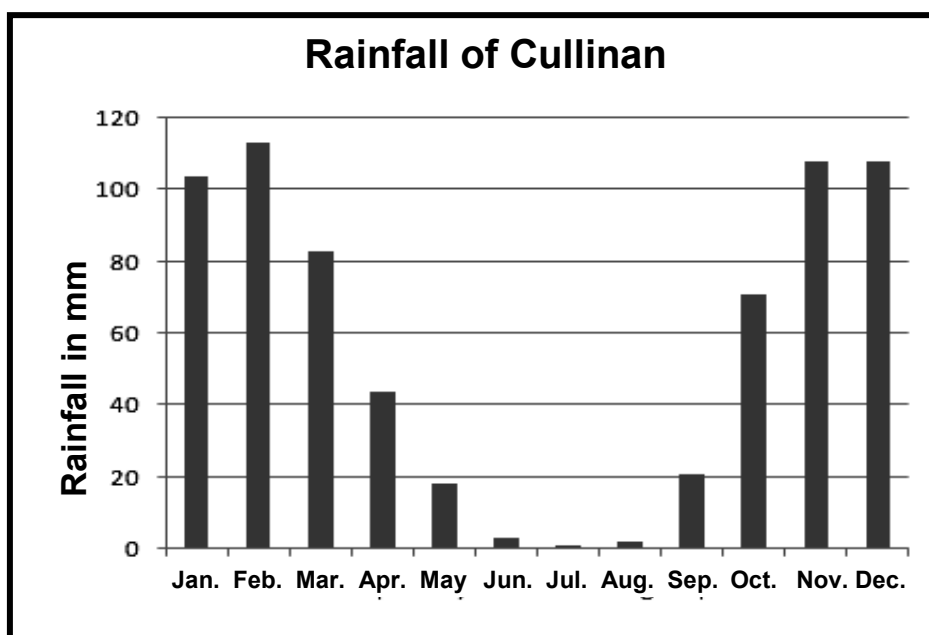
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(5 x 1) (5)  
**[20]**

**QUESTION 3: APPLICATION AND INTERPRETATION**

- 3.1 Refer to the graph below, the information on page 3 and the topographical map to answer the questions that follow.



- 3.1.1 Does Cullinan receive seasonal rainfall or rainfall throughout the year?

(1 x 1) (1)

- 3.1.2 Give ONE point of evidence from the graph and ONE point of evidence from the topographical map to support your answer to QUESTION 3.1.1.

Graph: \_\_\_\_\_

Topographical map: \_\_\_\_\_

(2 x 1) (2)

- 3.1.3 Taking your answer to QUESTION 3.1.1 into account, was the orthophoto map taken in summer or winter? Give a reason for your answer.

Answer: \_\_\_\_\_

Reason: \_\_\_\_\_

(1 + 2) (3)

- 3.2      3.2.1      State the general flow direction of the Masokololo River in block **C8**.
- \_\_\_\_\_
- (1 x 1)      (1)
- 3.2.2      Give ONE reason from the topographical map for your answer to QUESTION 3.2.1.
- \_\_\_\_\_
- \_\_\_\_\_
- (1 x 2)      (2)
- 3.3      Refer to the settlement at point **V** in block **D8** and answer the questions below.
- 3.3.1      Name the settlement pattern of the settlement at point **V**.
- \_\_\_\_\_
- (1 x 1)      (1)
- 3.3.2      State ONE disadvantage for a farm labourer living in the settlement in QUESTION 3.3.1.
- \_\_\_\_\_
- \_\_\_\_\_
- (1 x 2)      (2)
- 3.4      Refer to blocks **D1** and **D2** indicating the Premier Diamond Mine, an opencast mine situated on the outskirts of Cullinan. Study it together with the orthophoto map and answer the questions that follow.
- 3.4.1      State ONE environmental injustice that this type of mining caused in the area surrounding the Premier Diamond Mine.
- \_\_\_\_\_
- (1 x 1)      (1)
- 3.4.2      Discuss TWO measures that mining companies can implement to restore the environmental balance.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- (2 x 2)      (4)

- 3.4.3 Evaluate why mining companies choose not to restore the environmental balance you mentioned in QUESTION 3.4.2.

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(2 x 2) (4)

- 3.5 Refer to the farm Uitzicht in block **E7** and answer the questions that follow.

- 3.5.1 Does the farm Uitzicht practise small-scale or large-scale farming?

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(1 x 1) (1)

- 3.5.2 Give ONE reason from the topographical map to support your answer to QUESTION 3.5.1.

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(1 x 2) (2)

- 3.6 The residential area at point **9** on the orthophoto map is a high-income residential area.

Give ONE piece of evidence from the orthophoto map to support this statement.

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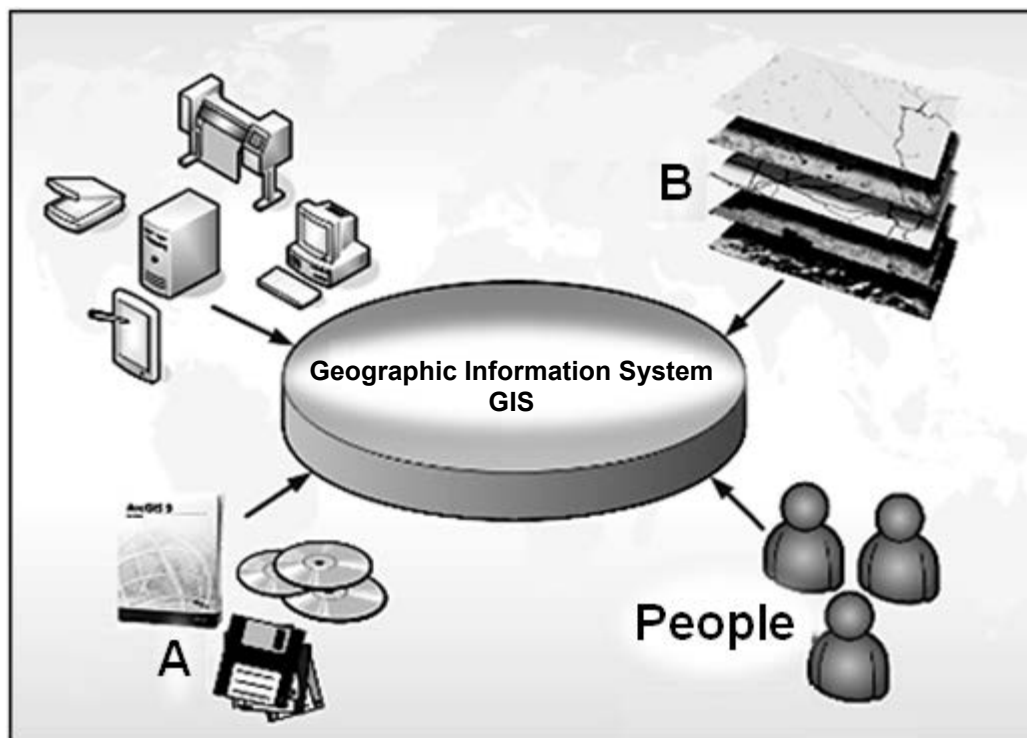
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(1 x 1) (1)

**[25]**

**QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

- 4.1 The diagram below shows the different components of a GIS. Study the diagram and answer the questions that follow.



[Adapted from Google Images]

- 4.1.1 Identify components **A** and **B**.

**A:** \_\_\_\_\_

**B:** \_\_\_\_\_

(2 x 1) (2)

- 4.1.2 Explain the role that people play in a GIS.

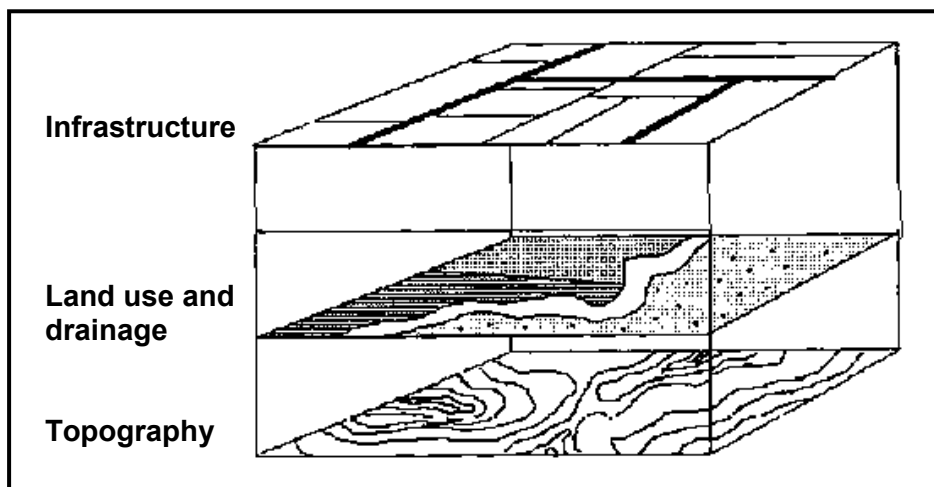
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(1 x 2) (2)

- 4.2 In order to do a paper GIS it is important to familiarise oneself with the different layers of information. Refer to block **F6** on the topographical map and the diagram below to answer the questions that follow.



[Adapted from Google Images]

- 4.2.1 Give ONE example of each of the following layers in block **F6**:

Infrastructure: \_\_\_\_\_

Land use: \_\_\_\_\_

Drainage: \_\_\_\_\_

(3 x 1) (3)

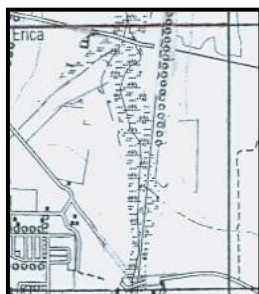
- 4.2.2 Why is data layering (information layers) important in a GIS?

\_\_\_\_\_

\_\_\_\_\_

(1 x 2) (2)

- 4.3 The area around the marsh and vlei in block **E5** is a flood risk. Hydrologists have recommended that a buffer zone of 250 m be created around the marsh and vlei where no development may take place. Refer to the extract of block **E5** on the topographical map below and answer the questions that follow.



Scale 1 : 50 000

Marsh and vlei



Perennial river



Non-perennial river



- 4.3.1 Draw in the buffer zone recommended by the hydrologists on the above extract of block **E5**. (2 x 1) (2)
- 4.3.2 Identify ONE human-made buffer zone and ONE natural buffer zone in block **E5**.
- Human-made: \_\_\_\_\_
- Natural: \_\_\_\_\_ (2 x 1) (2)
- 4.3.3 State ONE site factor that determined the location of the settlement Erica in blocks **E4** and **E5**. \_\_\_\_\_ (1 x 2) (2)
- TOTAL: 75**

## **ROUGH WORK AND CALCULATIONS**





# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**GEOGRAPHY P2**

**NOVEMBER 2014**

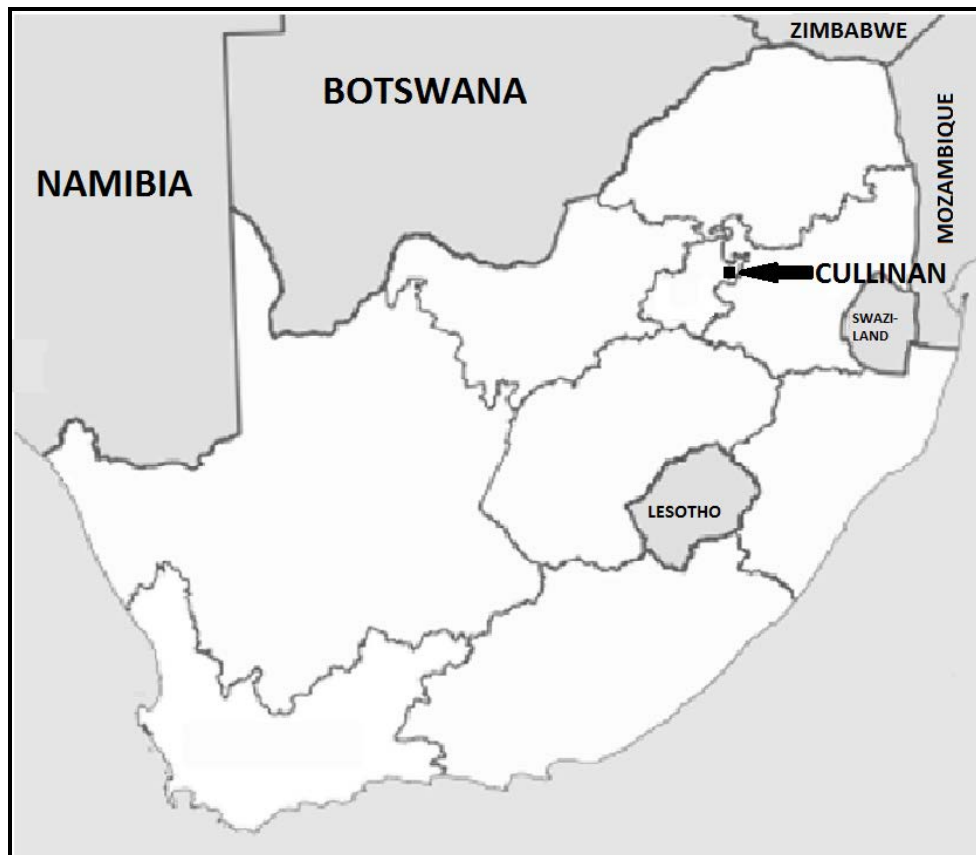
**MEMORANDUM**

**MARKS: 75**

**This memorandum consists of 14 pages.**

**GENERAL INFORMATION ON CULLINAN**

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**FIGURE 1**

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**C**

1.2 The direction of **P** in block **B8** from **O** in block **C6** is ...

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**D**

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- B irregular.
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- D a grid iron.

**B**

1.5 The contour interval on the orthophoto map is ... metres.

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- B 10
- C 15
- D 20

**A**

1.6 The orthophoto map is an example of a ... photograph.

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- B low-angle oblique
- C horizontal
- D vertical aerial

**D**

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- B 20
- C 150
- D 1 400

**A**

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- C golf course.
- D conservation area.

**C**

1.9 The natural feature at **7** on the orthophoto map is a ...

- A valley.
- B spur.
- C gorge.
- D gap.

**B**

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**A**

1.13 Feature **6** on the orthophoto map is a ...

- A mine.
- B dam.
- C excavation.
- D mine dump.

**B**

1.14 The stream order at **X** in block **C5** is ...

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- B 3.
- C 1.
- D 2.

D

1.15 The grid reference/coordinates/position of the dam in block **F7** is ...

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- B 28°42'30"S 25°36'48"E/28°42,5'S 25°36,8'E.
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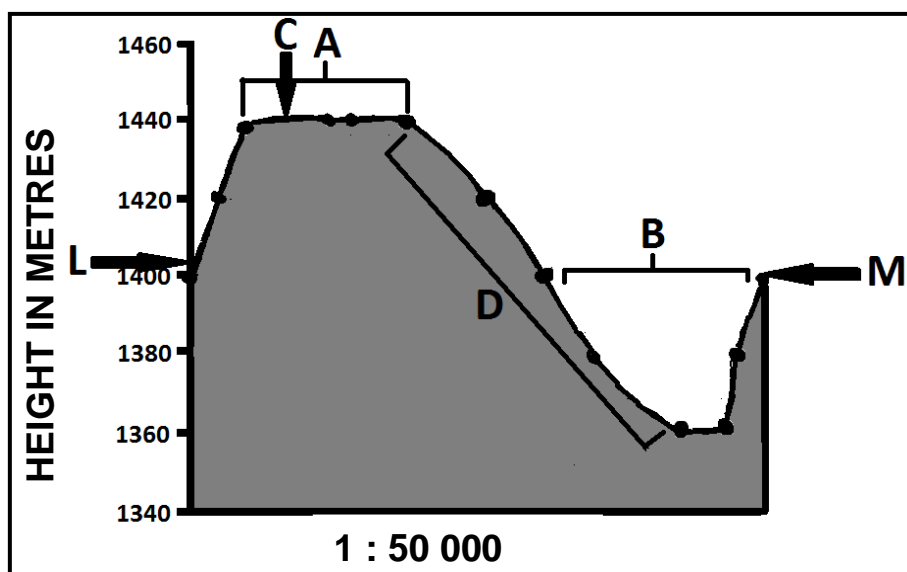
A

(15 x 1)

**[15]**

## QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the cross-section below from **L** in block **A2** to **M** in block **B5** on the topographical map and answer the questions that follow. The vertical scale for the cross-section is 1 cm represents 20 m.



2.1.1 Identify landforms **A** and **B** on the cross-section above.

**A:** Ridge/Butte/Hill/Flat topped hill ✓

**B:** Valley/River valley ✓

(2 x 1)

(2)

- 2.1.2 (a) Identify the conventional sign at **C** that shows height.

*Trigonometrical station ✓* (1 x 1) (1)

- (b) State the height of the conventional sign at **C**.

*1 453.3 (m) ✓* (1 x 1) (1)

- 2.1.3 (a) Which average gradient will apply to slope **D** on the cross-section? Circle the correct answer (**A** or **B**) below.

**(A)** 1 : 22 (1 x 1) (1)

- (b) Give a reason for your answer to QUESTION 2.1.3(a).

*Steep gradient because the contour lines are close together ✓*

*1 : 122 indicates that the slope is gentle/1 : 22 indicates a steep slope ✓*

*The cross-section shows slope **D** as a steep slope ✓*

*Rise is over a shorter distance*

*For every 22 units in horizontal distance, height increases by 1 unit ✓*

*[Any ONE]* (1 x 1) (1)

- 2.1.4 Calculate the vertical exaggeration of the cross-section. Show ALL calculations. Marks will be awarded for calculations.

$$\text{Vertical exaggeration} = \frac{\text{vertical scale}}{\text{horizontal scale}}$$

Vertical scale: 1 cm represents 20 m (2 000 cm)

$$= \frac{1:2000 \checkmark}{1:50\,000 \checkmark}$$

$$= \frac{1}{2\,000} \times \frac{50\,000}{1} \checkmark$$

$$= \frac{25}{1}$$

$$= 25 \text{ times } \checkmark$$

(Learner must indicate unit) (4 x 1) (4)

- 2.2 Calculate the magnetic declination of topographical map 2528DA CULLINAN for 2014. Show ALL calculations. Marks will be awarded for calculations.

$$\begin{aligned}
 \text{Difference in years} &= 2014 - 2002 \\
 &= 12 \text{ years } \checkmark \\
 \text{Mean annual change} &= 8'W \checkmark \\
 \text{Total change} &= 12 \times 8'W \\
 &= 96'W / 1^\circ 36'W \checkmark
 \end{aligned}$$

$$\begin{aligned}
 \text{Magnetic declination for 2014} &= 16^\circ 52'W + 96'W / 1^\circ 36'W \checkmark \\
 &= 17^\circ 88'W \\
 &= 18^\circ 28'W \checkmark
 \end{aligned}$$

(5 x 1) (5)

- 2.3 Refer to the demarcated area in RED on the topographical map which represents the orthophoto map. Use the demarcated area to calculate the surface area of the orthophoto map in km<sup>2</sup>. Show ALL calculations. Marks will be awarded for calculations.

**Area = length × breadth**

$$\text{Length} = 9,1 \text{ cm } \checkmark \times 0,5 = 4,55 \text{ km (Range 8.95 – 9.25) [Accept other formulas to calculate length]}$$

$$\begin{aligned}
 \text{Breadth} &= 7,1 \text{ cm } \checkmark \times 0,5 = 3,55 \text{ km (Range 6.95 – 7.25) [Accept other formulas to calculate breadth]} \\
 &= 4,55 \text{ km } \checkmark \times 3,55 \text{ km } \checkmark \\
 &= 16,15 \text{ km}^2 \checkmark
 \end{aligned}$$

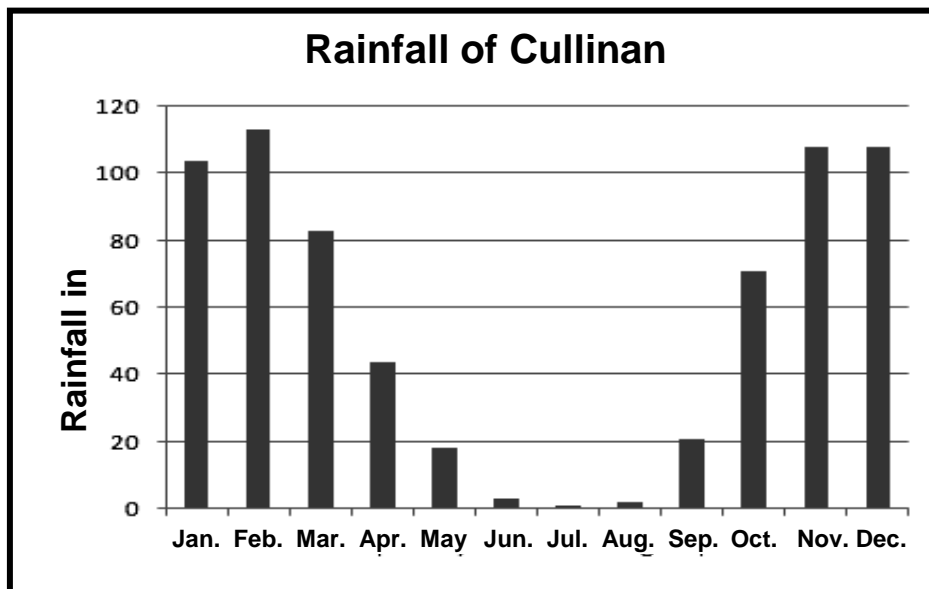
$$\text{Range: } 15,75 \text{ km}^2 - 16,56 \text{ km}^2$$

(If orthophoto map is used to calculate the area, 1 mark must be given for the final correct answer. No credit is given for steps)

(Accept if line scale was used for determining distance) (5 x 1) (5)  
[20]

**QUESTION 3: APPLICATION AND INTERPRETATION**

- 3.1 Refer to the graph below, the information on page 2 and the topographical map to answer the questions that follow.



- 3.1.1 Does Cullinan receive seasonal rainfall or rainfall throughout the year?  
*Seasonal* ✓ (1 x 1) (1)
- 3.1.2 Give ONE point of evidence from the graph and ONE point of evidence from the topographical map to support your answer to QUESTION 3.1.1.
- Graph: *Highest rainfall during summer months (November–March)* ✓  
*Lowest rainfall in the winter months (May–September)* ✓  
[Any ONE]
- Topographical map: *Non-perennial/ Periodic rivers/water* ✓  
*Many dams/Reservoirs/Windmills* ✓  
*Irrigation implemented (accept example)* ✓  
[Any ONE] (2 x 1) (2)
- 3.1.3 Taking your answer to QUESTION 3.1.1 into account, was the orthophoto map taken in summer or winter? Give a reason for your answer.
- Answer: *Winter* ✓
- Reason: *Limited/Lack of vegetation* ✓✓  
*Light shading of dams show little/no water* ✓✓  
*Cloudless winter conditions ideal for taking a vertical aerial photograph* ✓✓  
[Any ONE] (1 + 2) (3)



- 3.2      3.2.1      State the general flow direction of the Masokololo River in block **C8**.  
*North/Northwards ✓* (1 x 1) (1)
- 3.2.2      Give ONE reason from the topographical map for your answer to QUESTION 3.2.1.  
*Dam wall found on the northern section of the dam ✓✓*  
*Dam wall is downstream north of the dam ✓✓*  
*Contour lines bend upstream ✓✓*  
*Water collects south of the dam wall ✓✓*  
*V-shaped contours that cut the river point towards increasing height to the south ✓✓*  
*The non-perennial tributary in block **B8** that joins the river at an acute/small angle from the south ✓✓*  
*Descends from **E8** at (1 508 m) to **A8** at (1 358 m) ✓✓*  
*[Any ONE]* (1 x 2) (2)
- 3.3      Refer to the settlement at point **V** in block **D8** and answer the questions below.
- 3.3.1      Name the settlement pattern of the settlement at point **V**.  
*Nucleated/Clustered/Compact ✓* (1 x 1) (1)
- 3.3.2      State ONE disadvantage for a farm labourer living in the settlement in QUESTION 3.3.1.  
*No privacy ✓✓*  
*Few services ✓✓*  
*Diseases can spread easily ✓✓*  
*Fires spread easily from house to house ✓✓*  
*Lower standard of living ✓✓*  
*Conflicts between farm workers ✓✓*  
*The farm labourers do not own the land ✓✓*  
*[Any ONE. Accept other reasonable answers applicable to the question]* (1 x 2) (2)

3.4 Refer to blocks **D1** and **D2** indicating the Premier Diamond Mine, an opencast mine situated on the outskirts of Cullinan. Study it together with the orthophoto map and answer the questions that follow.

3.4.1 State ONE environmental injustice that this type of mining caused in the area surrounding the Premier Diamond Mine.

*Biodiversity being lost / Food chains will be destroyed ✓*  
*Ecosystems being destroyed/ destroying aesthetic appeal/scenic beauty ✓*  
*Groundwater and rivers being polluted ✓*  
*Environmental despoliation ✓*  
*Pollution/ Dust ✓*  
*Landscape being scarred ✓*  
*Acid Mine Drainage ✓*  
*Wind erosion ✓*  
*Sinkholes ✓*

*[Any ONE. Accept other reasonable answers applicable to the question]*

(1 x 1) (1)

3.4.2 Discuss TWO measures that mining companies can implement to restore the environmental balance.

*Refilling of the excavation/ open cast mine ✓✓*  
*Filling with water for recreational purposes ✓✓*  
*Purification/Treatment of acid water ✓✓*  
*Rehabilitate the area by planting vegetation ✓✓*  
*Limit the amount of mining pollutants being dumped in the surrounding environment ✓✓*  
*Do research to establish the impact of mining on the environment ✓✓*

*[Any TWO. Accept other reasonable answers applicable to the question]*

(2 x 2) (4)

3.4.3 Evaluate why mining companies choose not to restore the environmental balance you mentioned in QUESTION 3.4.2.

*Costs large amounts of money to restore the environmental balance ✓✓*  
*Decreases the potential profit of the mining company ✓✓*  
*It is time consuming ✓✓*  
*Environmental laws not strictly enforced/implemented ✓✓*  
*High costing for labour to implement rehabilitation ✓✓*  
*Cannot start rehabilitation as area is still being mined ✓✓*  
*Area is being remined due to improved technology ✓✓*  
*Most mines are owned by foreigners who are no longer interested in restoring balance ✓✓*

*[Any TWO. Accept other reasonable answers]*

(2 x 2) (4)

3.5 Refer to the farm Uitzicht in block **E7** and answer the questions that follow.

3.5.1 Does the farm Uitzicht practise small-scale or large-scale farming?

*Large-scale ✓* (1 x 1) (1)

3.5.2 Give ONE reason from the topographical map to support your answer to QUESTION 3.5.1.

*Farm boundaries ✓✓*  
*The farm has a name ✓✓*  
*Irrigation/Water supply/Reservoir/Dam found in D7 ✓✓*  
*Farm area is large ✓✓*  
*Area is accessible(roads) for the easy distribution of products ✓✓*  
*Generally flat land ✓✓*  
*Farm workers reside close-by in nucleated settlements ✓✓*  
*[Any ONE. Accept other reasonable answers]* (1 x 2) (2)

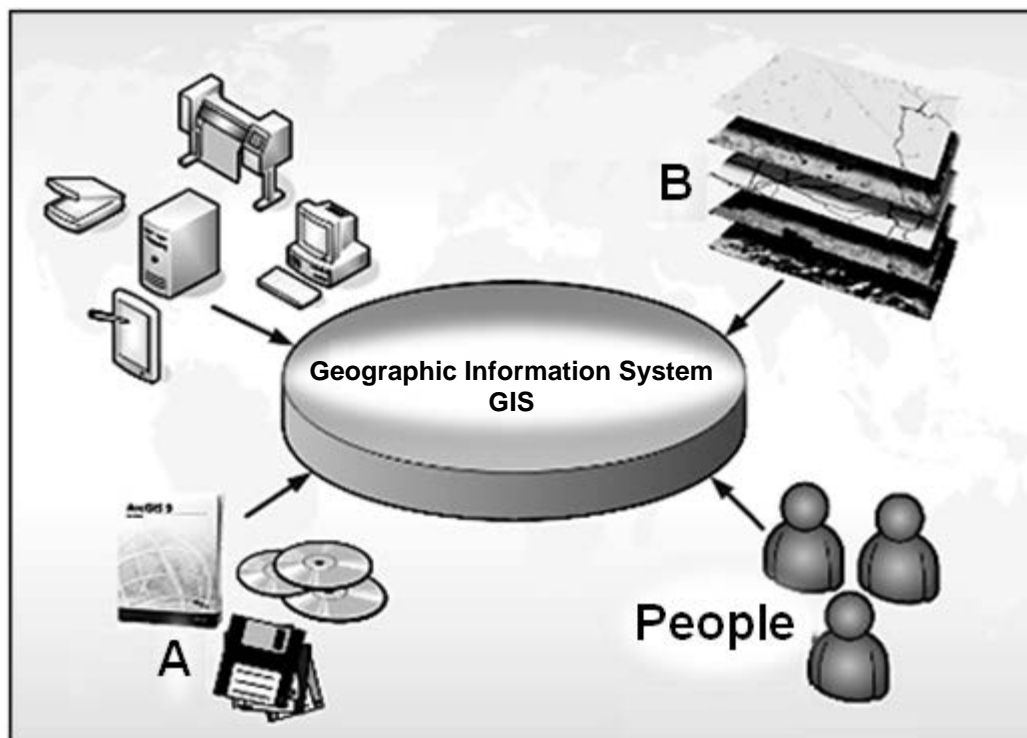
3.6 The residential area at point **9** on the orthophoto map is a high-income residential area.

Give ONE piece of evidence from the orthophoto map to support this statement.

*Large plots/ houses ✓*  
*Low building density ✓*  
*Far from CBD ✓*  
*Near the golf course/Recreation ✓*  
*Scenic beauty/Aesthetic appeal/view ✓*  
*Accessible - Linked to a main road and other services for easy access (must qualify) ✓*  
*Not accessible - Fewer entrances into the residential area (must qualify) ✓*  
*Greenbelt ✓*  
*Away from the mining activities ✓*  
*[Any ONE. Accept other reasonable answers]* (1 x 1) (1)  
**[25]**

**QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

- 4.1 The diagram below shows the different components of a GIS. Study the diagram and answer the questions that follow.



[Adapted from Google Images]

- 4.1.1 Identify components **A** and **B**.

**A:** Software/Programmes ✓

**B:** Data ✓

(2 x 1) (2)

- 4.1.2 Explain the role that people play in a GIS.

*People collect the data ✓✓*

*People manipulate and process the information ✓✓*

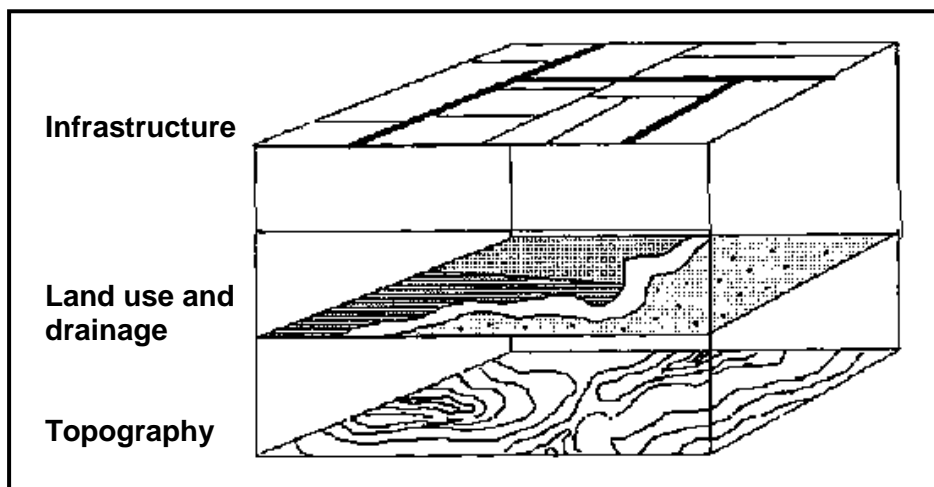
*People use the information ✓✓*

*People develop GIS programmes and capture data ✓✓*

*[Any ONE]*

(1 x 2) (2)

- 4.2 In order to do a paper GIS it is important to familiarise oneself with the different layers of information. Refer to block **F6** on the topographical map and the diagram below to answer the questions that follow.



[Adapted from Google Images]

- 4.2.1 Give ONE example of each of the following layers in block **F6**:

Infrastructure: *Other road/Reservoir/Buildings/Dam wall/  
Hiking trails ✓  
[Any ONE]*

Land use: *Settlement/Cultivated land/Crop farming/Rows of  
trees/Hiking trails/Reservoir/Dam/Excavation/  
Farms/Other road/Diggings/Buildings ✓  
[Any ONE]*

Drainage: *Non-perennial river/Newman's  
Spruit/Dam/Reservoirs/River valley ✓  
[Any ONE]*

(3 x 1) (3)

- 4.2.2 Why is data layering (information layers) important in a GIS?

*Different sets of data can be compared ✓✓  
Integrated picture of landscape ✓✓*

*Relationships between different sets of data can be established ✓✓  
Analyse different sets of information ✓✓  
Comparisons can assist with future developments ✓✓  
Helps with querying ✓✓  
Any ONE. Accept other reasonable answers]*




(1 x 2) (2)

- 4.3 The area around the marsh and vlei in block **E5** is a flood risk. Hydrologists have recommended that a buffer zone of 250 m be created around the marsh and vlei where no development may take place. Refer to the extract of block **E5** on the topographical map below and answer the questions that follow.

4.3.1  
Buffer zone  
must be 5 mm  
from the end of  
the marsh and  
vlei. (ONE  
mark)✓  
Candidates  
should draw a  
curved line.  
(ONE mark) ✓



Scale 1 : 50 000

Marsh and vlei   
Perennial river   
Non-perennial river 

- 4.3.1 Draw in the buffer zone recommended by the hydrologists on the above extract of block **E5**.

See sketch above.

(2 x 1) (2)

- 4.3.2 Identify ONE human-made buffer zone and ONE natural buffer zone in block **E5**.

Human-made: Row of trees ✓

Natural: Gradient/Slope/Contour lines/Flood plain✓

(2 x 1) (2)

- 4.3.3 State ONE site factor that determined the location of the settlement Erica in blocks **E4** and **E5**.

It is built on a dry point settlement/On higher ground away from the marsh and vlei/river/flood plain ✓✓

Contour lines are far apart indicating a gentle slope ✓✓

Soil fertility✓✓

In the inversion layer/thermal belt✓✓

Aspect✓✓

[Any ONE]

(1 x 2) (2)

[15]

**TOTAL: 75**