education

MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

OMNIA LABOR VINCIT

NATIONAL
SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

JUNE 2024

MARKS: 150

TIME: 3 HOURS

This question paper consists of 17 pages.

Please turn over

INSTRUCTIONS AND INFORMATION

1.   This question paper consists of FOUR QUESTIONS.

   QUESTION 1: CLIMATE AND WEATHER (40 MARKS)
   QUESTION 2: GEOMORPHOLOGY (40 MARKS)
   QUESTION 3: SETTLEMENTS (40 MARKS)
   QUESTION 4: GEOGRAPHICAL SKILLS AND TECHNIQUES (30 MARKS)

2.   Answer ALL FOUR questions.

3.   ALL diagrams are included in the QUESTION PAPER.

4.   Leave a line between the 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.

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 topographic map 2531 BC EMJEJANI and a 1 : 10 000 orthophoto map 2531 BC_19, 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 orthophoto map to the invigilator at the end of the examination.

QUESTION 1: CLIMATE AND WEATHER

1.1 Various options are provided as possible answers to the following questions. Choose the answers and write only the letter (A - D) next to the question numbers (1.1.1 to 1.1.5) in the answer book, e.g., 1.1.6.C

Refer to the satellite image and answer questions 1.1.1 to 1.1.3


[Source: https://courses.lumenlearning.com/suny-geophysical/chapter/cyclones/]
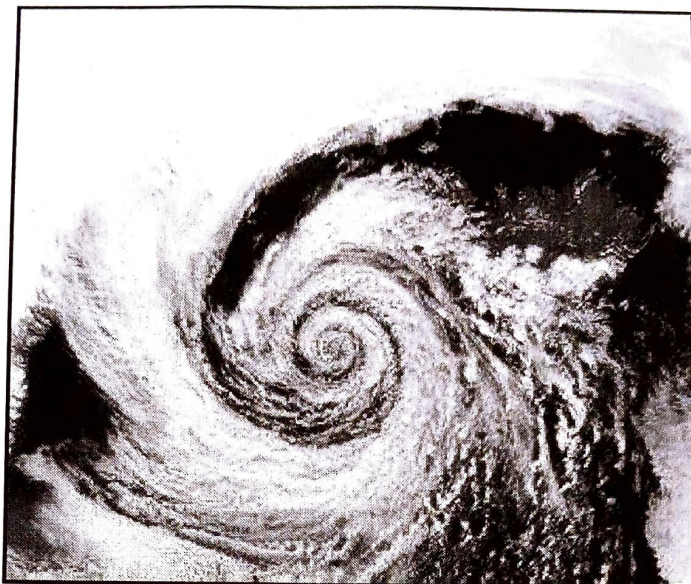
1.1.1   The satellite image depicts a/an ...

     A.   tropical cyclone.
     B.   high pressure cell.
     C   extra tropical cyclone.
     D   Ridge.

1.1.2   The climatological phenomenon identified in QUESTION 1.1.1 develops ...

     A   at the polar front.
     B   over warm oceans.
     C   between 5°- 25° N/S.
     D   between 30°- 60° N/S.

1.1.3   The satellite image is characterised by the ... and the ...

     (i)   eye.
     (ii)   band of clouds.
     (iii)   two fronts.
     (iv)   anticlockwise circulation.

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

Refer to the synoptic map to answer questions 1.1.4 - 1.1.5.
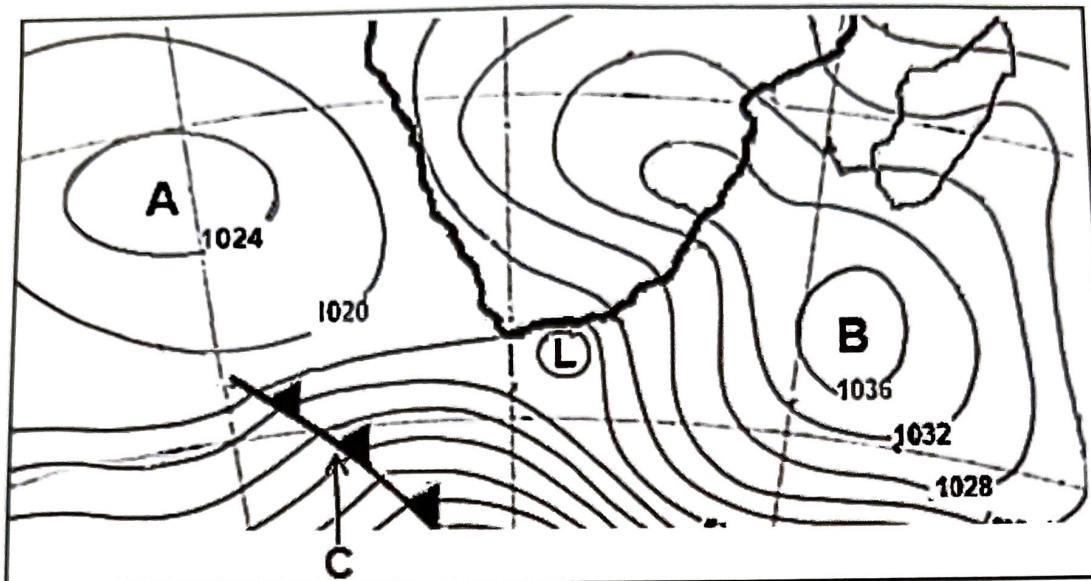
[Source: South African weather service]

1.1.4   The cell represented by the letter **B** is the …

A   Coastal low.
B   South Indian High.
C   Kalahari High.
D   South Atlantic High.

1.1.5   The pressure cell associated with fog along the coast of South Africa
is called the …

A   Coastal low.
B   South Indian High.
C   Kalahari High.
D   South Atlantic High.

1.2   Refer to the sketch below of a valley wind. Complete the statements in COLUMN A with the options in COLUMN B. Write only **Y** or **Z** next to the question numbers (1.2.1 to 1.2.5) e.g. 1.2.6 **Z**


[Source: http://fox41blogs.typepad.com/.]
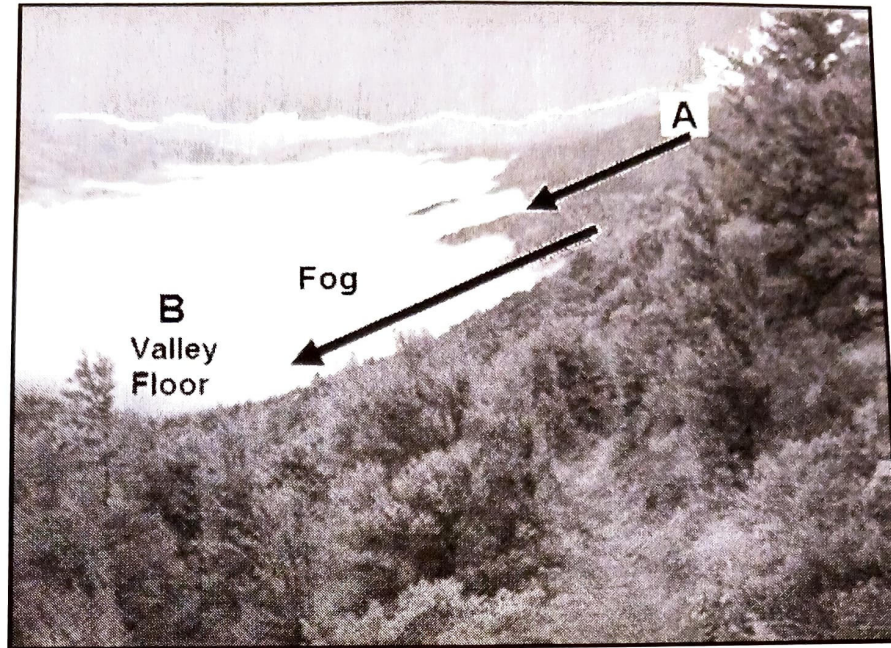
	COLUMN A	COLUMN B
1.2.1	The valley wind depicted on the diagram occurs during the …	**Y** Day **Z** Night
1.2.2	Frost pockets occur at …	**Y** A **Z** B
1.2.3	The downslope movement of cold wind in the figure is due to …	**Y** Gravitational force **Z** Terrestrial radiation
1.2.4	The location and direction of the slopes of the valley in relation to the Sun's rays are called …	**Y** Thermal belt **Z** Aspect
1.2.5	When temperature drops below freezing point.	**Y** Frost **Z** Radiation fog

(5 x 1)   (5)

1.3   Refer to the infographic on tropical cyclones.
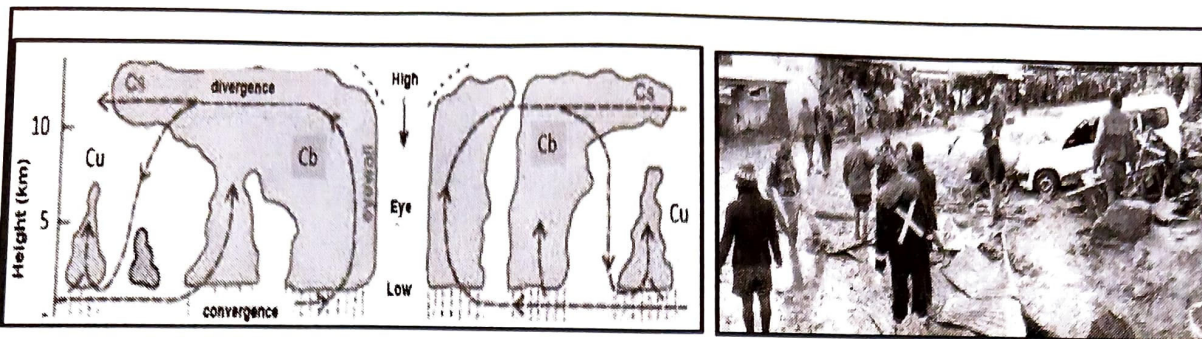
Category 5-tropical cyclone Freddy

Highest winds	270km/h
Lowest pressure:	918 mb
Fatalities:	1434, (third deadliest in the Southern Hemisphere)
Missing:	19
Damage:	$655 million
Areas affected:	Madagascar, Mozambique, Zimbabwe, Malawi, South Africa, Eswatini, Zambia

[Source:en.m.wikipedia.org]

1.3.1   The reason for calm and cloudless weather in the eye is (subsiding/ rising) air .   (1 x 1)   (1)

1.3.2   Name TWO countries that were affected by tropical cyclone Freddy?
                                                                          (2 x 1)   (2)

1.3.3   Give evidence from the extract to prove that tropical cyclone Freddie qualifies to be a category 5 cyclone.   (1 x 2)   (2)

1.3.4   Explain why tropical cyclone Freddie dissipated over land.   (1 x 2)   (2)

1.3.5   Damages caused by tropical cyclone Freddie amounted to $655 million. In a paragraph of approximately EIGHT lines explain how this happened.   (4 x 2)   (8)

1.4 Refer to the synoptic map showing line thunderstorms.
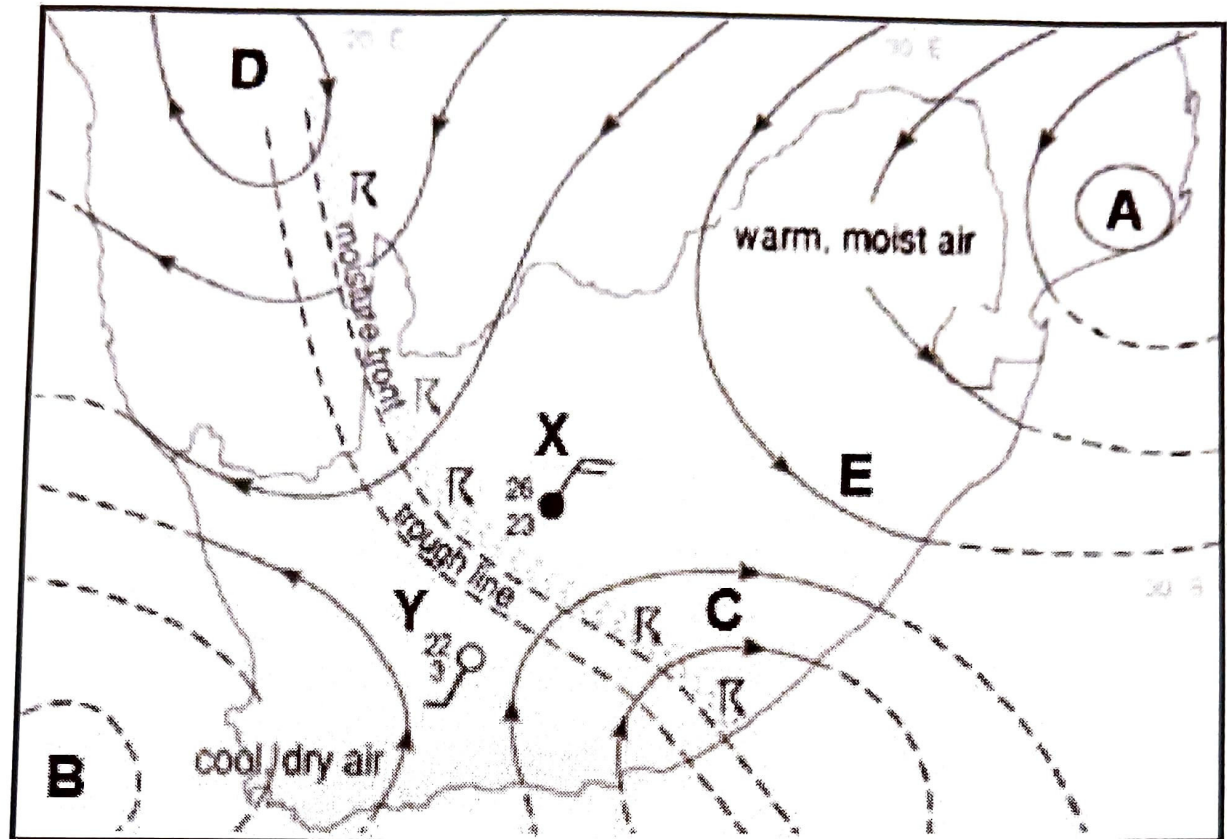

[Source: South African Weather Services]

1.4.1 Line thunderstorms are typically (frontal/convectional) thunderstorms.
(1 x 1) (1)

1.4.2 Explain how the air movement at **A** and **B** leads to the formation of a moisture front. (1 x 2) (2)

1.4.3 Differentiate between the cloud cover at **X** and **Y.** (2 x 1) (2)

1.4.4 Account for the different cloud cover at **X** and **Y** respectively. (2 x 2) (4)

1.4.5 Explain how line thunderstorms affect the physical (natural) environment in the interior of South Africa. (3 x 2) (6)

(40)

QUESTION 2: GEOMORPHOLOGY

2.1 Refer to diagram **A** and **B** below representing fluvial landforms. Choose which diagram match the statement provided. Only write **A** or **B** next to your answer; e.g. 2.1.6 B.
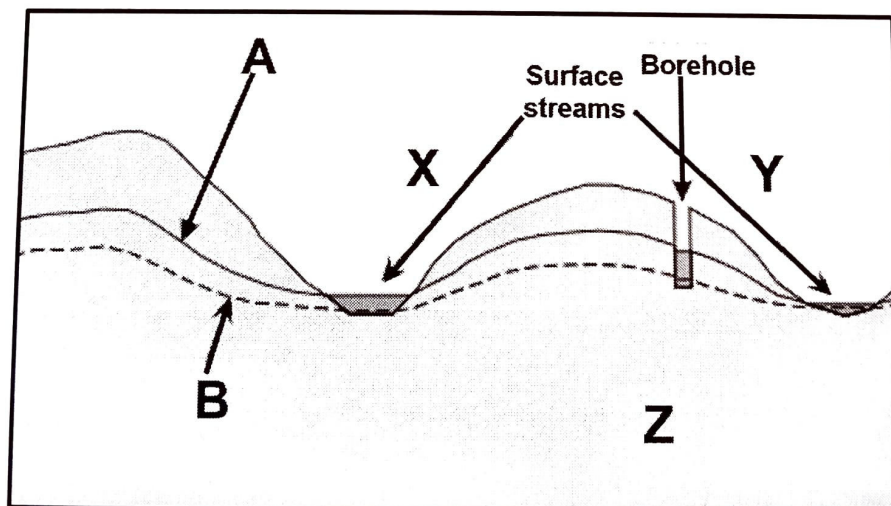
Diagram A   **Diagram B**

[Source: https://quizlet.com/gb/292846280/geography]
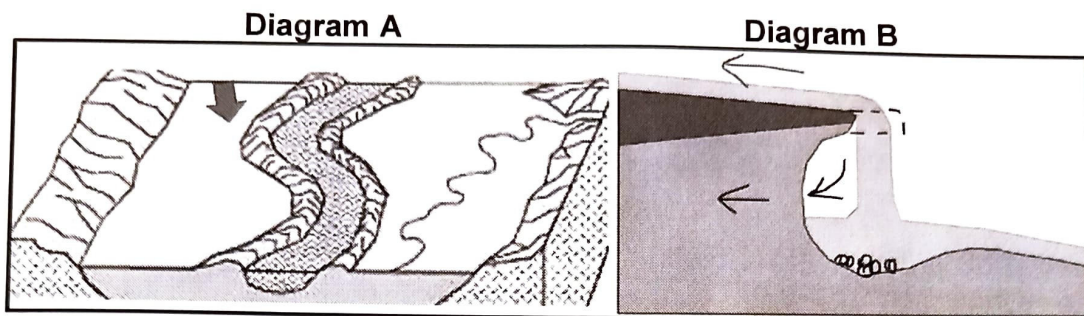
2.1.1 This landform results from repeated flooding.

2.1.2 Commonly found in the upper course of a river.

2.1.3 A plunge pool is a feature of this landform.

2.1.4 Associated with laminar flow.

2.1.5 This landform migrates upstream. (5 x 1) (5)

2.2 Study the diagram below representing the water table.

[Source: https://www.quora.com/]

2.2.1 The water table of a permanent river is represented by line (**A/B**).

2.2.2 Which line represents the dry season water table?

2.2.3 The borehole in the diagram will supply water (all year round/only during wet season).

2.2.4 Surface stream (X/Y) will have water all year round.

2.2.5 Baseflow is the correct term for (**Y/Z**)

(5 x 1) (5)

2.3 Refer to the longitudinal river profile.
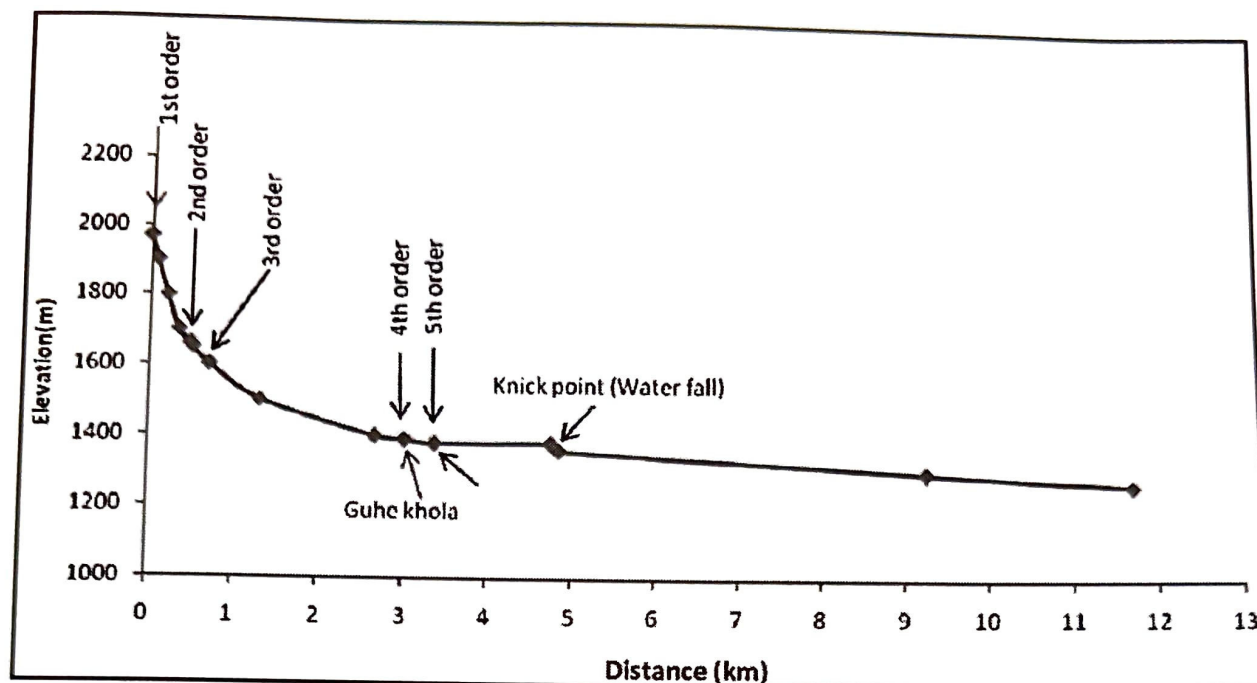
[Source:https://www.researchgate.net/figure/Longitudinal-profile]

2.3.1 Define the term *longitudinal profile of a river*. (1 x 1) (1)

2.3.2 Identify TWO dimensions depicted from the above profile. (2 x 1) (2)

2.3.3 What evidence on the profile indicates that the river is ungraded? (1 x 2) (2)

2.3.4 Highlight a possible cause of rejuvenation within this drainage basin.

(1 x 2) (2)

2.3.5 In a paragraph of approximately EIGHT lines, discuss the impact of rejuvenation on the Kodku River's drainage basin. (4 x 2) (8)

2.4   Refer to the drainage patterns labelled **A**, **B** and **C**.
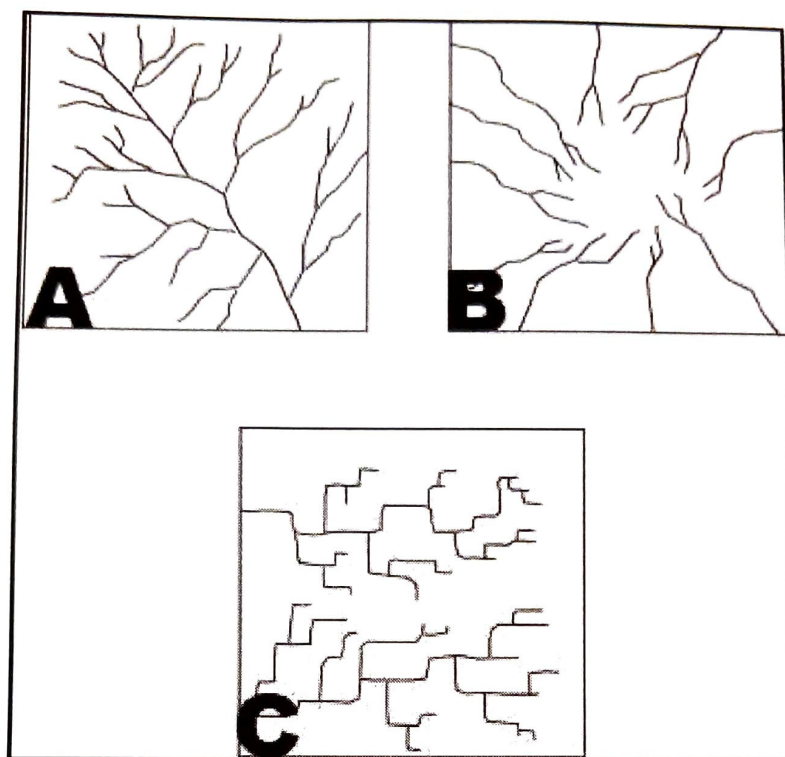
[Source: examiner's sketch]

2.4.1   Identify drainage pattern **A, B** and **C** respectively.   (3 x 1)   (3)

2.4.2   Differentiate between the underlying rock structure of drainage patterns **A**
          and **C** respectively.   (2 x 2)   (4)

2.4.3   The drainage density at **A** is high.

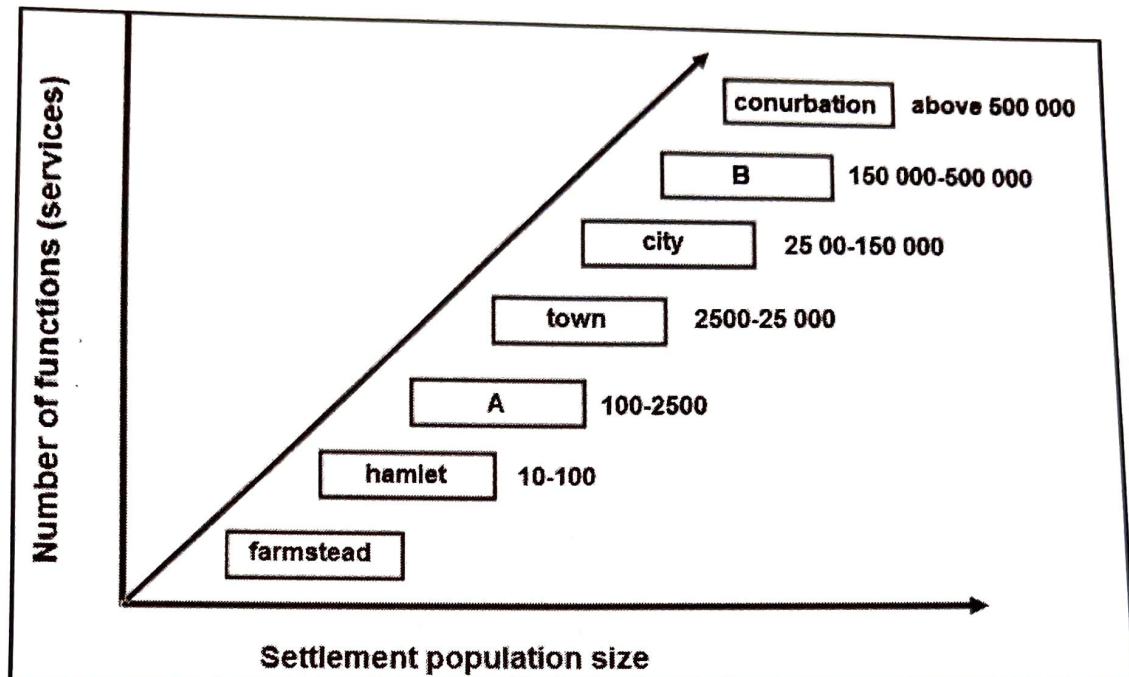a.   Give evidence from the diagram that river **A** has a high density.
                                                                                       (1 x 2)   (2)

b.   Account for the high density at river **A**.   (3 x 2)   (6)

(40)

QUESTION 3: RURAL AND URBAN SETTLEMENTS

3.1   Refer to the sketch below showing the hierarchy of settlements. Identify the settlement matching the statements below. Write only the question number and the settlement e.g. 3.1.8 city


[Source: Wikispaces and *Exam Series*]

3.1.1   The smallest urban settlement of them all

3.1.2   The settlement represented by letter **A**

3.1.3   The settlement with a population between 150 000 – 500 000

3.1.4   The settlement with the highest number of functions

3.1.5   A small grouping of farmsteads   (5 x 1)   (5)

3.2   Refer to the diagram below showing an urban profile and street patterns. 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 (3.2.1-3.2.8) in the answer book e.g. 3.2.9 D
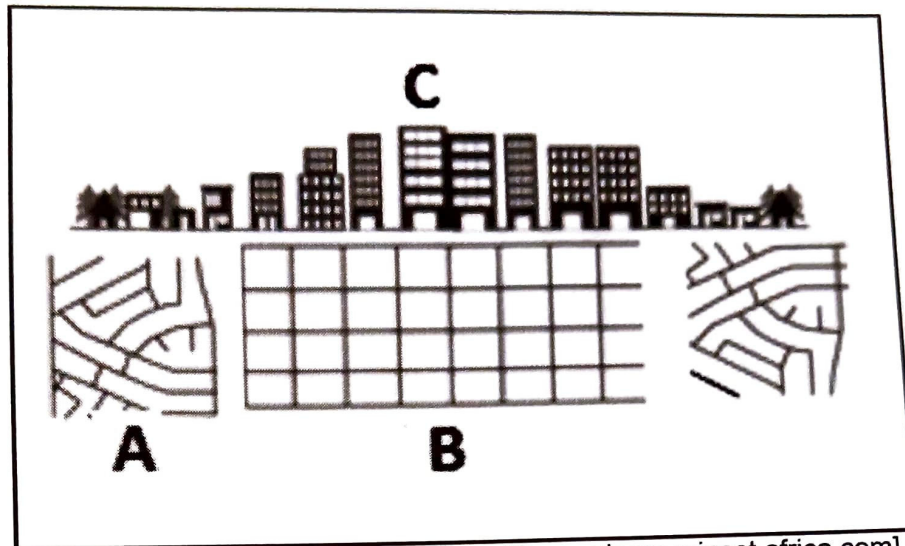
[Source:learn.minset.africa.com]

3.2.1   Letter **B** shows a pattern where roads intersect at 90°.

A. Cobweb
B. Planned irregular
C. Grid iron
D. Linear

3.2.2   Land use zone at **C** is …

A. CBD.
B. Residential.
C. Industrial.
D. OBD.

3.2.3   The street pattern at **A.**

A. Radial
B. Planned irregular
C. Gridiron
D. Linear

3.2.4 Characteristics of street pattern **A** ...

    (i)   smooth flow of traffic.
    (ii)   traffic congestion.
    (iii)   found on hilly relief.
    (iv)   old settlements

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

3.2.5 Characteristics of street pattern **B**.

    (i)   regulated and easy to extend
    (ii)   very expensive
    (iii)   traffic congestion
    (iv)   all major roads lead to CBD

    A. (i) and (iii)
    B. (i) and (iv)
    C. (ii) and (iii)
    D. (ii) and (iv)   (5 x 1) (5)

3.3 Study the photograph showing an abandoned town in the Northern Cape.

[Source: https://www.architecturaldigest.com/gallery/most-stunning-abandoned-towns-around-world]

3.3.1 This town is a ghost town. Give TWO pieces of evidence to prove this statement.   (2 x 1) (2)

3.3.2 Identify the term that describe the process where a high percentage of the population prefer to stay in the cities.   (1 x 1) (1)

3.3.3 Discuss THREE reasons why people move from rural areas to urban areas.   (3 x 2) (6)

3.3.4   Describe TWO consequences of people leaving a rural area. (2 x 2) (4)

3.3.5   Suggest TWO ways in which rural development strategies are important for South Africa's economy.   (2 x 1) (2)

3.4   Study the photograph on the change of function of a property.
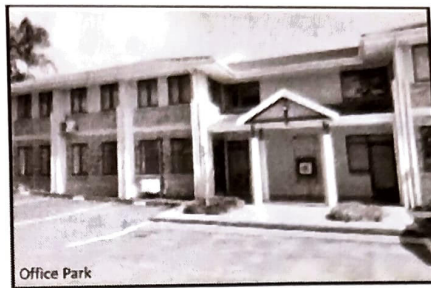
[Source: money.cnn.com]

3.4.1   Name the term used to describe the change of function of a property.
                                                        (1 x 1) (1)

3.4.2   Discuss the consequences of the changes mentioned in QUESTION 3.4.1 to the people living near the property.   (2 x 2) (4)

3.4.3   Discuss TWO reasons why functions and land use change in an urban environment.   (2 x 2) (4)

3.5   Study the photograph of a typical informal settlement in South Africa.

[Source: https://africa.businessinsider.com/local/lifestyle/top-10-poorest-countries-in-africa-in-2021/qrsbhj9]
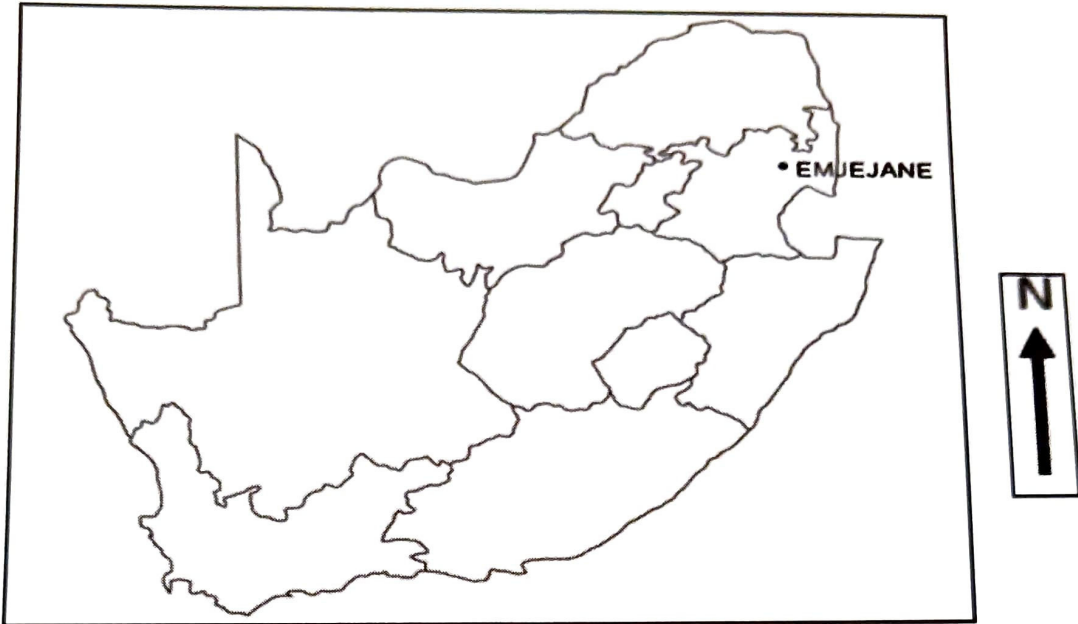
3.5.1   Describe the general location of informal settlements in South African towns and cities.   (1 x 1) (1)

3.5.2   Give ONE reason for the rapid growth of informal settlements in South Africa.   (1 x 1) (1)

3.5.3   Suggest TWO ways in which South Africa could address the social injustice issues in informal settlements.   (2 x 2) (4)

                                                                        (40)

QUESTION 4: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON EMJEJANE

Coordinates: 25°26'S 31°41'E

Emjejane, formally known as Hectorspruit, is a small farming town situated between Kaapmuiden and Komatipoort on a southern tributary of the Crocodile River in Mpumalanga, South Africa. The farms in the region produce sugar cane, subtropical fruit and vegetables. The location of Emjejane creates excellent opportunities for prospective investors and businesses to establish themselves in the area along the N4 transport route servicing the Maputo Spatial Development Corridor.

[Adapted from: https://en.wikipedia.org/wiki/Emjejane]

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

ENGLISH	**AFRIKAANS**
Diggings	Delwerye
Golf Course	Gholfbaan
River	Rivier
Sewerage Works	Rioolwerke
Gorge	Kloof
Waterfall	Waterval
Nature Reserve	Natuurreservaat

4.1   **MAP SKILLS AND CALCULATIONS**

Choose the correct answer for questions 4.1.1 – 4.1.3 from the options below.
Write down only the letter (A – D) next to the question numbers (4.1.1 to 4.1.3).

4.1.1   According to the urban hierarchy, Emjejane is classified as a …

A   City.
B   Country town.
C   Hamlet.
D   Metropolitan.

(1 x 1) (1)

4.1.2   Emjejane is located in … province.

A   Limpopo
B   North West
C   Mpumalanga
D   KwaZulu-Natal

(1 x 1) (1)

4.1.3   The farms in the region of Emjejane produce mainly …

A   Sugar cane.
B   Sub-tropical fruit.
C   vegetables
D   All of the above.

(1 x 1) (1)

4.1.4   In which year was the map constructed?   (1 x 1) (1)

4.1.5   Use the answer to QUESTION 4.1.4 to calculate the current difference
in years.   (1 x 1) (1)

4.1.6   The annual change is 5' westwards. Calculate the total annual change
for 2024.   (1 x 1) (1)

4.1.7   Use the answer to QUESTION 4.1.6 to calculate current magnetic
declination.   (2 x 1) (2)

Refer to spot height 274 (block **A1**) and spot height 271 (block **B3**) on the
topographic map.

4.1.8   Calculate the true bearing of spot height 271 (in block **B3**) from spot
height 274 (in block **A1**).   (1 x 2) (2)

4.1.9   Use the answers to QUESTIONS 4.1.7 and 4.1.8 to calculate the
magnetic bearing from spot height 274 in block **A1**, to spot height 271
in block **B3**.

Formula: **MB = True bearing (TB) + Magnetic declination (MD)**
(1 x 1) (1)

4.2 **MAP INTERPRETATION**

    4.2.1 The general direction of flow of the main river covered by block **B4** in the topographic map is …

        A.   South West
        B.   South East
        C.   North West
        D   North East

                                        (1 x 1) (1)

    4.2.2 Refer to the settlement at **H** on the topographic map.

        (a)   Identify the pattern of the settlement at **H**.   (1 x 1) (1)

        (b)   What is the shape of this settlement at **H**?   (1 x 1) (1)

        (c)   Explain ONE factor that influenced the shape of this settlement at **H**.   (1 x 2) (2)

    4.2.3 Which of the settlements, **7** or **8**, is considered an informal settlement?
                                                (1 x 1) (1)

    4.2.4 Provide evidence from the orthophoto map to support your answer to QUESTION 4.2.3.   (2 x 2) (4)

    4.2.5 Where would most of the residents of the informal settlement be employed?   (1 x 2) (2)

4.3   **GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

Refer to the railway tracks in Block **A1** and **B1** on the orthophoto map.

    4.3.1 Data integration is the combination of different types of data and data layers of a specific area for the purpose of decision-making. List TWO data layers that an engineer will consider before planning the route that the railway tracks will follow.   (2 x 1) (2)

    4.3.2 Data for the orthophoto map was gathered through the process of remote sensing. Define *remote sensing*?   (1 x 2) (2)

    4.3.3 How did remote sensing assist developers in the development of the Maputo Corridor (N4) along blocks **D4** and **D5**?   (2 x 2)   (4)

                                          TOTAL SECTION B : (30)
                                          GRAND TOTAL:150