education

MPUMALANGA PROVINCE

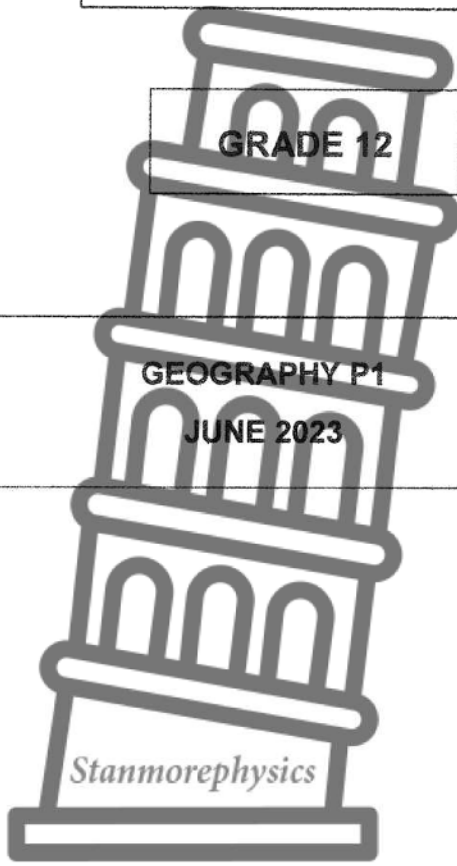
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

JUNE 2023



MARKS: 150

TIME: 3 Hours

This question paper consists of 12 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO SECTIONS:

SECTION A

QUESTION 1: CLIMATE AND WEATHER (40 MARKS)

QUESTION 2: FLUVIAL PROCESS AND FLUVIAL LAND FORMS (40 MARKS)

QUESTION 3: RURAL-URBAN SETTLEMENT (40 MARKS)

SECTION B

QUESTION 4: GEOGRAPHICAL SKILLS AND TECHNIQUES (30 MARKS)

2. Answer ALL FOUR questions
3. Leave a line between subsections of questions answered.
4. Start EACH question at the top of a NEW page.
5. Number the answers correctly according to the numbering system used in this question paper
6. Do NOT write in the margins of the ANSWER BOOK.
7. Draw fully labelled diagrams when instructed to do so.
8. Answer in FULL SENTENCES, except where you have to state, name, identify or list. Write in full sentences when answering paragraph questions.
9. Units of measurement MUST be indicated in your final answers, e.g., 1 020 hPa, 14 °C and 45 m.
10. You may use a non-programmable calculator.
11. You may make use of a magnifying glass.
12. Write neatly and legibly

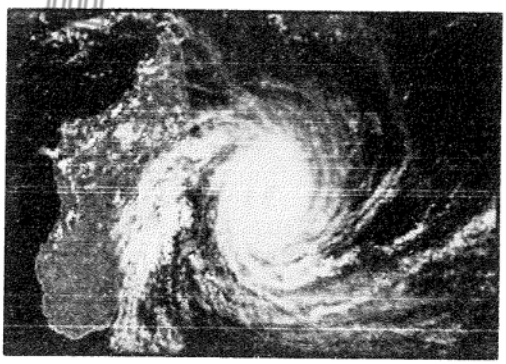
SECTION B: ADDITIONAL INSTRUCTIONS AND INFORMATION

1. A 1 : 50 000 topographical map 2329 BB LOUIS TRICHARDT and orthophoto map 2329 BB 04 LOUIS TRICHARDT is provide.
2. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.
3. Show ALL calculations and formulae where applicable. Marks will be allocated for this.
4. You must hand in the topographic map and the orthophoto map to the invigilator at the end of this examination session.

SECTION A: CLIMATE AND WEATHER, GEOMORPHOLOGY AND RURAL AND URBAN SETTLEMENT.

QUESTION 1: CLIMATE AND WEATHER.

1.1 Refer to the satellite image of tropical cyclone Bettina and answer the questions that follows.



[Source:iol.com]

1.1.1 Is this a high or a low pressure system?

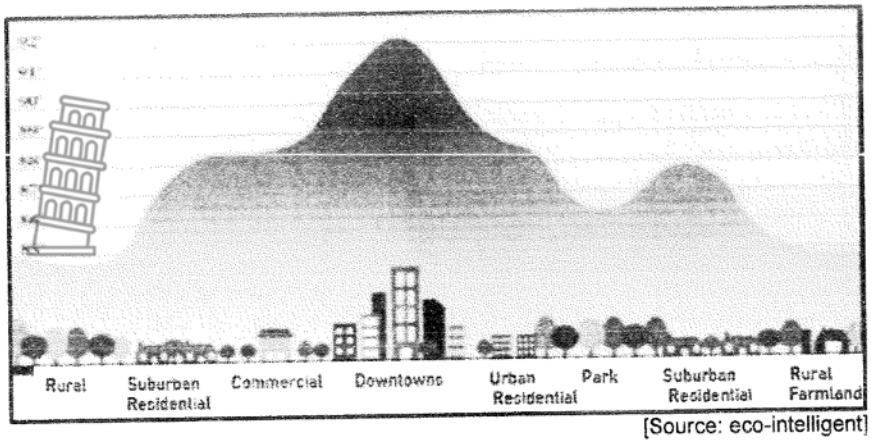
1.1.2 State the prevailing winds that drive this cyclone.

1.1.3 How many cyclones have occurred prior to this one?

1.1.4 What is the surface requirement for the development of this weather system?

1.1.5 Identify the type of cloud associated with this cyclone. (5 x 1) (5)

1.2 Refer to the diagram below and answer the questions that follow.



[Source: eco-intelligent]

1.2.1 Name the weather phenomena represented by the diagram.

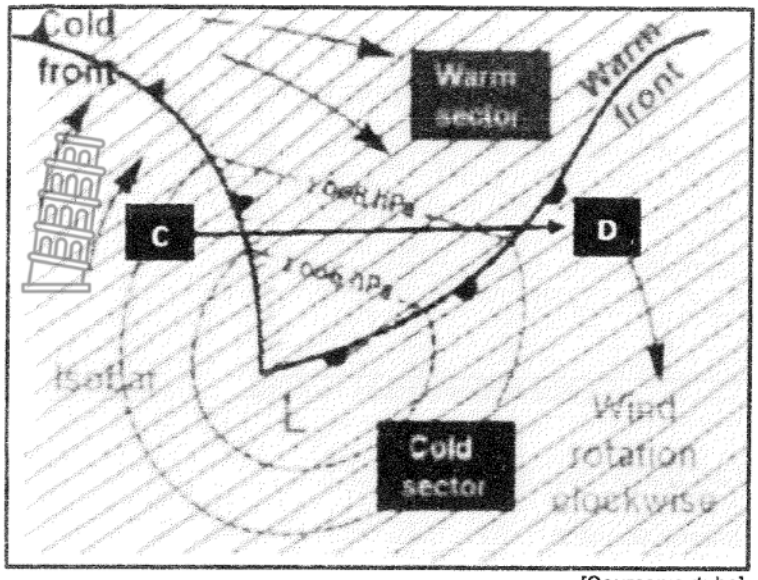
1.2.2 The sketch shows (day/night) situation.

1.2.3 Evapotranspiration is more effective at (Park/Commercial) area.

1.2.4 More cloud cover is experienced at (downtown/rural).

1.2.5 The evident reason for high temperatures at downtown is (low/high) density of buildings. (5 x 1) (5)

1.3 Refer to the diagram of mid-latitude cyclone.



[Source:youtube]

1.3.1 Give another name for a mid-latitude cyclone. (1 x 1) (1)

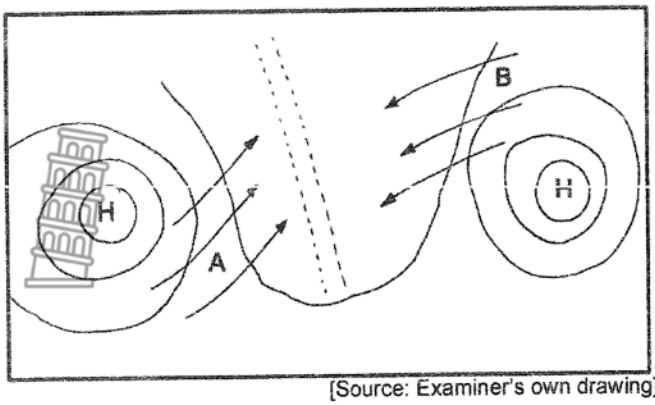
1.3.2 What evidence is there to prove that this cyclone is in it matured stage. (1 x 2) (2)

1.3.3 Identify the stage of development which follow the stage in QUESTION 1.3.2 (1 x 2) (2)

1.3.4 Explain how the next stage of development will form. (2 x 2) (4)

1.3.5 Draw a cross section of the cyclone from **C** to **D**. (3 x 2) (6)

1.4 Refer to the sketch of line thunderstorms.



[Source: Examiner's own drawing]

1.4.1 Identify the season depicted in the sketch. (1 x 1) (1)

1.4.2 Refer to winds **A** and **B**.

(a) Name the line boundary where wind **A** and **B** meet. (1 x 1) (1)

(b) State the type of cloud which may occur east of the line mentioned in QUESTION 1.4.2(a). (1 x 1) (1)

(c) Explain how winds **A** and **B** contribute to the formation of line thunderstorms. (2 x 2) (4)

1.4.3 In a paragraph of approximately EIGHT lines suggest strategies to reduce the impact of lightning associated with line thunderstorms. (4 x 2) (8)

QUESTION 2

2.1 State the drainage pattern that matches the description given below. Write only the number and the correct answer e.g. 2.1.6 parallel pattern.

2.1.1 In areas where domes and volcanoes occur.

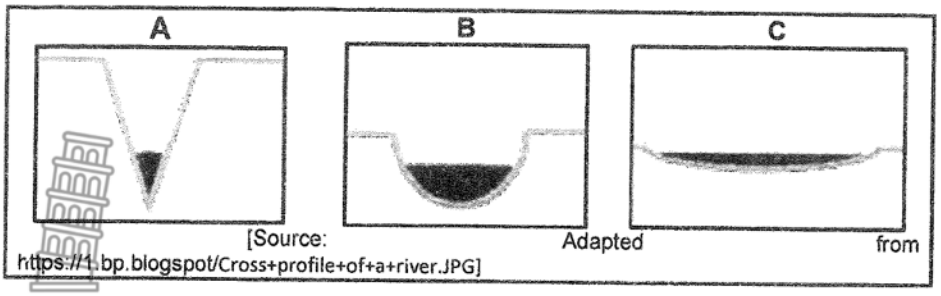
2.1.2 Rocks are homogenously resistant to erosion.

2.1.3 90° bends along the river course.

2.1.4 Shorter tributaries joining the main stream at 90°.

2.1.5 Very flat areas that have experienced recent glaciation. (5 x 1) (5)

2.2 Refer to the diagram of river profiles and answer the questions that follow.



[Source: Adapted from https://1.bp.blogspot/Cross+profile+of+a+river.JPG]

2.2.1 Identify the profiles shown by **A**, **B** and **C** on the sketch.

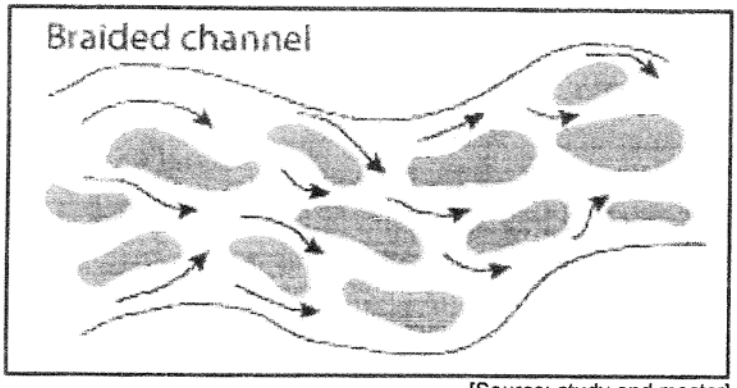
2.2.2 The type of erosion dominate at **A**.

2.2.3 Where the deposition and erosion are almost equal.

2.2.4 Meanders and spurs starts in this river course.

2.2.5 Very slow flow of water in this course. (5 x 1) (5)

2.3 Refer to the fluvial landform.



[Source: study and master]

2.3.1 Identify the fluvial landform shown. (1 x 1) (1)

2.3.2 In which course of a river does the fluvial landform occur? (1 x 2) (2)

2.3.3 The fluvial landform is formed by (seasonal/permanent) river where the gradient is (steep/gentle). (2 x 1) (2)

2.3.4 Discuss the differences between a delta and braided stream. (2 x 2) (4)

2.3.5 Describe how the fluvial landform in QUESTION 2.3.1 develops (3 x 2) (6)

2.4 Refer to the article on river capture and answer the questions that follow.

River Capture site in Georges Valley, Tzaneen
River capture 9 km down the Georges Valley road, at the turn off to the Wolkberg Wilderness area, a point at the Letaba River where a historic act of piracy occurred. The Great Letaba River eroded into the hills and stole the water of the Mohlapitse River.

[Adapted from www.info.za/Tzanneen]

2.4.1 Define the concept river capture. (1 x 1) (1)

2.4.2 State TWO conditions under which the Letaba River will erode headwards to capture the water of Mohlapitse River. (2 x 1) (2)

2.4.3 Explain how river capture alters the flow characteristics of the Letaba River and state the resultant fluvial landforms. (2 x 2) (4)

2.4.4 River capture damages the physical environment and human activity along the Mohlapitse River. In a paragraph of approximately EIGHT lines evaluate this statement. (4 x 2) (8)

QUESTION 3

3.1 Match the description in COLUMN A with the concept in COLUMN B. Write only the correct letter next to the number e.g. 3.1.6 G

	COLUMN A	COLUMN B
3.1.1	Settlement that lacks social life	A. Social injustice
3.1.2	Houses are located along a river	B. Wet point settlement
3.1.3	Houses are located closer to a water source because water is scarce.	C. Rural settlement
3.1.4	Settlement has one dominant function	D. Dry point settlement
3.1.5	When human rights are not met.	E. Linear
		F. Dispersed
		(5 x 1) (5)

3.2 Match the statement in Column A with the correct concept in Column B. Write only the number and the correct letter e.g. 3.2.6.Y

	COLUMN A	COLUMN B
3.2.1	A single city with many dependent towns	Y. Conurbation Z. Metropolis
3.2.2	External physical appearance of a city	Y.Urban morphology Z. Urban profile
3.2.3	The number of people in the city	Y. Urban expansion Z. Urban growth
3.2.4	A number of people expected to support a business	Y. sphere of influence. Z. Threshold population
3.2.5	Uncontrolled growth of the urban area	Y. Urban expansion Z. Urban sprawl

(5 x 1) (5)

3.3 Refer to the article on rural – urban migration and answer the following questions.

An overview of rural urban migration in South Africa.

The failure of the government to prioritise rural development threatens to negatively impact the development of growth of rural areas. Rural- urban migration in South Africa has negatively affected socio- economic development in rural areas. It is evident that rural provinces have been witnessing a huge outflow of people destined to urban areas, predominantly to Gauteng and Western Cape, this has robbed rural. Areas of skills and innovations which has prolonged the cycle of underdevelopment.

[Adapted from: https//doi.org/10.14738/abr644407]

3.3.1 Define the term rural depopulation. (1 x 1) (1)

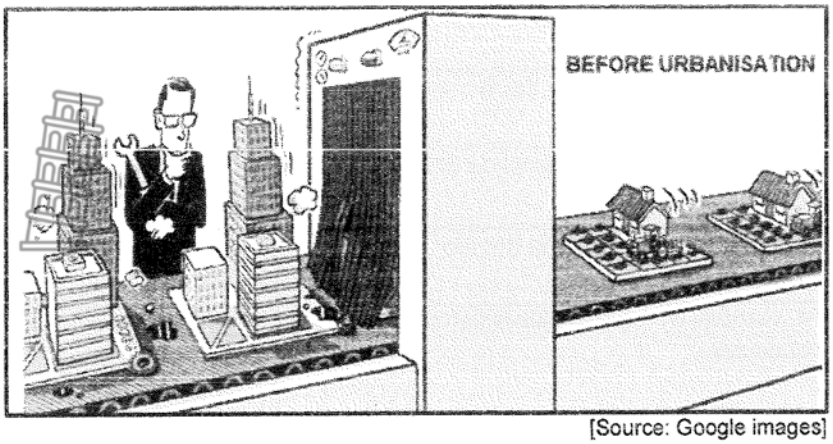
3.3.2 Name TWO provinces which attract rural migrants. (2 x 1) (2)

3.3.3 Explain how the government has failed to prioritise rural development. (1 x 2) (2)

3.3.4 Suggest TWO socio-economic factors that attract people to the city. (2 x 2) (4)

3.3.5 Evaluate the economic impact of rural urban migration to the rural areas. (3 x 2) (6)

3.4 Study the illustration of urbanisation and answer the questions that follow.



[Source: Google images]

3.4.1 What is urbanisation? (1 x 1) (1)

3.4.2 Explain how the sketch illustrates urbanisation. (1 x 2) (2)

3.4.3 Discuss how the natural environment is being affected by urbanisation as shown in the illustration. (2 x 2) (4)

3.4.4 The person in the sketch represents the local municipalities of urban areas and seems to be very concerned about how the process of urbanisation is unfolding. In a paragraph of approximately EIGHT lines, describe how the development of greenbelts can be used as a strategy to make cities more sustainable . (4 x 2) (8)

SECTION B: GEOGRAPHICAL SKILLS AND TECHNIQUES

QUESTION 4

The questions below are based on the 1 : 50 000 topographical map 2329 BB LOUIS TRICHARDT, as well as the orthophoto map of a part of the mapped area.

4.1 MAPWORK SKILLS AND CALCULATIONS (10 MARKS)

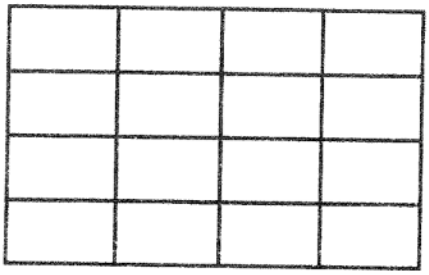
4.1.1 In the map index of 2329BB, the 29 represents …

A. 29° south of the equator.
B. 29° west of the Greenwich Meridian
C. 29° north of the equator.
D. 29° east of the Greenwich Meridian. (1 x 1) (1)

4.1.2 Redraw the grid below in your ANSWERSHEET and indicate the following on the grid:

(a) The map index position of Louis Trichardt (shade the area). (1 + 1) (2)

(b) The co-ordinates for the map. (1 + 1) (2)



4.1.3 Refer to blocks **E4** and **G4** on the topographical map.

Calculate the average gradient between trigonometrical beacon 96 (block **E4**) and spot height 932 (block **G4**). Show ALL calculations. Marks will be awarded for calculations. (5 x 1) (5)

4.2 MAP INTERPRETATION (12 MARKS)

4.2 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (4.2.1 to 4.4.2) in your ANSWER SHEET, for example 4.4.3 C. 3.3.1

4.2.1 The slope between **2** and **3** on the orthophoto map is a … slope.

A convex
B terrace
C gentle
D concave

(1 x 1) (1)

4.2.2 The area at **5** on the orthophoto map has a lower temperature than area **4** on the orthophoto map due to the …

A aspect of slope.
B artificial surfaces.
C thermal belt.
D river's influence.

(1 x 1) (1)

4.2.3 Refer to the suburb Tshikota, situated in block **F5** on the valley floor, on the topographical map.

(a) Is the local wind responsible for the cool conditions experienced in Tshikota at night-time, an anabatic or katabatic wind? (1 x 1) (1)

(b) Why does this local wind, named in QUESTION 3.2.3 (a), result in a high concentration of pollution in Tshikota at night? (1 x 2) (2)

(c) With specific reference to the topographical map, what has helped the Tshikota local government (municipality) to reduce the high concentration of pollution in the area? (1 x 2) (2)

4.2.4 Refer to the non-perennial river **7** in block **A3** on the orthophoto map

(a) In which direction does this non-perennial river, at 7, flow? (1 x 1) (1)

(b) Explain TWO reasons for your answer to QUESTION 3.2.4 by providing both orthophoto and topographical map evidence. (2 x 2) (4)

4.3 GEOGRAPHICAL SKILLS AND TECHNIQUES (8 MARKS)

Louis Trichardt is in the Soutpansberg area where geologists are conducting research and collecting data regarding the impact of deforestation on an ongoing basis.

4.3.1 Define the term data in GIS. (1 x 2) (2)

4.3.2 Is the data that is collected by geologists considered to be primary or secondary data? (1 x 1) (1)

4.3.3 Provide the topographic map data layer that will inform geologists regarding deforestation. (1 x 1) (1)

4.3.4 Refer to the dam at 8 on the orthophoto map. What information can geologists gather from this layer, regarding the influence of deforestation on the dam. (2 x 2) (4)

[30]

TOTAL:150

education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY
JUNE 2023
MARKING GUIDELINES

MARKS: 150

TIME: 3 Hours

This marking guidelines consists of 8 pages.

Question 1

1.1

1.1.1 Low pressure system (1)
1.1.2 Tropical easterlies (1)
1.1.3 One (1)
1.1.4 Tropical ocean/ Warm ocean (1)
1.1.5 Cumulonimbus clouds (1) (5 x 1) (5)

1.2

1.2.1 Urban heat island (1)
1.2.2 Day (1)
1.2.3 Park (1)
1.2.4 Downtown (1)
1.2.5 high (1) (5 x 1) (5)

1.3

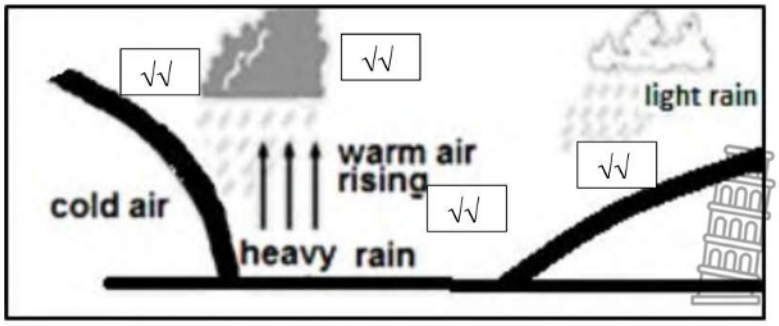
1.3.1 Wave cyclone (1)
Frontal depression (1)
Extra tropical cyclone (1)
Temperate cyclone (1)
(Any ONE) (1 x 1) (1)

1.3.2 Pressure at the centre below 1000mb/ HPA (1)
Distinct cold and warm fronts (1)
Wave deepened (1)
Well-developed warm sector (1)
(Any TWO) (2 x 1) (2)

1.3.3 Occluded stage (2) (1 x 2) (2)

1.3.4 Cold front moves faster and catches up with the warm front. (2)
Cold front lifts the warm air from the surface. (2)
Warm sector narrows (2)
Warm front is isolated from the surface. (2)
Rainfall stops. (2)
Air pressure returns to normal. (2)
(Any TWO) (2 x 2) (4)

1.3.5



Any three (3 x 2) (6)

1.4

1.4.1 Summer (1)

1.4.2 (a) moisture front (1)

(b) Cumulonimbus clouds (1)

(c) Cold SW meet with warm moist NE (at the moisture front) (2)
Cold air undercuts warm air (2)
Warm air is forced to rise (2)
Cumulonimbus clouds form (2)
[Any TWO] (2 x 2) (4)

1.4.3 Stock up all necessities (accept examples) (2)
Move stock to safer places (2)
Cancel outdoor activities/stay indoors (2)
Avoid driving or crossing bridges (2)
Cover mirrors with blanket (2)
Avoid using water (2)
Don't use an umbrella when walking outside (2)
Don't use metal objects (2)
Raise awareness on thunderstorms in thunderstorm prone areas (2)
Cover plants with nets (2)
Plug off electric appliances /Avoid using cell phone (2)
Avoid standing close to tall objects (2)
Make firebreaks to reduce the spread of fire (2)
Emergency services must be on standby (2)
[Any FOUR] (4 x 2) (8)

QUESTION 2

2.1

2.1.1 Radial (1)
2.1.2 Dendritic pattern(1)
2.1.3 Rectangular Pattern(1)
2.1.4 Trellis Pattern(1)
2.1.5 Deranged Pattern(1) (5 x 1) (5)

2.2

2.2.1 Cross profile/Transverse profile (1)
2.2.2 Vertical/ downward erosion (1)
2.2.3 **B** (Middle course)(1)
2.2.4 **B** (Middle course) (1)
2.2.5 **C** (Lower course) (1) (5 x 1) (5)

2.3

2.3.1 Braided stream (1) (1 x 1) (1)
2.3.2 Lower course (1) (1 x 1) (1)

2.3.3 Seasonal/Accept permanent (1)
Gentle (1) (2 x 1) (2)

2.3.4 Delta forms where the river enters the ocean (2)
Braided stream can form anywhere in the lower course before the river mouth (2)
Delta keeps the deposited silt in suspension (2)
Braided stream, the river obstructs its own path through the deposited material (2)
[Any TWO must refer both] (2 x 2) (4)

2.3.5 The river flows slower in the lower course of the river (2)
The river deposits its load (and blocks its path) (2)
The stream splits into two or more smaller channels due to the deposition of silt (2) (3 x 2) (6)

2.4

2.4.1 When a river with more energy captures the headwaters of the less energetic one. [CONCEPT] (1) (1 x 1) (1)

2.4.2 The captor river flows down a steeper side of the watershed (1)
The river flows on the side of the watershed that receives more rainfall (1)
The river flows over a less resistant /soft rock (1)
[Any TWO] (2 x 1) (2)

2.4.3 The captor stream will have more water which will result to turbulent flow/ high erosive power (2)
There will be an increase in the velocity of the river. (2)
Resultant landforms will be spurs/ waterfall/terraces/incised meanders/gorges(2)
(MUST refer to flow characteristic AND resultant landform) (2 x 2) (4)

2.4.4 Aquatic ecosystem perish since the river losses its water (2)
Disturbance of food chains and food webs (2)
Loss of biodiversity (2)
Less water available for agriculture resulting to a decrease in production (2)
Less available water for domestic purposes (accept examples) (2)
Poor water quality (2)
[ANY FOUR, must refer to both] (4 x 2) (8)

QUESTION 3

3.1

3.1.1 F (1)
3.1.2 E (1)
3.1.3 B (1)
3.1.4 C (1)
3.1.5 A (1) (5 x 1) (5)

3.2

3.2.1 Z (1)

3.2.2 Y (1)

3.2.3 Z (1)

3.2.4 Z (1)

3.2.5 Z (1) (5 x 1) (5)

3.3

3.3.1 The decrease in the number of people living in rural areas (1) (1 x 1) (1)

3.3.2 Gauteng (1)
Western Cape (1) (2 x 1) (2)

3.3.3 failure to provide basic needs in rural areas. (accept examples) (2)
poor service delivery in rural areas. (examples) (2)
delays in the implementation of the Land Reform. (accept examples) (2)
poor facilities. (accept examples) (2)
poor infrastructure. (accept examples) (2)
Lack of skills development in rural areas (2)
Failure to create job opportunities in rural areas (2)
[Any One] (1 x 2) (2)

3.3.4 better employment opportunities (2)
good infrastructure (2)
good quality housing (2)
better facilities (examples) (2)
[Any TWO] (2 x 2) (2)

3.3.5 Development of ghost towns (2)
schools close down (2)
farms are neglected (2)
Production decrease as aging population is left in rural areas (2)
Resources are underutilised (2)
Brain drain-has left people who are less educated and this slows economic growth (2)
[Any THREE] (3 x 2) (2)

3.4

3.4.1 An increase in the percentage of people living in urban areas. (1) (CONCEPT) (1 x 1) (1)

3.4.2 Urban areas are depicted before urbanisation as being spacious, due to a lower concentration of people. After urbanisation they are depicted as being densely concentrated. (2) (1 x 2) (2)

3.4.3 Fertile soil is being removed (2)
Natural habitats of species are being removed (2)
Biodiversity and ecosystems disturbed (2)
Increase of the heat island affect due to artificial production of heat (2)
Air pollution increase due to industrialisation (2)
Increase in general pollution e.g. water, noise and environmental problems occur.
(Any TWO) (2 x 2) (4)

3.4.4 Greenbelts help with the controlling of the growth of built-up areas (2)
It forms borders and prevents neighbouring towns from merging (2)
It preserves the character of each town (2)
Provide open spaces and recreation areas to urban dwellers (2)
Increase biodiversity and aesthetic appeal (2)
Reduces the heat island affect (2)
It reduces noise (2)
It increases oxygen and reduces carbon dioxide (2)
Promotes infiltration and reduce the risk of flooding (2)
[Any FOUR] (4 x 2) (8)