



**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2023

GEOGRAPHY P1

MARKS: 150

TIME: 3 hours

This question paper consists of 18 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO SECTIONS.
SECTION A:
QUESTION 1: The Atmosphere (60)
QUESTION 2: Geomorphology (60)
SECTION B:
QUESTION 3: Geographical Skills and Techniques (30)
2. Answer all THREE questions.
3. ALL diagrams are included in the QUESTION PAPER.
4. Leave a line between subsections of questions answered.
5. Start EACH question at the top of a NEW page.
6. Number the questions correctly according to the numbering system used in this question paper.
7. Do NOT write in the margins of the ANSWER BOOK.
8. Draw fully labelled diagrams when instructed to do so.
9. Answer in FULL SENTENCES, except when you have to state, name, identify or list.
10. Units of measurement MUST be indicated in your final answer, e.g. 1 020 hPa, 14 °C and 45 m.
11. You may use a non-programmable calculator.
12. You may use a magnifying glass.
13. Write neatly and legibly.

SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

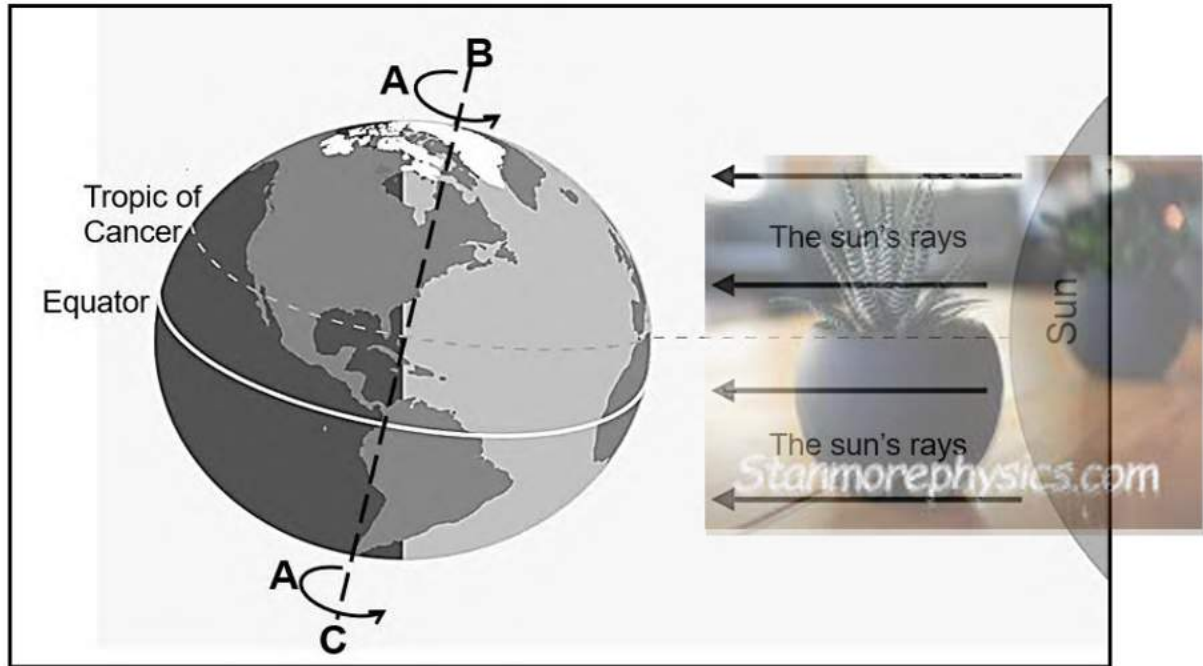
14. A 1 : 50 000 topographical map (3419 AB CALEDON) and an orthophoto map (3419AB 24 CALEDON) of a part of the mapped area are provided.
15. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.
16. Show ALL calculations. Marks will be allocated for this.
17. You must hand in the topographic and the orthophoto map to the invigilator at the end of this examination session.

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: THE ATMOSPHERE

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.8) in the ANSWER BOOK, for example 1.1.9 D.

Refer to the sketch below of the earth's axis to answer QUESTIONS 1.1.1 to 1.1.5.



[Adapted from <https://www.spacecentre.nz/resources/faq/solar-system/earth/rotation-speed.html>]

1.1.1 The season, the southern hemisphere experiences is ...

- A autumn.
- B winter.
- C spring.
- D summer.

1.1.2 The arrows at A shows the ... of the earth.

- A circle of illumination
- B revolution
- C rotation
- D circle of parallelism

1.1.3 The sketch illustrates a/an ... situation, with the days being ... than/to the night at the equator.

- (i) solstice
- (ii) equinox
- (iii) longer
- (iv) equal



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

1.1.4 Line **B–C** represents the ... of the earth's axis and is ... throughout the year.

- (i) dynamism
- (ii) parallelism
- (iii) consistent
- (iv) inconsistent

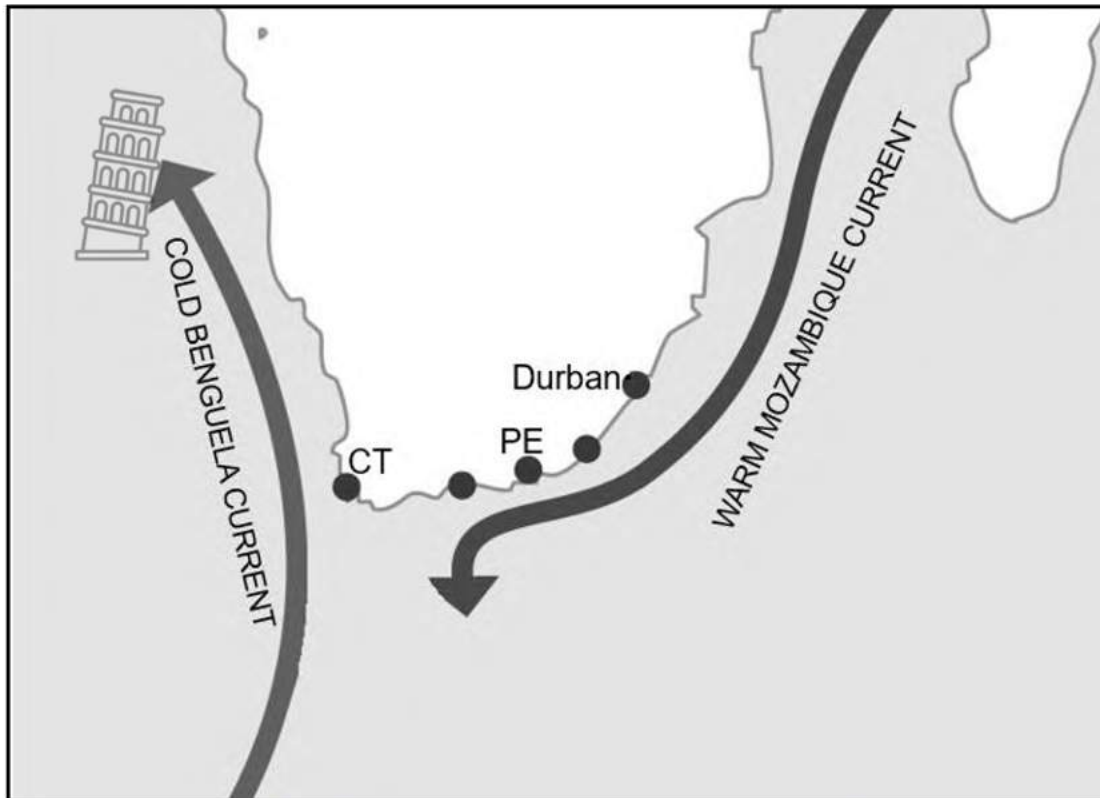
- A (i); (iii)
- B (i); (iv)
- C (ii); (iii)
- D (ii); (iv)

1.1.5 The amount of insolation that the earth receives depends on ... and ...

- (i) latitude
- (ii) rotation
- (iii) seasons
- (iv) revolution

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

Refer to the below sketch on ocean currents to answer QUESTIONS 1.1.6 to 1.1.8.



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

1.1.6 The ocean currents in the sketch play a combined role in shaping weather patterns by ...

- A increasing temperatures.
- B moderating temperatures.
- C decreasing temperatures.
- D increasing rainfall.

1.1.7 The cold Benguela Ocean current transfers ... air from the poles to the ... zones.

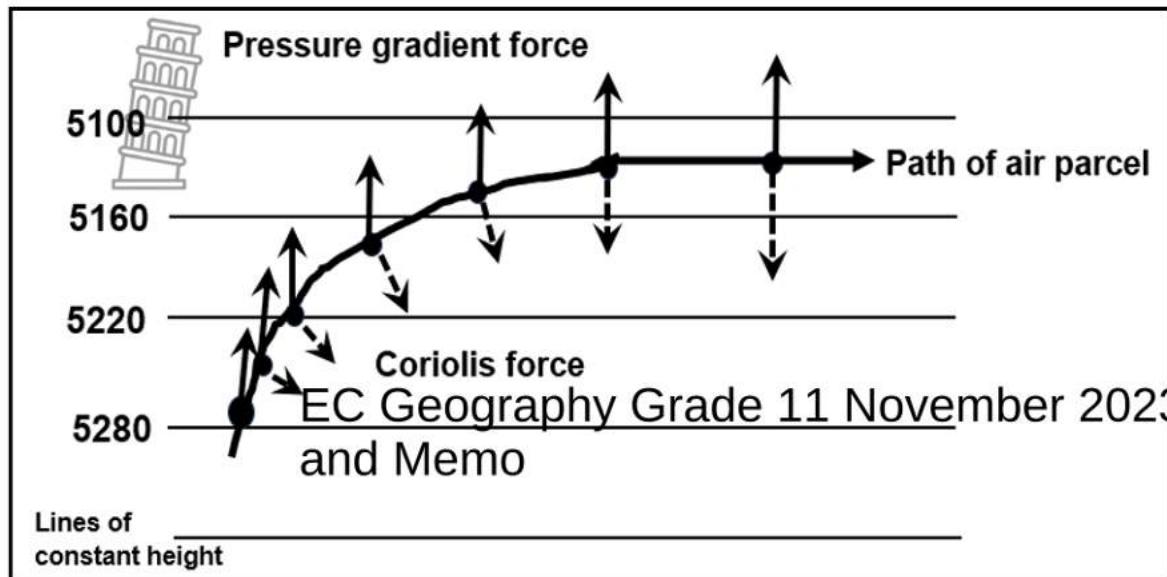
- A cold; temperate
- B warm; coastal
- C cold; coastal
- D warm; desert

1.1.8 Warm ocean currents move from the ... to the ...

- A poles; equator.
- B west; poles.
- C east; equator.
- D equator; poles.

(8 x 1) (8)

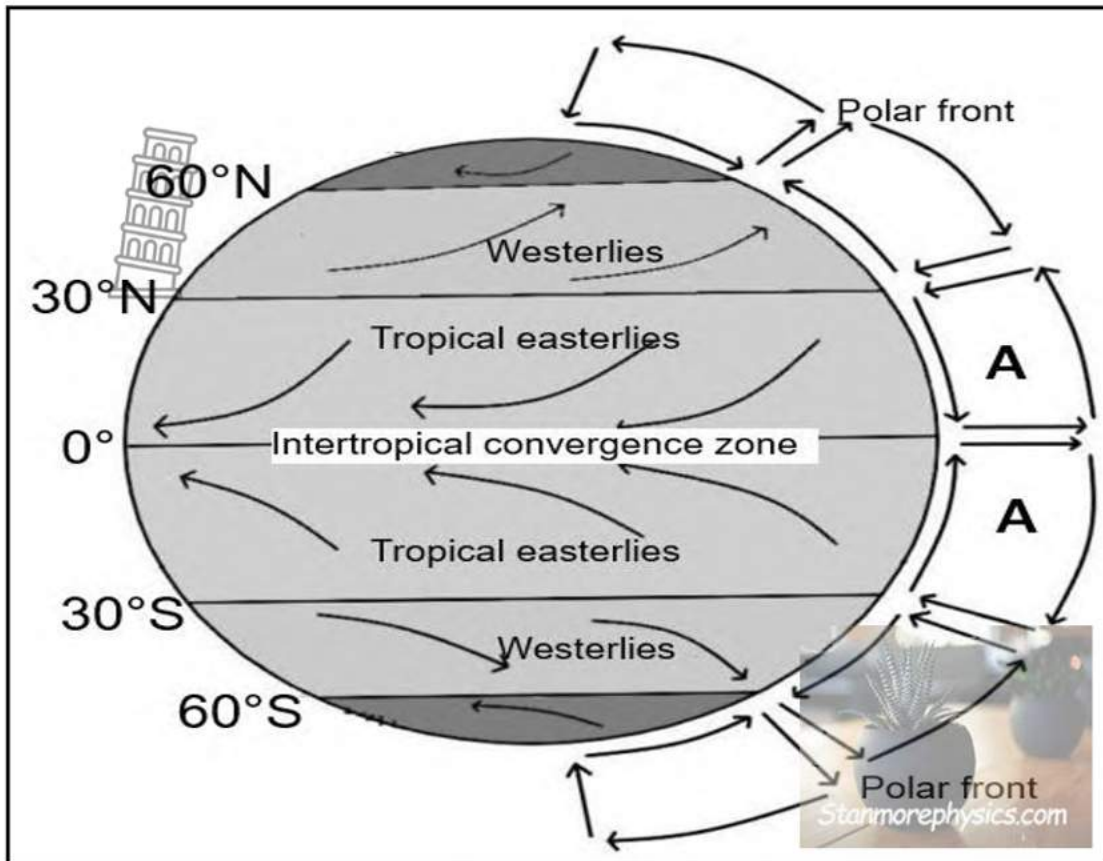
- 1.2 Refer to the sketch on the direction and speed of wind. Choose the correct word(s)/number(s) from those given in brackets to complete the following sentences. Write only the word(s)/number(s) next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK.



[Source: Examiner's own sketch]

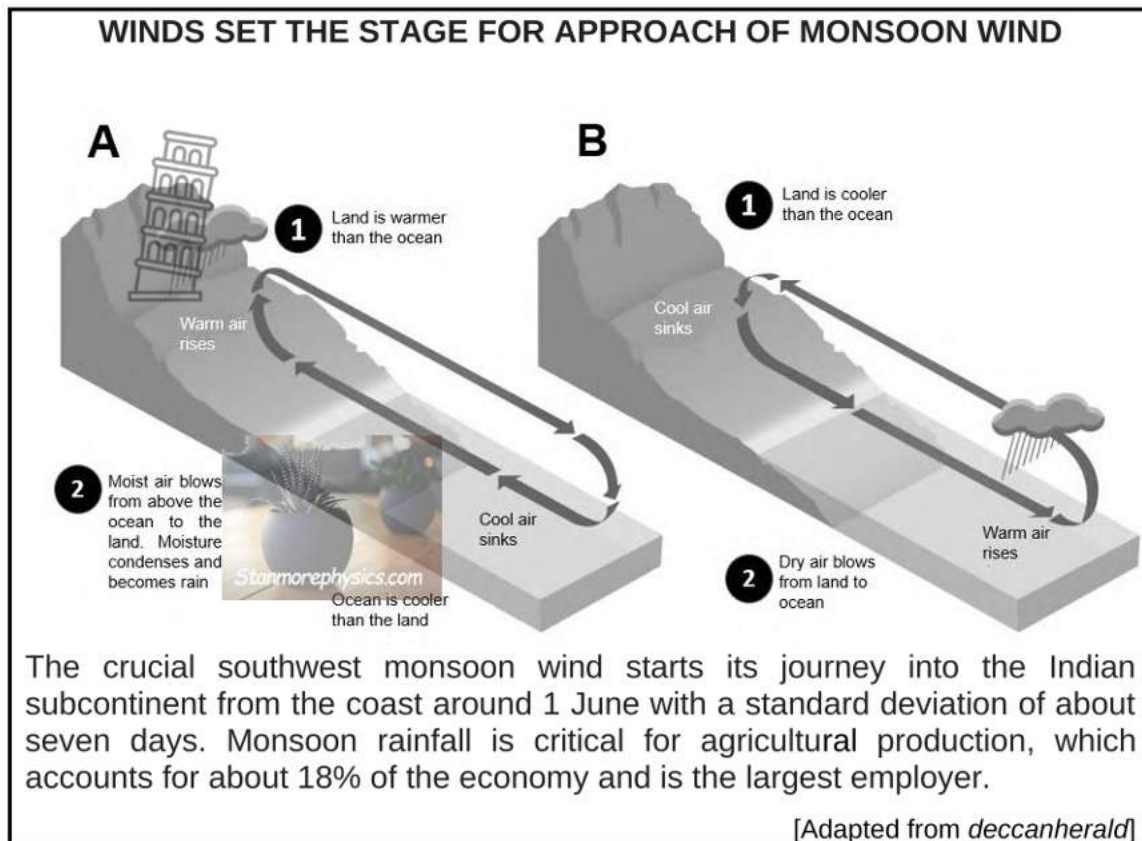
- 1.2.1 The lines in the sketch showing places of equal pressure are known as (contours/isobars).
- 1.2.2 The high pressure is represented by (5280/5100) hectopascals.
- 1.2.3 (Coriolis/Pressure gradient) force determines the speed of the wind.
- 1.2.4 Winds deflect or change direction because of (Pressure gradient/Coriolis force).
- 1.2.5 The direction of the wind in the sketch above represents conditions in the (southern/northern) hemisphere.
- 1.2.6 The greater the difference in air pressures between high- and low-pressure cells, the (stronger/weaker) the wind.
- 1.2.7 Geostrophic (balance/flow) is a theoretical wind that blows parallel to the isobars. (7 x 1) (7)

1.3 Refer to the sketch on global air circulation.



- 1.3.1 What is the *intertropical convergence zone*? (1 x 2) (2)
- 1.3.2 Name the global cell at A. (1 x 1) (1)
- 1.3.3 How does a polar front form? (2 x 2) (4)
- 1.3.4 In a paragraph of approximately EIGHT lines, explain the movement of tropical easterlies and westerly winds and its impact on weather in regions that they occur. (4 x 2) (8)

1.4 Refer to the sketch and extract of a monsoon wind.

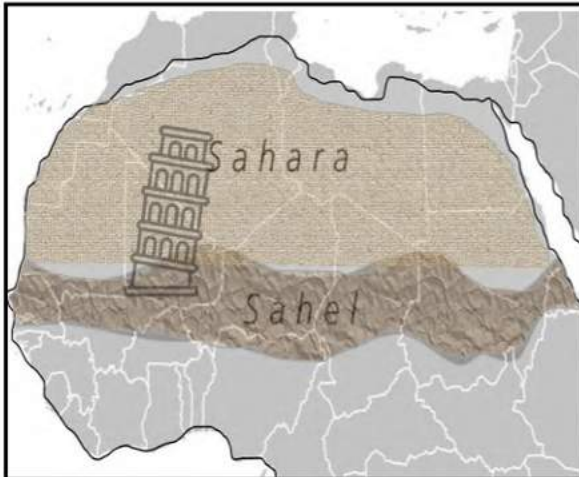


- 1.4.1 Match sketch **A** with either a summer or winter monsoon wind over the subcontinent of India. (1 x 1) (1)
- 1.4.2 Identify the direction of the monsoon wind, according to the extract, that blows in sketch **A**. (1 x 1) (1)
- 1.4.3 Why does this wind that you identified in QUESTION 1.4.2 bring heavy rainfall to the Indian subcontinent? (1 x 1) (1)
- 1.4.4 What positive physical (natural) impact will this heavy rainfall have on the Indian subcontinent? (2 x 2) (4)

Refer to sketch **B**.

- 1.4.5 Describe the weather conditions that would prevail over the Indian subcontinent in sketch **B**. (2 x 1) (2)
- 1.4.6 Explain the negative economic impact that the subcontinent of India would experience if the conditions in sketch **B** are prolonged (continued). (3 x 2) (6)

1.5 Refer to the map and extract on desertification.



Soaring temperatures and improper disaster management have resulted in increased desertification rates across the globe. Coupled with droughts and a drop in agricultural productivity, the effects of desertification cannot be ignored. To curb such high rates of land degradation that many regions of the world are experiencing, effective risk management is needed. Desertification is a huge issue also in Africa.

For example, poor harvesting and a surge in barren lands continue to plague the inhabitants of Tanzania. In Mauritania, a drop in rainfall has worsened agricultural production and has left many farmers struggling to grow enough food to eat or sell. Desertification can also cause loss of biodiversity and loss of *aquifers. In Africa, with nearly 45% of the landmass experiencing desertification, many people face even greater risks. In Mauritania, the dire situation has caused food insecurity, housing problems and population health declines. Villagers are trying to migrate as their houses become buried under the sand in addition to a lack of water sources and income.

* A body of rock or sediment saturated with groundwater.

[Source: <https://earth.org/desertification-in-africa/>]

- 1.5.1 What is *desertification*? (1 x 2) (2)
- 1.5.2 Identify the major desert on the map. (1 x 1) (1)
- 1.5.3 State ONE negative physical (natural) impact, according to the extract, of desertification. (1 x 1) (1)
- 1.5.4 Why is the Sahel regarded as a high-risk area? (1 x 1) (1)
- 1.5.5 Explain the negative social impact that a drop in agricultural productivity will have on the people of Africa. (2 x 2) (4)
- 1.5.6 Suggest measures that farmers could implement to reduce the spread of desertification. (3 x 2) (6)

[60]

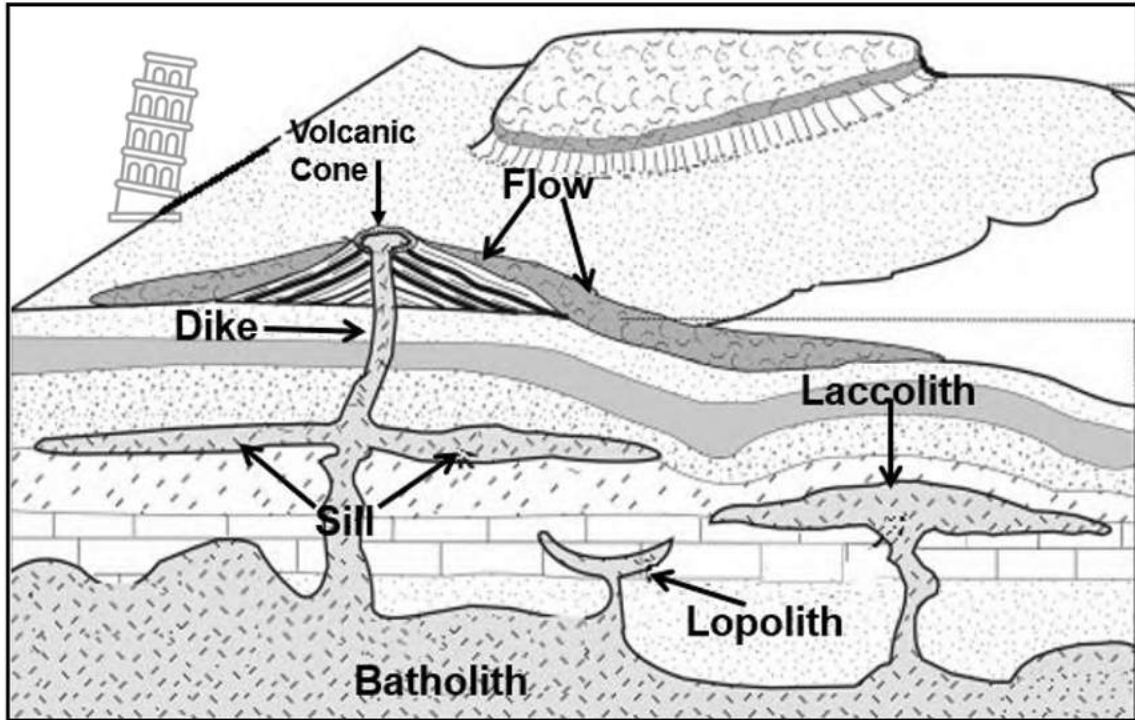
QUESTION 2: GEOMORPHOLOGY

- 2.1 Complete the statements in COLUMN A with the options in COLUMN B. Write only **X** or **Y** next to question numbers (2.1.1 to 2.1.8) in the ANSWER BOOK, for example 2.1.9 Y.

	COLUMN A		COLUMN B
2.1.1	Forms from layers of lava that flow horizontally onto the earth's surface	X	hilly landscape
		Y	basaltic plateau
2.1.2	Type of weathering causing exposed igneous rocks to peel off	X	sheetwash
		Y	exfoliation
2.1.3	The dip slope faces outward, and the scarp slope faces inwards	X	cuesta dome
		Y	cuesta basin
2.1.4	The relief region that lies between the plateau and coastal plains	X	plateau slopes
		Y	great escarpment
2.1.5	Top soil becomes saturated and slides on the frozen ground	X	earthflow
		Y	solifluction
2.1.6	Rapid movement of material down a slope will be increased by ...	X	steep slopes
		Y	thick vegetation
2.1.7	Assymmetrical ridge with a gentle dip slope between 10–25	X	hogsback
		Y	cuesta
2.1.8	Forms from hard rock that weathers slowly	X	dip slope
		Y	scarp slope

(8 x 1) (8)

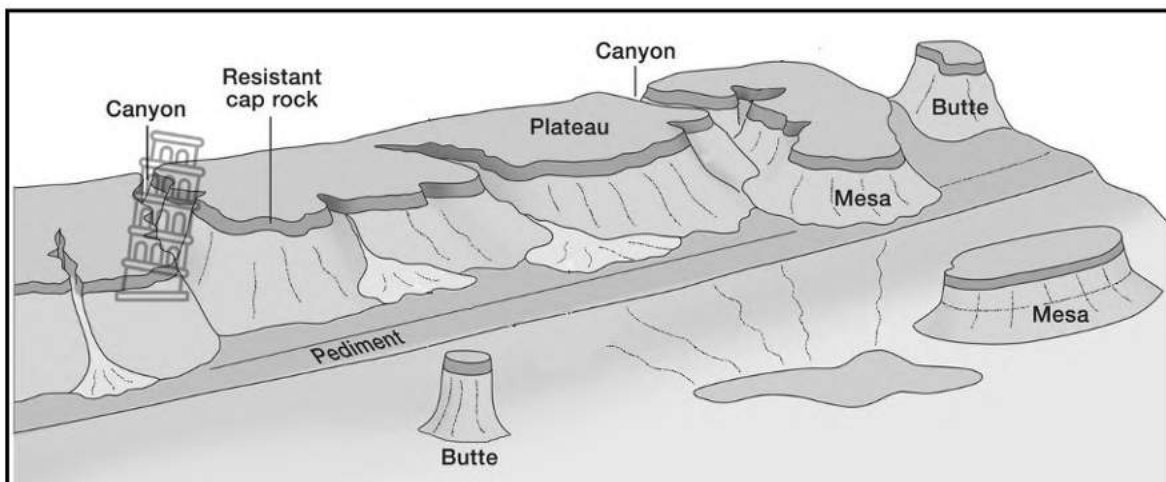
2.2 Refer to the sketch on intrusive landforms. Choose the correct landform from the sketch that the description below refers to. Write only the landform next to the question numbers (2.2.1 to 2.2.7) in the ANSWER BOOK.



[Source: <https://www.google.com/search?q=igneous+intrusions+diagram>]

- 2.2.1 The largest of all intrusive forms
- 2.2.2 A vertical intrusion of igneous rock that forms a wall
- 2.2.3 When magma is exposed on the earth's surface
- 2.2.4 Igneous intrusion that forms when strata is forced upwards
- 2.2.5 A horizontal intrusion of igneous rock that forms a sheet
- 2.2.6 Igneous intrusion that forms when sedimentary strata create a basin
- 2.2.7 A triangle-shaped hill formed from material of eruptions (7 x 1) (7)

2.3 Refer to the sketch on topography associated with horizontally layered rocks.



[Source: <https://www.google.com/search?q=topography+associated+with+horizontally>]

- 2.3.1 Comment on the height of the topography evident in the sketch. (1 x 1) (1)
- 2.3.2 Provide evidence from the sketch for your answer to QUESTION 2.3.1. (1 x 1) (1)
- 2.3.3 The topography above is (uniformly/not uniformly) resistant to erosion. (1 x 1) (1)
- 2.3.4 How do canyons form? (2 x 2) (4)
- 2.3.5 Explain how the elements of the Karoo landscape evident in the sketch will form from a canyon landscape. (2 x 2) (4)
- 2.3.6 How can the topography in the sketch associated with horizontally layered rocks be utilised economically by people? (2 x 2) (4)

2.4 Refer to the photos on topography associated with massive igneous rocks.

A



B



- 2.4.1 Identify the landforms associated with massive igneous rocks in photo **A** and photo **B**. (2 x 1) (2)
- 2.4.2 Name ONE characteristic of massive igneous rocks that is evident in the sketch. (1 x 1) (1)
- 2.4.3 From what igneous intrusions do the landforms in photo **A** and photo **B** originate? (2 x 1) (2)
- 2.4.4 How are these landforms in photo **A** and photo **B** exposed on the earth's surface? (1 x 2) (2)
- 2.4.5 In a paragraph of approximately EIGHT lines, explain the role of weathering in the formation of these two landforms. (4 x 2) (8)

2.5 Refer to the photograph and extract on a landslide.



[Source: google images]

In eThekweni, combinations of sloping ground, water and clay left trails of devastation in their wake during the recent floods.

Some articles have suggested the catastrophes in Durban and the greater eThekweni region of South Africa following recent floods are due to climate change and maladministration. While these factors play a role, the fact that landslides occurred comes as no surprise, considering the geology of the area.

eThekweni is a coastal metropolis characterised by hilly terrain dissected by several major rivers such as the Umgeni, Mlazi and Mbokodweni. The region is subtropical, but recent rains were abnormal relative to recent records and resulted in multiple landslides. The negative social, economic, and physical impact on the region has been disastrous.

[Adapted from an article by Charles Macrobert]

- 2.5.1 How does the photograph depict a landslide? (1 x 1) (1)
- 2.5.2 According to the article, what is the main cause of landslides in the greater eThekweni region. (1 x 1) (1)
- 2.5.3 What climatic evidence in the article suggests that the eThekweni region receives high rainfall? (1 x 1) (1)
- 2.5.4 What role did heavy rainfall play in the development of landslides? (2 x 2) (4)
- 2.5.5 Account for the negative social impact of landslides in the region. (2 x 2) (4)
- 2.5.6 Suggest strategies that the municipality of eThekweni could adopt to minimise the effects of landslides. (2 x 2) (4)

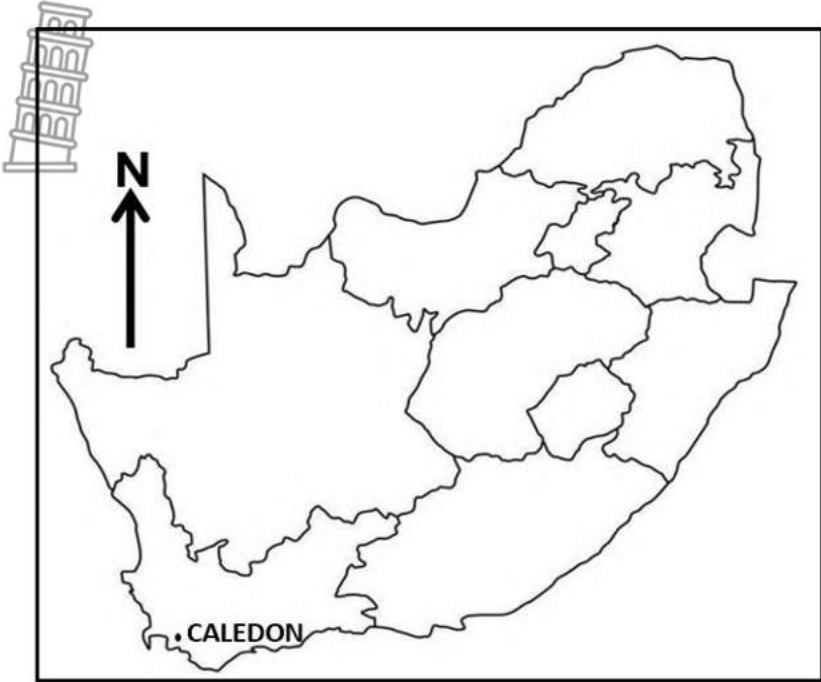
[60]

TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON CALEDON



Co-ordinates: 34° 13' S ; 19° 25' E

Caledon has a Mediterranean climate of warm, dry summers and cool, wet winters. Temperatures are modified by its close proximity to the South Atlantic Ocean, just over the Klein River Mountains to the south.

[Source: https://en.wikipedia.org/wiki/Calendon,_Western_Cape]

The following English terms and their Afrikaans translations are shown on the topographic and orthophoto maps:

ENGLISH

- Caledon Casino and Spa Resort
- Nature Reserve
- Show Grounds
- Hot Spring
- Sewage Disposal Works
- Silo
- Marshes and vlei
- Diggings

AFRIKAANS

- Caledon Casino en Spa-oord
- Natuurreservaat
- Skougronde
- Warmwaterbronne
- Rioolverwerkingsaanleg
- Graansuier
- Moeras en vlei
- Uitgrawings

3.1 MAPWORK SKILLS AND CALCULATIONS

3.1.1 The topographic map number 3419 refers to the ...

- A longitude and latitude.
B latitude and longitude.
C contour line and isobar.
D longitude and contour lines. (1 x 1) (1)

3.1.2 The scale of the orthophoto map is ... times larger than the scale of the topographic map.

- A 5
B 10
C 20
D 40 (1 x 1) (1)

3.1.3 The length (L) of the hospital (Area 2) on the orthophoto map is ... centimetres (cm).

- A 30
B 13
C 3
D 1,4 (1 x 1) (1)

3.1.4 The breadth (B) of the hospital (Area 2) on the orthophoto map is ... centimetres (cm).

- A 0,3
B 13
C 3,3
D 1,3 (1 x 1) (1)

3.1.5 Using the answers from QUESTIONS 3.1.3 and 3.1.4, calculate the area of the hospital 2 in square meters (m²). Show ALL calculations. Marks will be awarded for calculations.

Formula: **Area = length (L) x breadth (B)** (3 x 1) (3)

3.1.6 Calculate the magnetic declination of Caledon for 2023. Use the information and steps given below.

Difference in years: 22 years

Mean annual change: 4' westwards

Total change: _____

Magnetic declination for 2023: _____

_____ (3 x 1) (3)

3.2 MAP INTERPRETATION

- 3.2.1 What type of climate does Caledon experience? Give a reason for your answer. (1 + 1) (2)

Refer to the topographical and orthophoto maps.

- 3.2.2 The letter **3** on the orthophoto map indicates a ...



- A sewerage plant.
- B reservoir.
- C silo.
- D power station. (1 x 1) (1)

- 3.2.3 Rainfall over the mapped area is seasonal. Give TWO pieces of evidence, from the map in blocks **E1/2**, of measures farmers use to overcome the problem of water shortage during times of low rainfall. (2 x 1) (2)

- 3.2.4 The Caledon town council has decided to try and improve the level of development of this area through tourism. Explain how the council would promote this area using evidence from blocks **D3/4** and **E3/4**. (2 x 2) (4)


Refer to **2** in block **E2** on the orthophoto map.

- 3.2.5 The main economic activity at **2** in block **E2** on the orthophoto map is (secondary / tertiary). (1 x 1) (1)

- 3.2.6 Explain why area **2** was suitable for the development of the economic activity identified in QUESTION 3.2.5. (1 x 2) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.3.1 The topographic map is an example of ... data.

- 
- A raster
 - B pixelated
 - C vector
 - D attribute

(1 x 1) (1)

Study the photo of the road in block **B5** that goes up to the Basil Newmark Reservoir.

3.3.2 Define *spatial data*.

(1 x 1) (1)

3.3.3 What type of spatial object (point, line or polygon) is the road?

(1 x 1) (1)

3.3.4 Name ONE attribute that can be captured for the secondary road.

(1 x 1) (1)

3.3.5 Due to the increase in Caledon's population, the water in the Badsrivier at **G**, is decreasing in quality.

- (a) Mention TWO ways in which data can be collected to do an environmental impact study surrounding the river. (2 x 1) (2)
- (b) Explain how the collected data can be used to protect the affected river against further deterioration. (1 x 2) (2)

TOTAL SECTION B: 30
GRAND TOTAL: 150



**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2023

**GEOGRAPHY P1
MARKING GUIDELINE**

MARKS: 150

This marking guideline consists of 10 pages.

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: THE ATMOSPHERE

- 1.1 1.1.1 A (1)
- 1.1.2 C (1)
- 1.1.3 B (1)
- 1.1.4 C (1)
- 1.1.5 A (1)
- 1.1.6 B (1)
- 1.1.7 A (1)
- 1.1.8 D (1) (8 x 1) (8)
- 1.2 1.2.1 isobars (1)
- 1.2.2 5280 (1)
- 1.2.3 Pressure gradient (1)
- 1.2.4 Coriolis (1)
- 1.2.5 northern (1)
- 1.2.6 stronger (1)
- 1.2.7 flow (1) (7 x 1) (7)
- 1.3 1.3.1 Zone where the tropical easterlies meet / generally found at the equator where its position changes seasonally (2)
[CONCEPT] (1 x 2) (2)
- 1.3.2 Hadley cell (1) (1 x 1) (1)
- 1.3.3 Warm subtropical air meets cold polar air (2)
The two air masses do not mix as they have different temperature and water vapour content (2)
The two air masses move parallel to each other and in opposite directions (2)
[ANY TWO] (2 x 2) (4)

1.3.4 **TROPICAL EASTERLIES**

Pressure gradient between subtropical high (30° north and south) and the low pressure at the equator (2)

Convergence takes place at this belt to form the ITCZ (2)

These winds are associated with heavy rainfall (2)

They steer tropical cyclones from east to west (2)

Warm, steady winds (2)

Converges at the ITCZ causing thunderstorms (2)

TROPICAL WESTERLIES

The south westerlies and the north westerlies diverge from the subtropical high-pressure belt and blow towards the sub-polar low-pressure zone (2)

Convergence takes place at this belt to form the polar front (2)

They steer the mid-latitude cyclones from west to east (2)

Moderate the temperatures sub-polar regions (2)

Winds are irregular and fluctuate from a breeze to a very strong wind (2)

[ANY FOUR – MUST MENTION BOTH MOVEMENT AND WEATHER OF BOTH WINDS]


(4 x 2) (8)

- | | | | | |
|-----|-------|---|---------|-----|
| 1.4 | 1.4.1 | summer (1) | (1 x 1) | (1) |
| | 1.4.2 | Southwest (1) | (1 x 1) | (1) |
| | 1.4.3 | Contains high amounts of moisture (1) | (1 x 1) | (1) |
| | 1.4.4 | Surface run-off would fill up rivers etc (2)
Infiltration increases water table (2)
Brings moisture to the soil (2)
Natural vegetation increases (2)
More grazing land available (2)
Increases biodiversity (2)
Revives habitat for ecosystems (2)
[ANY TWO] | (2 x 2) | (4) |
| | 1.4.5 | Temperatures drop / becomes colder (1)
Pressure increases (1)
Dry / little rain (1)
[ANY TWO] | (2 x 1) | (2) |
| | 1.4.6 | A lack of rainfall would decrease the water supply available for agricultural crops (2)
There would be food insecurity as certain crops e.g. rice is a staple crop (2)
Food prices would increase as the country would have to import food (2)
There would be less agricultural products to export (2)
Foreign exchange would decrease (2)
Farmworkers would lose their jobs (2)
[ANY THREE] | (3 x 2) | (6) |

- 1.5 1.5.1 A process where fertile land becomes arid (2)
[CONCEPT] (1 x 2) (2)
- 1.5.2 Sahara (1) (1 x 1) (1)
- 1.5.3 Loss of biodiversity (1)
Loss of aquifers (1)
[ANY ONE] (1 x 1) (1)
- 1.5.4 It is on the edge of the Sahara Desert (1) (1 x 1) (1)
- 1.5.5 Smaller harvests especially in staple crops would lead to widespread famine/malnutrition (2)
There would be widespread poverty and deaths (2)
There would be job losses in farming and industry (2)
It would result in migration of people from rural to urban areas (2)
People would move to other countries creating conflict (2)
[ANY TWO] (2 x 2) (4)
- 1.5.6 Practice crop rotation (2)
Planting of trees (2)
Using organic fertilisers (2)
Practice contour ploughing (2)
Plant ground covers (2)
Allowing land to lie fallow (2)
[ANY THREE] (3 x 2) (6)
- [60]

QUESTION 2: GEOMORPHOLOGY

- 2.1 2.1.1 Y (1)
- 2.1.2 Y (1)
- 2.1.3 X (1)
- 2.1.4 X (1)
- 2.1.5 Y (1)
- 2.1.6 X (1)
- 2.1.7 Y (1)
- 2.1.8 Y (1) (8 x 1) (8)
- 2.2 2.2.1 Batholith (1)
- 2.2.2 Dyke (1)
- 2.2.3 Lava (1)
- 2.2.4 Laccolith (1)
- 2.2.5 Sill (1)
- 2.2.6 Lopolith (1)
- 2.2.7 Volcanic cone (1) (7 x 1) (7)
- 2.3 2.3.1 The original height remains the same (1) (1 x 1) (1)
- 2.3.2 Resistant cap rock (1) (1 x 1) (1)
- 2.3.3 Not uniformly (1) (1 x 1) (1)
- 2.3.4 Steep-sided valley with rocks vary in resistance to erosion (2)
 Rivers incise into joints in rocks (2)
 Backwasting widens the joints (2)
 Resistant layers form from vertical cliffs and softer rock form gentle slopes (2)
[ANY TWO] (2 x 2) (4)
- 2.3.5 Mesas form from a plateau that is reduced in size by backwasting (2)
 Continuing erosion (backwasting) reduces the size of the mesa to form a butte (2) (2 x 2) (4)

- 2.3.6 The impressive scenery associated with canyons can be used as a tourist attraction (2)
Canyons can be utilised for recreational activity (accept examples) (2)
The pediplain below canyons, mesas and buttes can be used for livestock farming (2)
[ANY TWO] (2 x 2) (4)
- 2.4.1  A – tors (1)
B – granite dome (1) (2 x 1) (2)
- 2.4.2 Rocks have no strata/bedding planes (1) (1 x 1) (1)
- 2.4.3 A – laccoliths (1)
B – batholith (1) (2 x 1) (2)
- 2.4.4 Erosion of overlying strata/material (2) (1 x 2) (2)
- 2.4.5 **Tors**
Water seeps into joints of igneous rocks underneath the earth's surface (2)
This causes chemical weathering to take place (2)
Chemical weathering causes the rock to break into rectangular blocks (2)
- Granite domes**
Once the dome is exposed the outer layers of rock are exposed to expanding and contracting (2)
Exfoliation a type of mechanical weathering takes place (2)
Peeling of rock layers take place due to expansion and contracting (2)
[ANY FOUR] (4 x 2) (8)
- 2.5 2.5.1 A large mass of land has broken loose and plunged down a slope (2)
(1 x 1) (1)
- 2.5.2 Geology of the area (1 x 1) (1)
- 2.5.3 'the region is subtropical' (1) (1 x 1) (1)
- 2.5.4 Water pressure pushes particles apart reducing their strength (2)
Some soils like clays are more slippery (2)
Slopes become unstable causing masses of land to break off (2)
[ANY TWO] (2 x 2) (4)

- 2.5.5 Collapsing land would lead to death and injury to people (2)
Property damage and loss of homes (2)
Destruction of infrastructure (accept examples) (2)
Loss of jobs (2)
Interruption of basic services (accept examples) (2)
[ANY TWO] (2 x 2) (4)
 - 2.5.6 Careful planning and management needed when making use of slopes (2)
Development in landslide-prone areas must be restricted (2)
Regrade slopes (2)
Reduce deforestation on slopes (2)
Provide adequate drainage on slopes (2)
Plant vegetation covers on slopes (2)
[ANY TWO] (2 x 2) (4)
- [60]**

TOTAL SECTION A: 120

SECTION B

QUESTION 3: MAP SKILLS AND CALCULATIONS

- 3.1 3.1.1 B (1) (1 x 1) (1)
- 3.1.2 A (1) (1 x 1) (1)
- 3.1.3 C (1) (1 x 1) (1)
- 3.1.4 D (1) (1 x 1) (1)
- 3.1.5 FORMULA: **Area = length (L) x breadth (B)**
- 3 cm x 1,3 cm
(3 x 100) x (1,3 x 100)
- 300 m (1) x 130 m (1)
- Area: 39 000 m² (1) (3 x 1) (3)
- 3.1.6 Total change: $22 \times 4' = 88'$ (1)
- Magnetic Declination for 2023: $23^\circ 46' W + (1) 88'$
- ($23^\circ 134' W$) $25^\circ 14' W$ of true north (1) (3 x 1) (3)

3.2 MAP INTERPRETATION

3.2.1 Mediterranean (1)

Caledon is in the Western Cape (1)

Latitude 34° (1) (western side of South Africa)

[ANY ONE]

(1 + 1) (2)

3.2.2 (C) Silo (1)

(1 x 1) (1)

3.2.3 Dams (1)

Wind pumps (1)

(2 x 1) (2)

3.2.4 Mountainous landscape could attract hiking (2)

Protected area (Caledon Nature Reserve) opened up to visitors (2)

Wild Flower Garden would attract visitors (2)

Hot Spring would attract visitors (2)

Golf course could have organised events (2)

Showgrounds could hold events (2)

Caledon Casino and Spa Resort could advertise to have regular visitors (2)

[ANY TWO – Must justify answer]

(2 x 2) (4)

3.2.5 Tertiary (1)

(1 x 1) (1)

3.2.6 Accessible by roads/national route (2)

Close proximity to residential areas (2)

Available land makes provision for parking (2)

Land available for future expansion (2)

[ANY ONE]

(1 x 2) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

3.3.1 C – Vector (1)

(1 x 1) (1)

3.3.2 Spatial data describes the location of features using coordinates (1)

[CONCEPT]

(1 x 1) (1)

3.3.3 Line (1)

(1 x 1) (1)

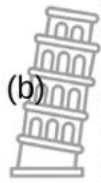
3.3.4 Secondary road (1)

Dirt/Gravel road (1)

[ANY ONE – Accept other suitable answers]

(1 x 1) (1)

- 3.3.5 (a) Surveys or questionnaires (1)
Physical water samples taken from the river for analysis (1)
Photographs (1)
Satellite images (1)
Remote sensing devices (1)
[ANY TWO] (2 x 1) (2)



- (b) Identify causes of pollutions (2)
Collected data can show the severity of the problem (2)
Collected data can help develop strategies to minimize the problem (2)
Use data to create buffer zones around the river (2)
Make decision-makers aware of the problem (2)
[ANY TWO] (1 x 2) (2)

TOTAL SECTION B: 30
GRAND TOTAL 150