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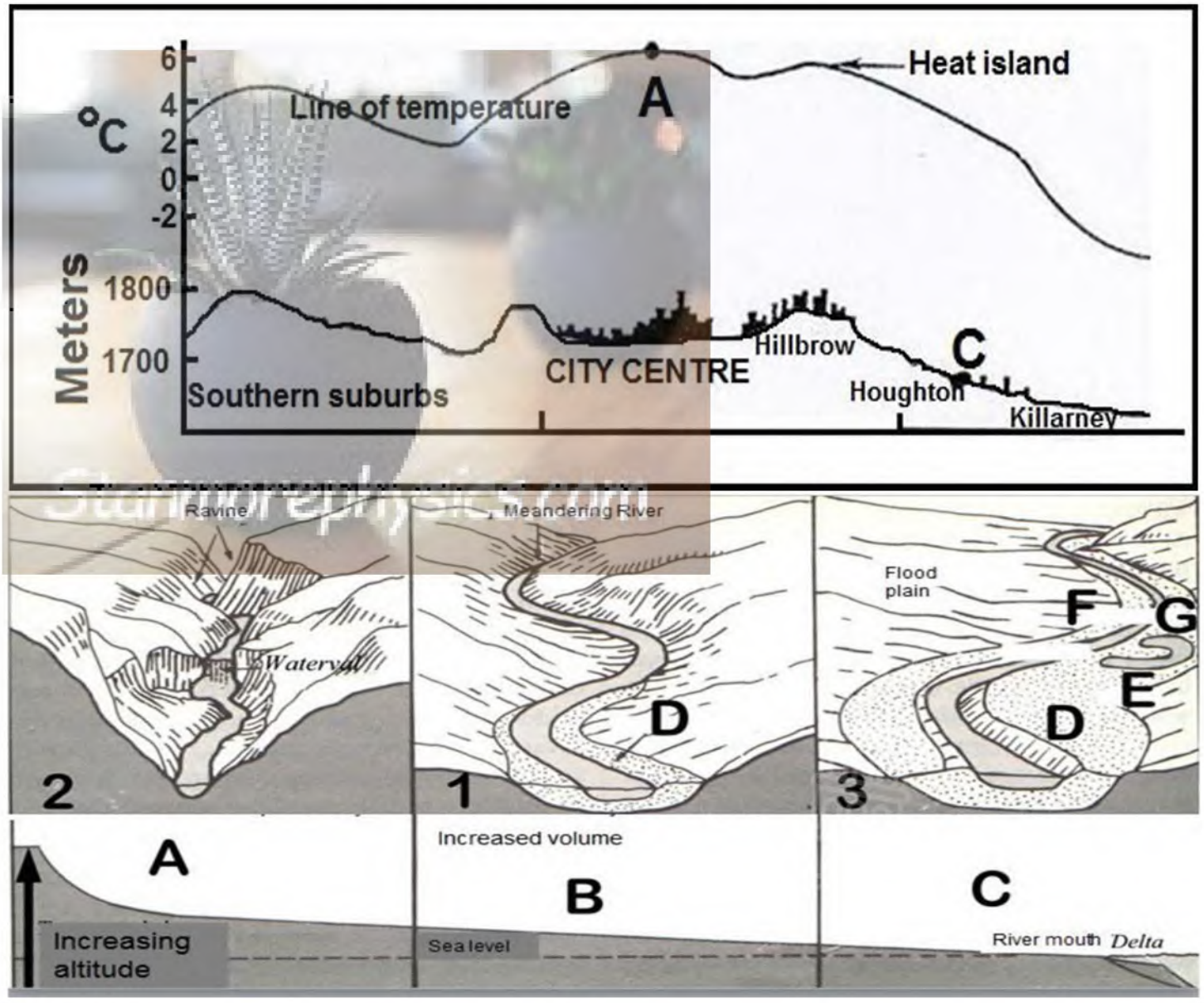
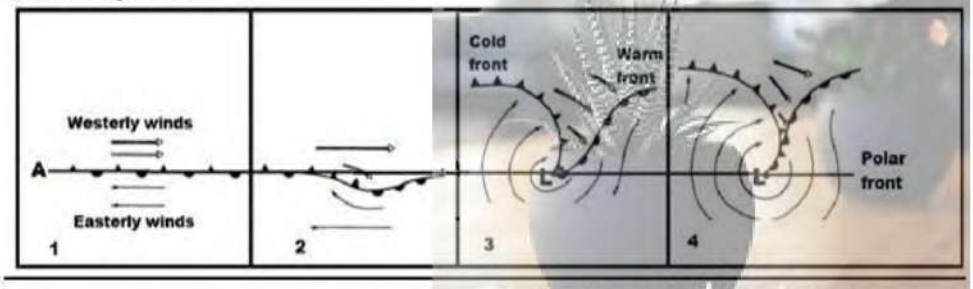
PHYSICAL GEOGRAPHY



2024 COLLECTABLE MARKSNMM

ACTIVITY 1.1: MID-LATITUDE CYCLONES

1.1 Study FIGURE 1.1, based on stages in the development of a mid-latitude cyclone



1.1.1 Which line of latitude , 20°S , 60°S or 90°S, is represented by line A?

1.1.2 Is mid-latitude cyclone a high or low pressure system?

1.1.3 Describe the circulation of the air, as shown in stage 2.

1.1.4 Name the zone of separation between the westerly and the easterly winds.

1.1.5 Name the stage of development during which fronts form.

1.1.6 Define the term cold front, as seen in stage 3.

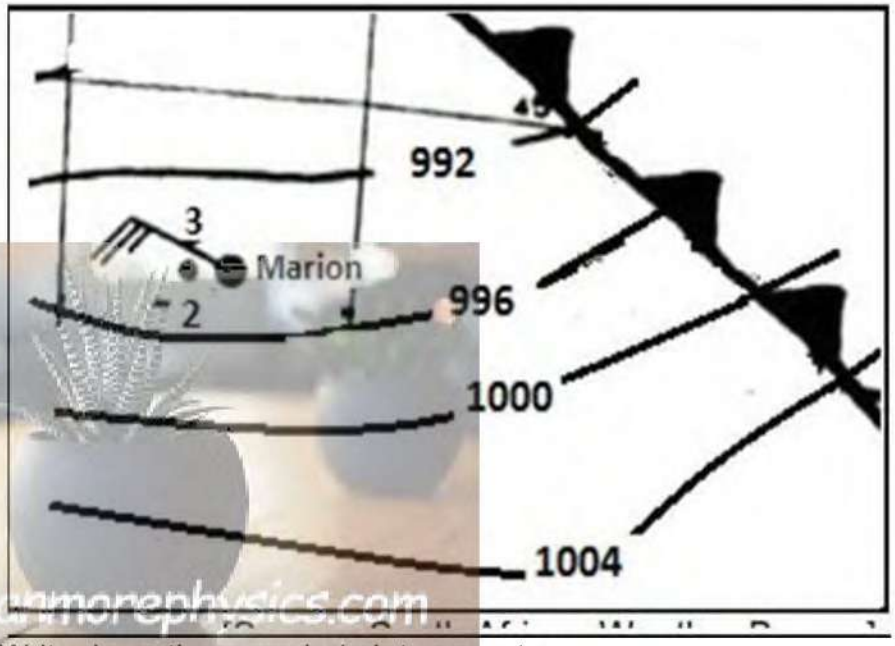
1.1.7 Which stage (1,2,3 or 4) shows the mid-latitude cyclone in the occlusion stage?

1.1.8 Give ONE point of evidence in the diagram that indicates that this cyclone occurs in the Southern Hemisphere

(8x1) (8)

ACTIVITY 1.2

1.2 FIGURE 1.2 is an extract from the synoptic weather map showing weather station model conditions for Marion Island



1.2.1 Write down the recorded air temperature

1.2.2 State the dew point temperature

1.2.3 What is the wind direction experienced on the Island

1.2.4 How fast is the wind blowing on the island

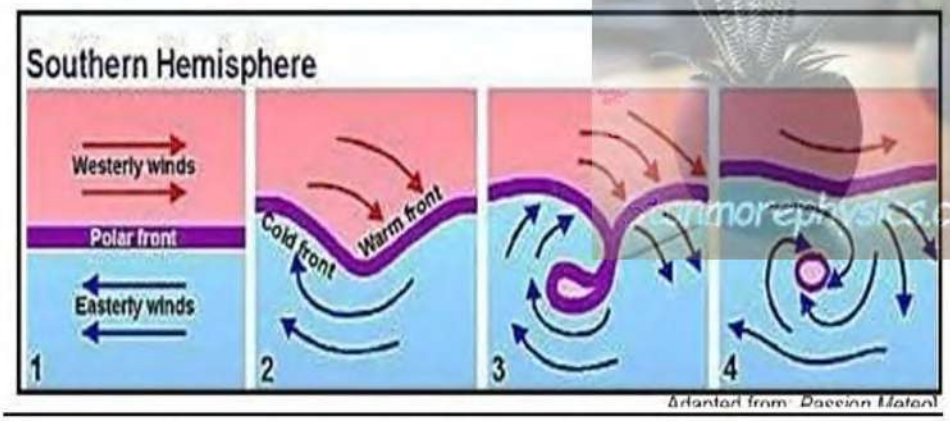
1.2.5 Write down the air pressure experienced on the island

1.2.6 Describe the cloud cover

1.2.7 What type of precipitation is experienced on the island (7x1) (7)

ACTIVITY 1.3

1.3 Study FIGURE 1.3 based on a weather system



1.3.1 Which weather system is depicted in figure 1.3

1.3.2 Is this weather system a high pressure or low pressure

1.3.3 Describe the air circulation as shown in stage 2

1.3.4 Name the area of convergence between the westerly and polar easterlies

1.3.5 At which line of latitude is this weather system developing

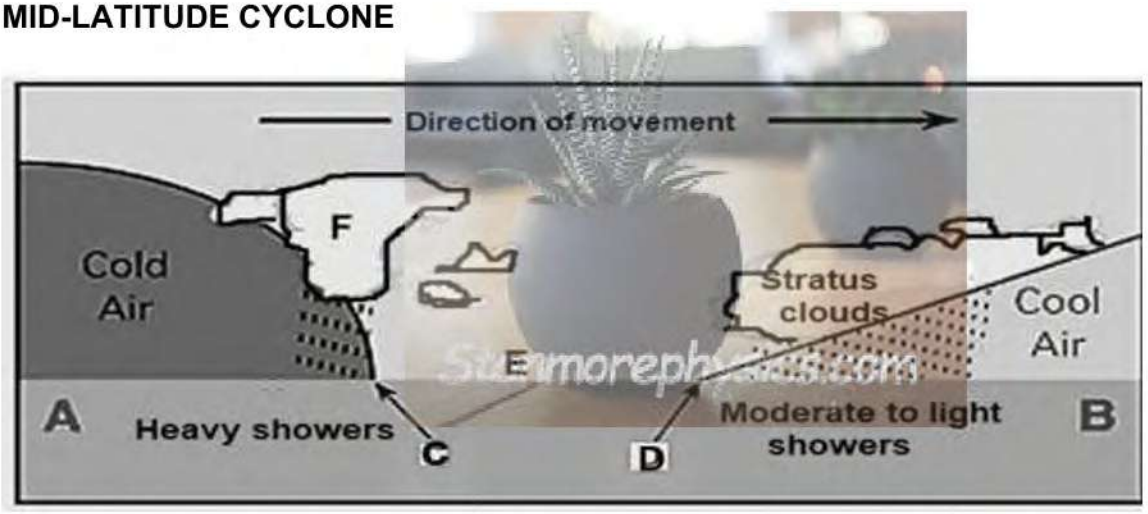
1.3.6 Which stage (1, 2, 3 or 4) shows when there is no longer any warm air at the surface level.

1.3.7 Name stage 3 of development of this weather system (7x1) (7)

ACTIVITY 1.4

1.4 Refer to the figure below that shows a mid-latitude cyclone and answer the questions that follow.

MID-LATITUDE CYCLONE



1.4.1 In which general direction does this mid-latitude cyclone move?

1.4.2 Is the direction of movement of the mid-latitude cyclone influenced by the (easterly/westerly) winds?

1.4.3 In which season is the Western Cape affected by the mid-latitude cyclone?

1.4.4 The (cold/warm) front affects the Western Cape in general.

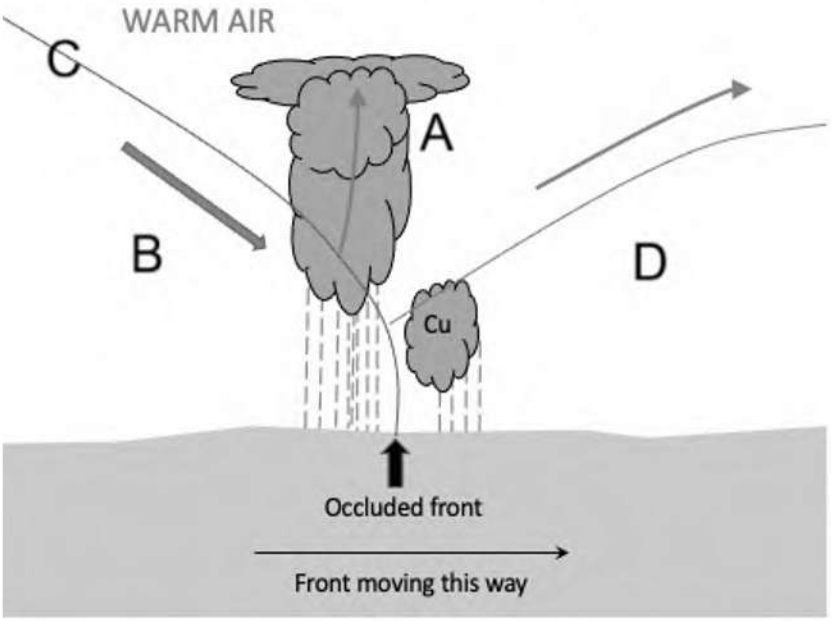
1.4.5 Name the clouds represented by the letter **F**.

1.4.6 The pressure will (drop/rise) when a cold front passes over an area.

1.4.7 The area indicated by the letter **E** is known as the …

1.4.8 Does front **C** or **D** have a gentle gradient? (8 x 1) (8)

1.5 Study FIGURE 1.5 based on a cross section of a mid-latitude cyclones and the questions that follows:



1.5.1 Name cloud type **A**

1.5.2 What is the air mass characteristic at area **B**

1.5.3 Name the sector identified by **D**

1.5.4 In which general direction do mid latitude cyclones travel in thesouthern hemisphere

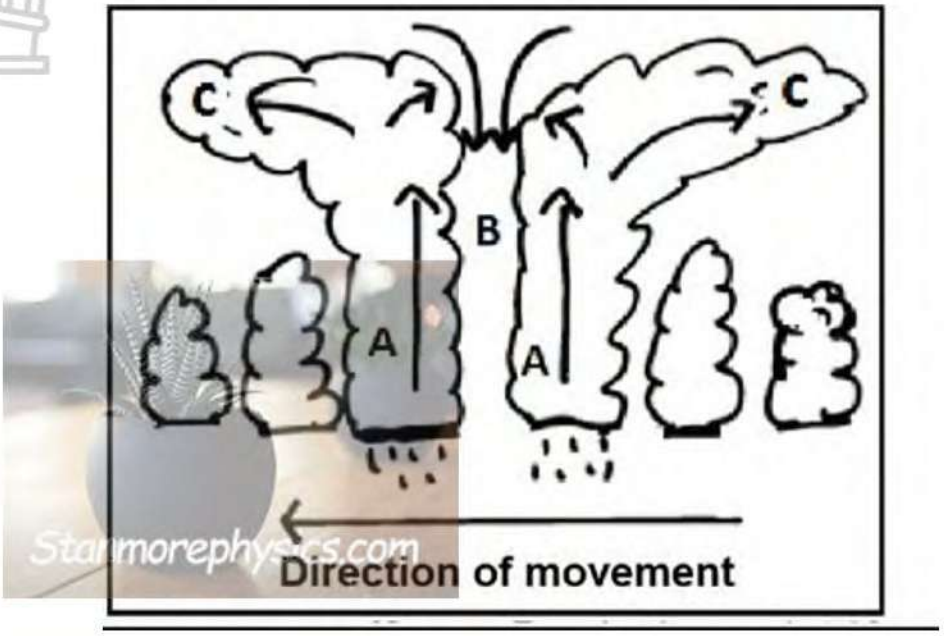
1.5.5 State the front labeled **C**

1.5.6 Determine the gradient of front **C**

1.5.7 Identify the type of occlusion as indicated by figure 1.5 (7x1) (7)

ACTIVITY 2.1: TROPICAL CYCLONESTROPICAL CYCLONE

2.1 Study FIGURE 2.1 based on a cross section of a tropical cyclones and the questions that follows:



2.1.1 Name cloud type **A**

2.1.2 What is the name given to area **B** in the tropical cyclone

2.1.3 Is the pressure high or low in area **B**

2.1.4 In which general direction do tropical cyclones travel in the southern hemisphere

2.1.5 State the precipitation associated with cloud **A**

2.1.6 Name the air movement in area **B**

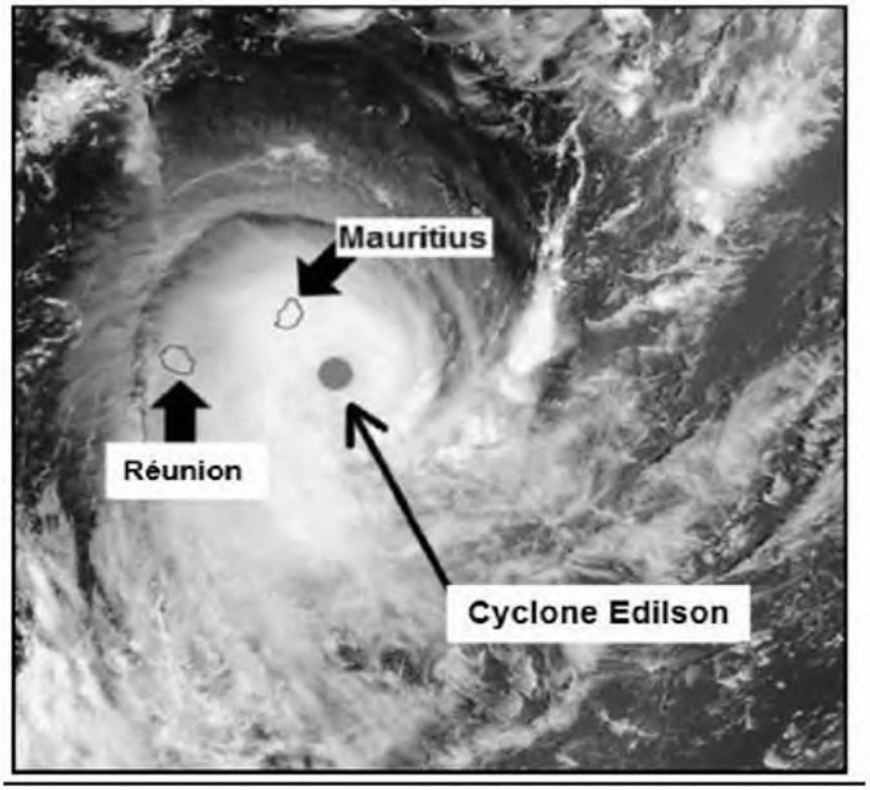
2.1.7 Is the air converging or diverging in area **C**

2.1.8 What is the name given to the stage of development when a cyclone moves inland

(8x1) (8)

ACTIVITY 2.2

2.2 Use FIGURE 2.2, a satellite image of a tropical storm, and answer the questions that follows:



2.2.1 Identify the type of cyclone represented on the satellite image

2.2.2 Is this a high or low pressure system

2.2.3 In which season does this cyclone occur

2.2.4 Name the prevailing winds that drives this cyclone

2.2.5 Name the global air circulation cell in which this system occurs

2.2.6 Which ONE, Reunion or Mauritius will experience less severe weather

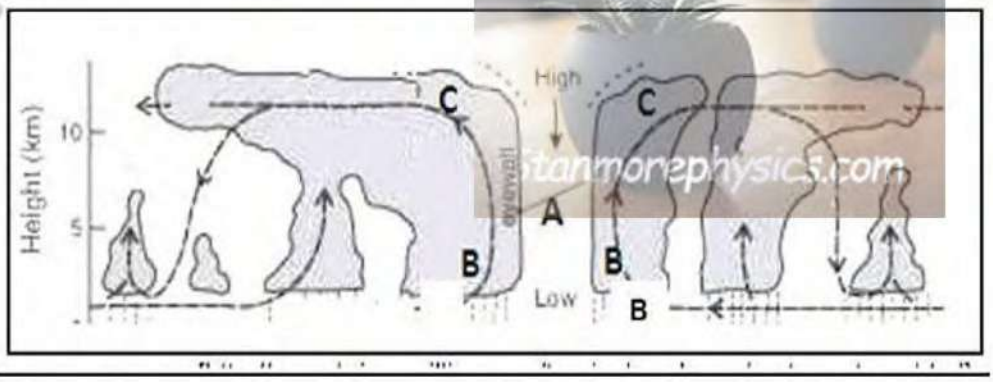
2.2.7 What does the name Edilson reveal about the number of cyclones experienced in this season?

2.2.8 Name the cloud that is found around the eye of this cyclone?

(8x1) (8)

ACTIVITY 2.3

2.3 Study FIGURE 2.3, based on the cross section of a tropical cyclone.



2.3.1 What is the name given to the centre of a tropical cyclone (**A**)

2.3.2 Why is the centre of a tropical cyclone always cloudless

2.3.3 Name cloud type **B**

2.3.4 In which general direction does the tropical cyclone moves in the Southern Hemisphere

2.3.5 Name the stage of development of this tropical cyclone

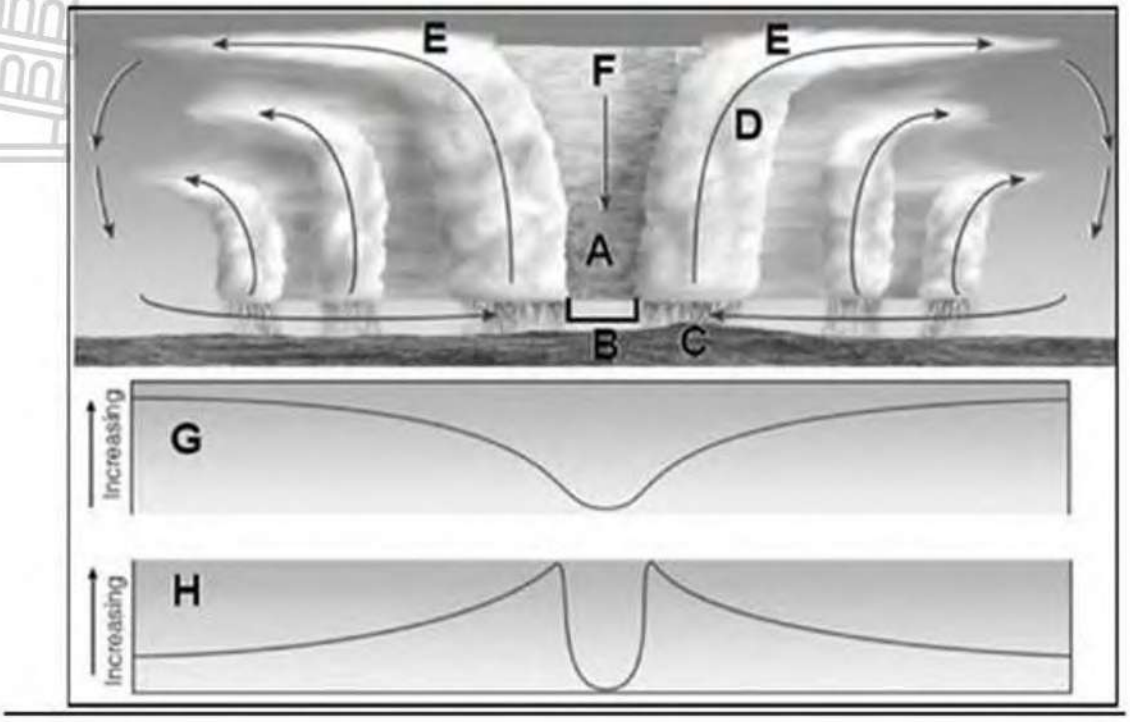
2.3.6 Is the air converging or diverging in area **C**

2.3.7 Why does this cyclone not originate between 0° and 5° North and South of the equator

(7x1) (7)

ACTIVITY 2.4

2.4 Study FIGURE 2.4, a cross sectional view of a tropical cyclone



Choose the correct word(s) from those given in brackets which will make each statement geographically CORRECT. Write only the word(s) next to the question numbers (2.1.1 to 2.1.8)

2.4.1 The (eye/vortex) at **A** is a characterised by descending air.

2.4.2 The area at **B** is an area of (high/low) air pressure

2.4.3 (light/heavy) rainfall occurs at **C**.

2.4.4 The vertical movements of air at **D** are known as (up draughts/down draughts.)

2.4.5 The upper air at **E** is (converging/diverging)

2.4.6 **F** is associated with (low/high) air pressure.

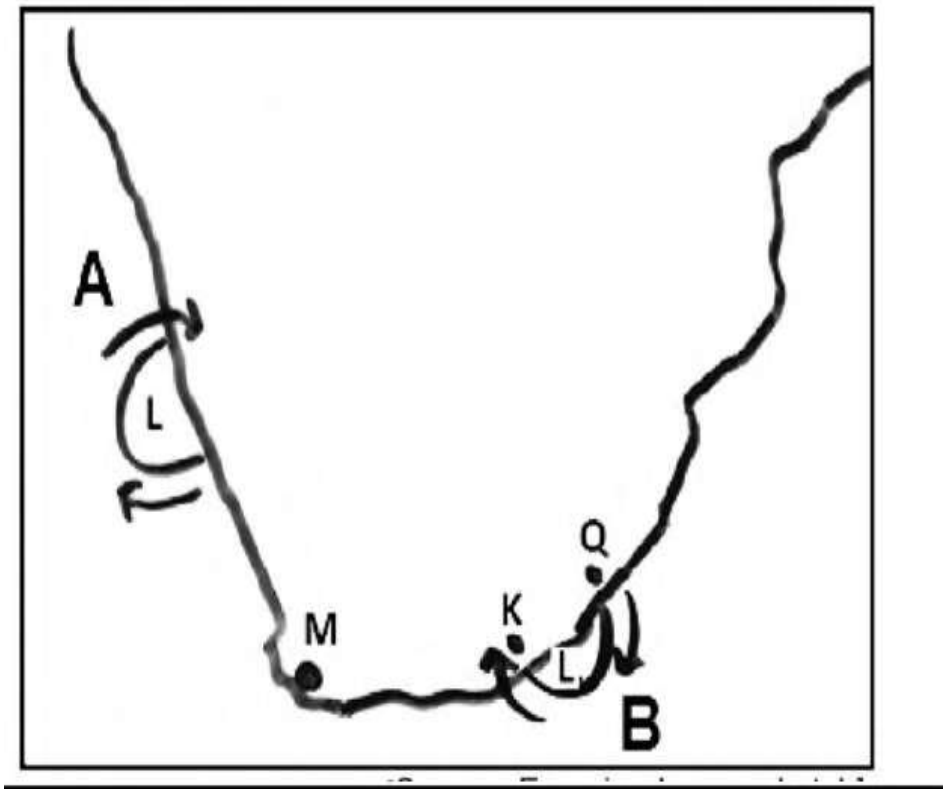
2.4.7 The graph(**G**) shows air(pressure/temperature) with the passage of the tropical cyclone

2.4.8 Surface (air temperature/wind speed) is depicted by graph **H**.

(8x1) (8)

ACTIVITY 3.1

3.1 Refer to FIGURE 3.1, showing two coastal lows, A and B. Choose ONE term in brackets to make each of the statement True.



3.1.1 Air circulation in pressure cell A and B is (clockwise/anticlockwise)

3.1.2 Air (converges/diverges) at A or B

3.1.3 Pressure cell A will have a (lower/higher) moisture content than B.

3.1.4 Pressure cell A is associated with (fog/drizzle)

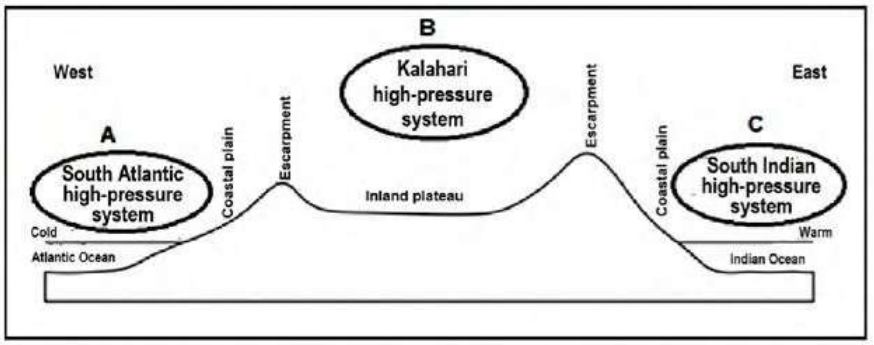
3.1.5 The air pressure at B will be (lower/higher) than at A

3.1.6 Place M will soon be affected by weather system (A/B)

3.1.7 Place (K/Q) will be affected by berg winds (7x1) (7)

ACTIVITY 3.2a

3.2 Refer to FIGURE 3.2, which shows the position of anticyclones over South Africa. Indicate whether each of the statement below refers to anticyclone **A, B** or **C**. Write only the letter (**A,B** or **C**) next to the question number.



3.2.1 The subsiding air causes semi arid conditions on the West Coast of South Africa.

3.2.2 In summer this pressure is found at higher altitude due to surface heating

3.2.3 The subsiding air forms an inversion layer in winter that prevents moist air from reaching the interior.

3.2.4 The ridging of pressure cell results in rainfall over the South Western Cape.

3.2.5 Interaction with a coastal low result in berg wind conditions

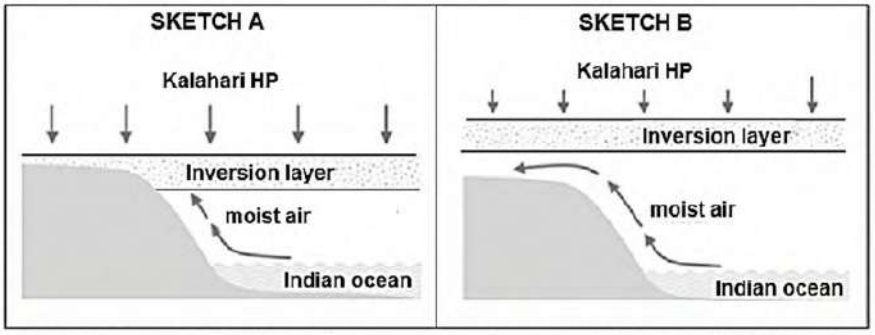
3.2.6 Sometimes this pressure cell is known as the blocking high when it is in the path of a mid – latitude cyclone

3.2.7 This pressure cell is generally associated with fog and reduced visibility.

(7x1) (7)

ACTIVITY 3.2b

3.2 Refer to FIGURE 3.2b, which shows the position of inversion layer over South Africa. Indicate whether each of the statement below refers to **Sketch A** or **Sketch B** conditions. Write only the letter (**A** or **B**) next to the question number.



[Adapted from *https://www.theanswer.co.za/wp-content/uploads/2021/11/Gr-12-Geography-3-in-1-Extracts.pdf*]

3.2.1 The subsiding air causes cold-dry conditions over the interior of South Africa.

3.2.2 Kalahari high pressure is found at higher altitude due to surface heating

3.2.3 The subsiding air forms an inversion layer that prevents moist air from reaching the interior.

3.2.4 Results in rainfall over the interior of SouthAfrica.

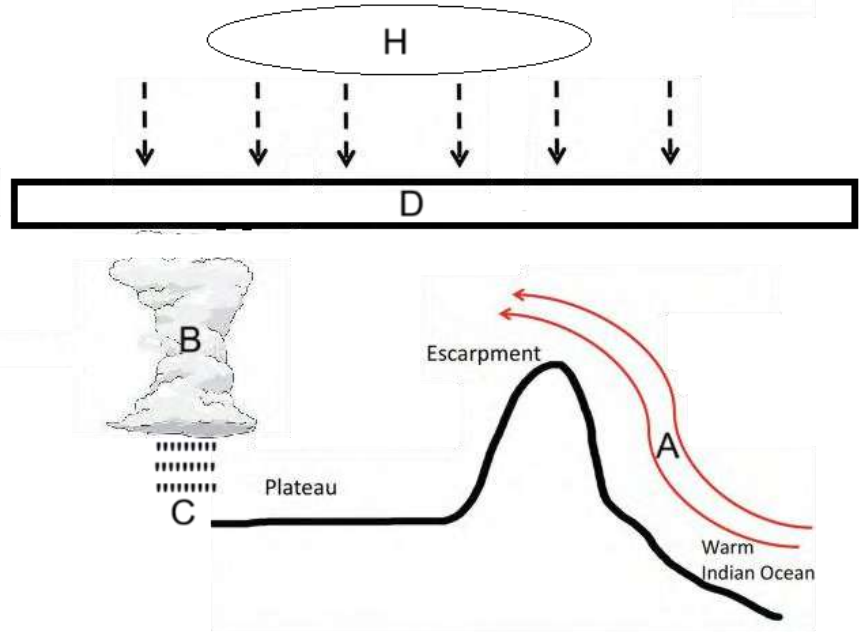
3.2.5 The position of the inversion layer allows warm moist air to reach the interior of South Africa

3.2.6 May result in formation of line thunderstorm

3.2.7 Results in winter rainfall over the eastern coast of SouthAfrica. (7x1) (7)

ACTIVITY 3.2c

3.2 Refer to FIGURE 3.2c, which shows the typical weather conditions over South Africa on a particular season



3.2.1 Identify the season represented by figure 3.2c

3.2.2 Determine the moisture content of wind **A**

3.2.3 Name the cloud type at **B**

3.2.4 State the precipitation type as indicated by **C**

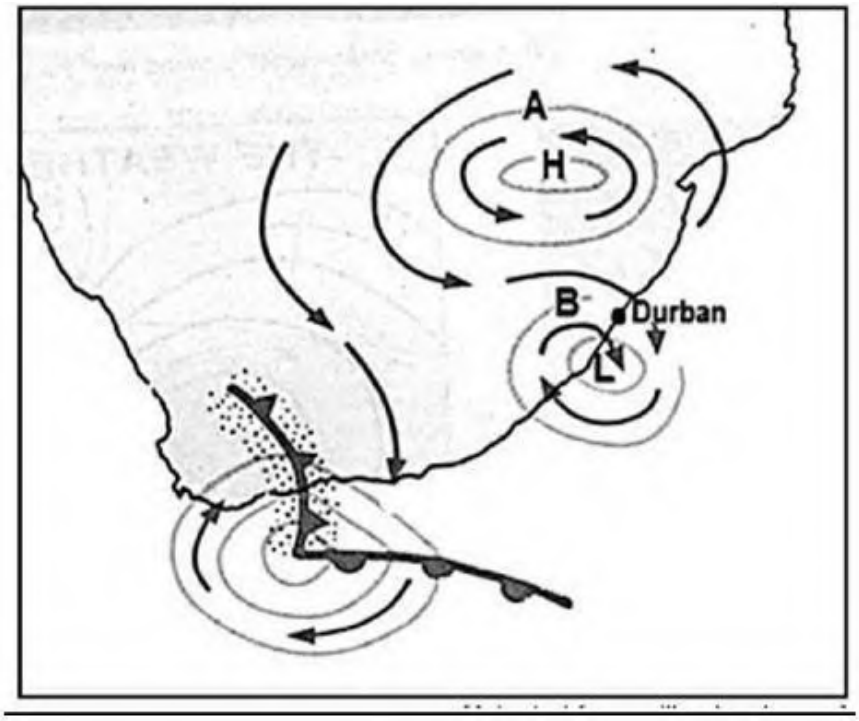
3.2.5 Will the precipitation type identified in 3.2.4 be a blessing or a curse to the farmers over the interior of South Africa

3.2.6 What is the layer indicated by **D**

3.2.7 Name the high pressure **H** as depicted on the sketch (7x1) (7)

ACTIVITY 3.3

3.3 Refer to FIGURE 3.3, showing berg wind conditions. Choose the correct word(s) from those given in brackets. Write only the word(s) next to the correct number.



3.3.1 Berg winds conditions occurs during (summer/winter)

3.3.2 Pressure cell **A** is (Kalahari/South Atlantic) high pressure

3.3.3 Pressure cell **B** is a (Thermal/Coastal) low pressure cell

3.3.4 The general direction of movement of frontal depression is (eastwards/westwards)

3.3.5 Durban will experience (onshore/offshore) winds.

3.3.6 The cloud cover at Durban will be (overcast/clear) due to the winds identified in 3.3.5 above

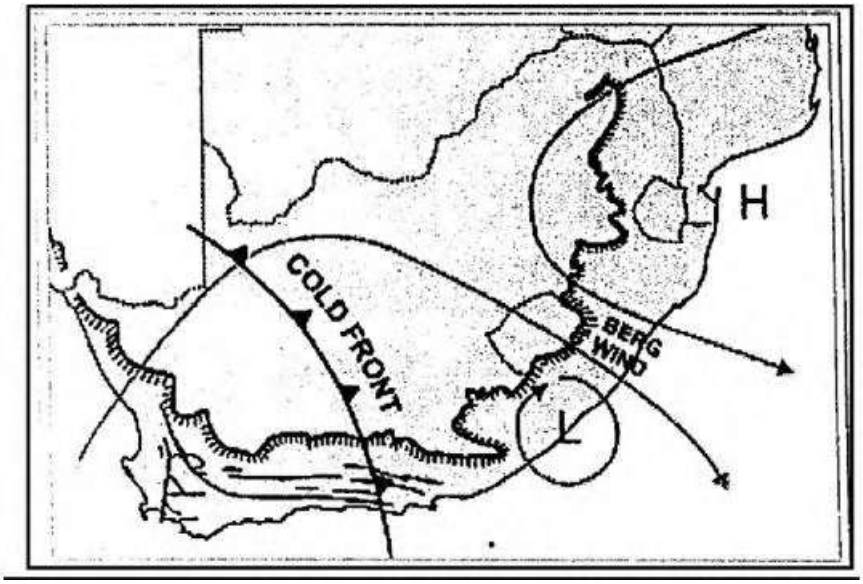
3.3.7 (onshore/offshore) are associated with fog and light rain

3.3.8 The risk of veld fire during berg wind conditions (increases/decreases) in the eastern part of South Africa.

(8x1) (8)

ACTIVITY 3.4

3.4 Refer to FIGURE 3.4, showing berg winds conditions. Choose the correct word(s) to make the statement True. Write only the word(s) next to the number.



3.4.1 Berg wind conditions occurs during (summer/winter)

3.4.2 Berg winds are (hot and dry/cold and moist) wind

3.4.3 The letter **H** indicates (Kalahari/ South Indian) high pressure.

3.4.4 The letter **L** indicates the position of the (thermal/coastal) low pressure.

3.4.5 Berg wind are associated with (rain/veld fires)

3.4.6 The cold front is part of a (high/low) pressure system

3.4.7 Berg wind results in (onshore/ offshore) winds

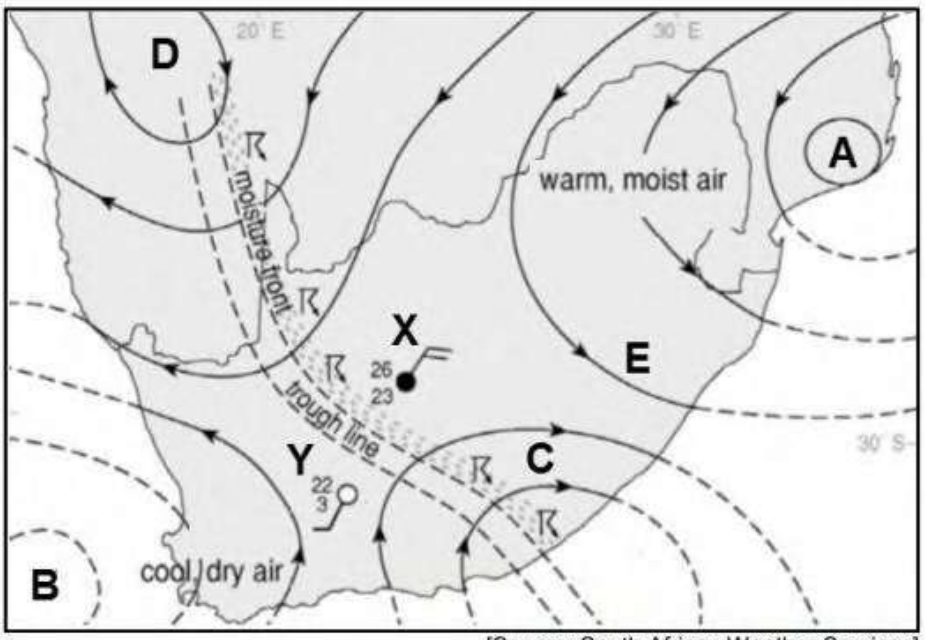
3.4.8 Berg winds are associated with adiabatic (cooling/heating) (8x1) (8)

ACTIVITY 4.1: LINE THUNDERSTORMS

4.1 Refer to FIGURE 4.1, a synoptic weather map.

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 number (4.1.1–4.1.7) in the ANSWER BOOK, for example 4.1.8 D. Do NOT answer these multiple-choice questions on the ANSWER SHEET provided in the ANSWER BOOK.

FIGURE 4.1: LINE THUNDERSTORMS



[Source: South African Weather Services]

4.1.1 The cloud coverage at weather station X can be described as …

A partly cloudy.
B clear skies.
C overcast.
D not visible

4.1.2 The weather experienced along the moisture front is generally …

A heavy rainfall.
B snowfall.
C thunderstorms.
D hail.

4.1.3 The trough line is associated with … clouds.

A cumulus

B cumulonimbus

C stratus

D altostratus

4.1.4 At E the warm, moist air from pressure cell A moves in a … direction.

A north-easterly

B north-westerly

C south-easterly

D south-westerly

4.1.5 The wind direction at weather station X is ...

A south-west.

B north-east.

C south-east.

D north-west.

4.1.6 The cold, dry air from pressure cell B is …

A ridging from the Atlantic Ocean.

B ridging from the Indian Ocean.

C undercutting pressure cell C.

D undercutting pressure cell D.

4.1.7 The shape of the trough line is determined by …

A differences at weather stations X and Y.

B the position of the South Indian High.

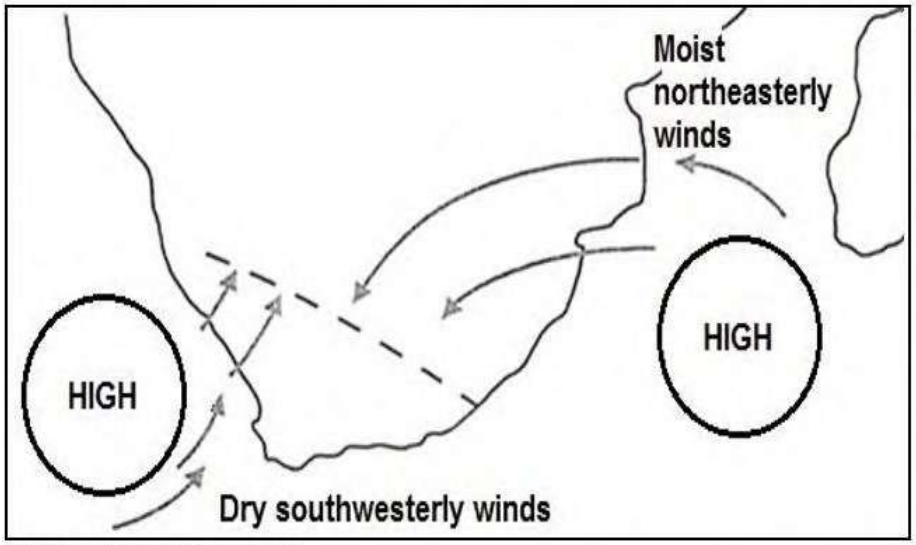
C the ridging of the South Atlantic High.

D uneven distribution of cold and warm air masses. (7 x 1) (7)

ACTIVITY 4.2

Refer to FIGURE 4.2 showing line thunderstorms. Select the correct word/s from within the brackets to make the statements TRUE. Write down only the word/s next to the question numbers (4.2.1 to 4.2.8) in the ANSWER BOOK, e.g.4.2.9 moisture.

FIGURE 4.2: LINE THUNDERSTORMS



[Source: Examiner's own sketch]

4.2.1 The South Indian high-pressure cell is situated over a (cold/warm) ocean current

4.2.2 Moist air is drawn from over the (Indian/Atlantic) ocean towards the interior

4.2.3 Cold dense air diverges out of the (South Atlantic/South Indian) high-pressure cell

4.2.4 The two air masses meet at the (polar/moisture) front in the interior

4.2.5 Cumulonimbus clouds and the worst weather conditions will be experienced to the (west/east) of this front

4.2.6 (Hail/Fog) is associated with line thunderstorms

4.2.7 Veld fires can be triggered by (lightning/thunder) during the formation of line thunderstorms

4.2.8 Line thunderstorms are more likely to occur in (summer/winter) in South Africa (8 x 1) (8)

ACTIVITY 4.3a:

4.3 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 (4.3.1 to 4.3.7) in the ANSWER BOOK, e.g. 4.3.8 A.

4.3.1 An urban heat island can be described as …

A urban areas being colder than rural areas.
B urban areas receiving more insolation than rural areas.
C urban areas being warmer than rural areas.
D an increase in temperature as you move from rural to urban areas.

4.3.2 Urban heat islands can develop because of …

A the reduced number of vehicles.
B reduced industrial activity.
C larger open water sources.
D larger artificial surfaces.

4.3.3 The following photograph shows … due to a large glass surface in an urban area.

[Source: *https://www.mornglass.com/light-pollution-of-glass-curtain-wall.html*]

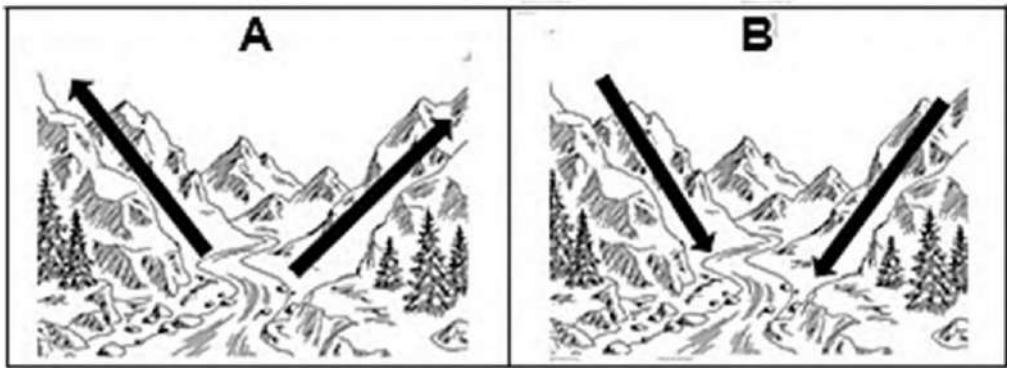
A Albedo
B evapotranspiration
C insolation
D absorption

4.3.4 A pollution dome located over an urban area would be … and …

(i) higher during the day
(ii) lower during the day
(iii) lower during the night
(iv) higher during the night

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

Refer to sketches **A** and **B** below, showing wind direction in valleys, to answer QUESTIONS 4.3.5 to 4.3.7.



[Adapted from *https://www.alamy.com/mountain-valley-river-graphic-black- white-landscape-sketch-illustration-vector-image416759737.html*]

4.3.5 The wind illustrated in sketch **A** is a/an ... wind.

A katabatic
B Föhn
C anabatic
D Berg

4.3.6 The wind illustrated in diagram **B** is most prevalent …

A in the afternoon.
B at night.
C before midday.
D at any time of the day.

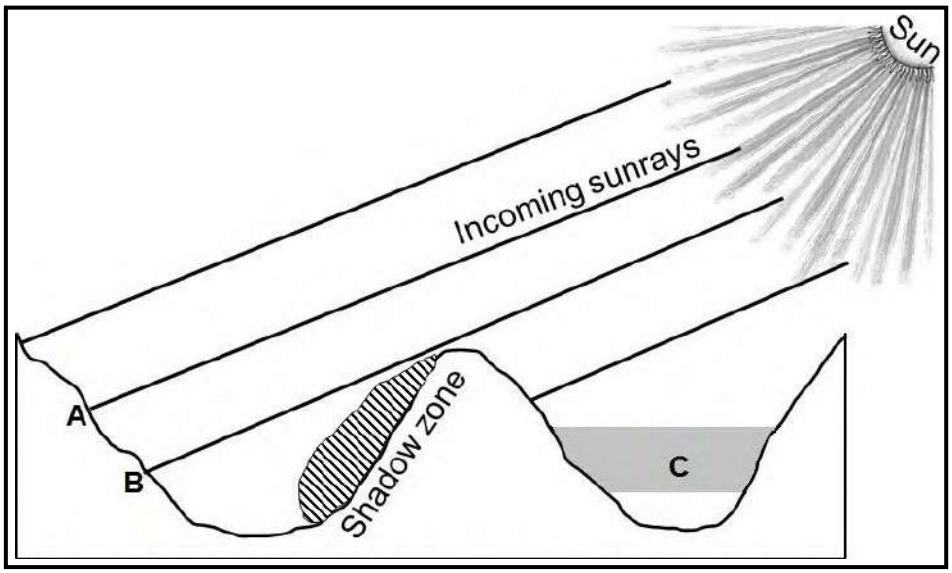
4.3.7 Frost pockets will likely form in diagram **B** because of the …

A accumulation of cold air.
B dispersion of warm air.
C mountain slopes.
D location of the river. (7 x 1) (7)

ACTIVITY 4.3b

4.3 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the questionnumbers (4.3.1 to 4.3.8) in the ANSWER BOOK, e.g. 4.3.9 D.

Refer to the sketch below showing valleys in the Southern Hemisphere to answer QUESTIONS 4.3.1 to 4.3.4.



[Source: Examiner's own sketch]

4.3.1 The relationship between slopes and the sun's rays is referred to as …

A insolation.
B aspect.
C north-facing slope.
D terrestrial radiation.

4.3.2 The surface from **A** to **B** is intensely heated because it is …

A receiving oblique sunrays.
B at a lower latitude.
C receiving direct sunrays.
D at a higher altitude.

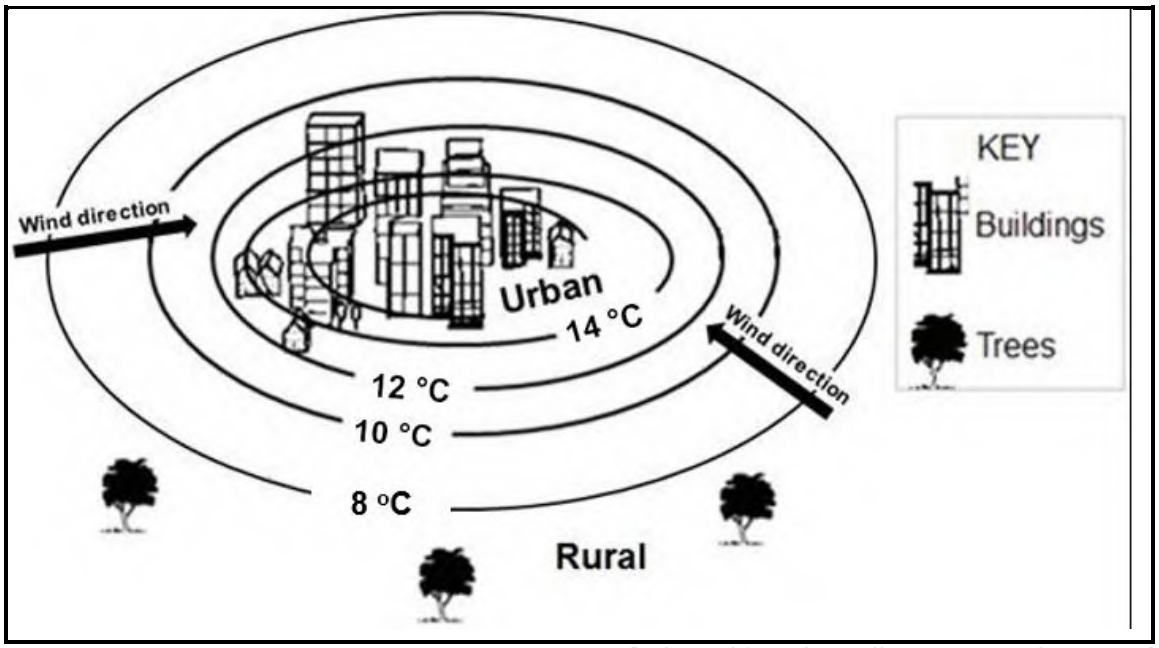
4.3.3 The climatological phenomenon occurring at **C** is …

A radiation fog.
B advection fog.
C terrestrial radiation.
D a frost pocket.

4.3.4 Dense vegetation is found in the shadow zone due to … conditions.

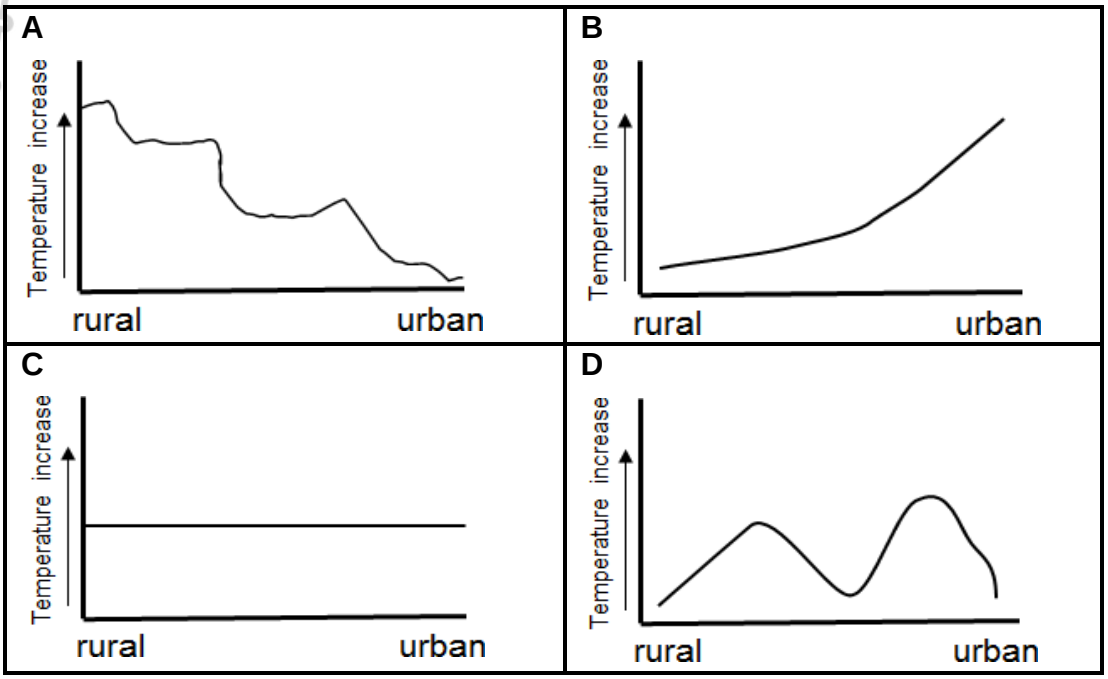
A warm
B dry
C moist
D windy

Refer to the sketch below depicting rural and urban climates to answer QUESTIONS 4.3.5 to 4.3.8.



[Adapted from https://www.researchgate.net]

4.3.5 Which graph below represents the change in temperature from the rural area to the urban area?



[Source: Examiner's own sketch]

4.3.6 The reason for the change in temperature (answer to QUESTION 1.2.5) is due to … surfaces and … storm-water systems in urban areas.

(i) natural
(ii) artificial
(iii) more
(iv) less

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

4.3.7 The wind direction from the rural area to the urban area is influenced by … temperatures and … air pressure in urban areas.

(i) warmer
(ii) cooler
(iii) higher
(iv) lower

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

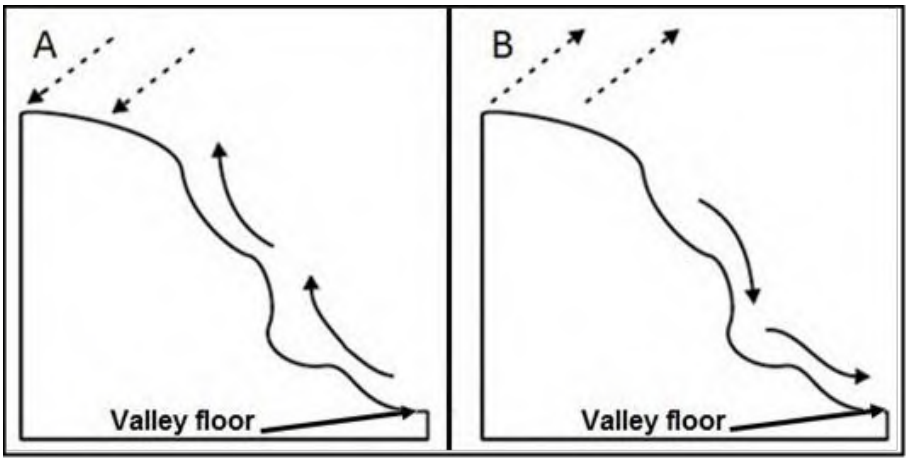
4.3.8 The urban area will experience … cloud cover with a/an … in precipitation than the rural area.

A more; increase
B less; decrease
C more; decrease
D less; increase (8 x 1) (8)

ACTIVITY 4.4

Refer to FIGURE 4.4 showing air movement associated with valley climates. Match the descriptions below with winds A and B. Write only the letter A or B next to the question numbers (4.4.1 to 4.4.7) in the ANSWER BOOK, e.g. 4.4.8 B.

FIGURE 4.4 VALLEY CLIMATES



[Examiner's own sketch]

4.2.1 The air movement associated with upslope flow

4.2.2 Air movement that occurs at the nigh

4.2.3 Air movement that originates due to the rate of insolation

4.2.4 Air movement that mostly reduces air pollution at the bottom of the valley

4.2.5 Air movement associated with dense, heavy air

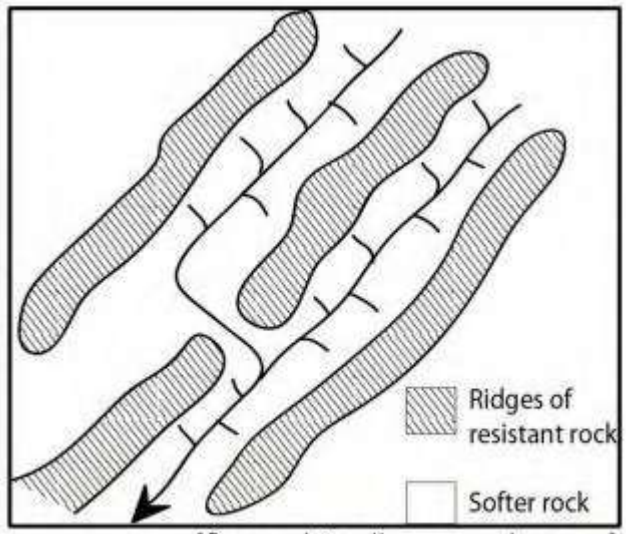
4.2.6 Air movement associated with the formation of frost on the valley floor

4.2.7 The direction of air movement determined by gravitational forces (7 x 1) (7)

ACTIVITY 5.1: DRAINAGE PATTERNS

Various options are provided as possible answers to the following questions, based on drainage patterns. Choose the answer and write only the letter (A–D) next to the question numbers (5.1.1 to 5.1.5) in the ANSWER BOOK, for example 5.1.6 D.

Refer to the drainage pattern below to answer questions 5.1.1 to 5.1.3.



[Source: https://sageography.co.za]

5.1.1 The drainage pattern is known as the … pattern.

A trellis

B centripetal

C parallel

D radial

5.1.2 This pattern develops on the following underlying rock structure:

(i) Rock with uniform resistance to erosion

(ii) Folded mountains

(iii) Areas where volcanoes erupted

(iv) Hard and soft rock formations

A (i) and (ii)

B (i) and (iii)

C (ii) and (iii)

D (ii) and (iv)

5.1.3 The tributaries join the mainstream at … angles.

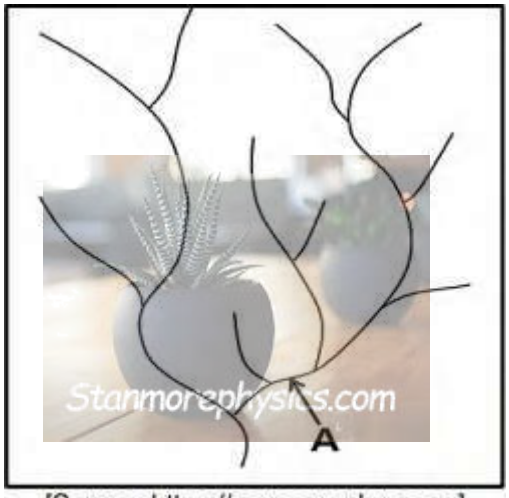
A acute

B right

C oblique

D obtuse

Refer to the dendritic drainage pattern below to answer questions 5.1.4 and 5.1.5.



[Source: https://sageography.co.za]

5.1.4 The stream order at A is …

A 1.

B 2.

C 3.

D 4.

5.1.5 This drainage pattern usually flows on … slopes and in … valleys.

(i) gentle
(ii) steep
(iii) V-shaped
(iv) U-shaped

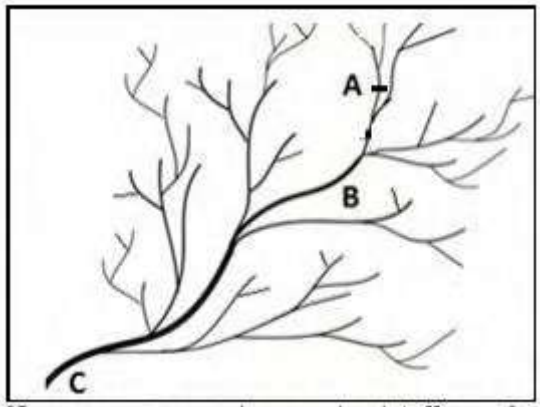
A (i) and (iii)
B (i) and (iv)
C (ii) and (iii)
D (ii) and (iv)

(5 x 1) (5)

ACTIVITY 5.2

5.2 Refer to the drainage basin in FIGURE 5.2 and answer the questions that follow.

FIGURE 5.2: DRAINAGE PATTERN



[Source: sageography.myschoolstuff.co.za]

5.2.1 Name the drainage pattern shown in the diagram.

5.2.2 At which angle do the tributaries join the main stream?

5.2.3 State whether this drainage pattern is associated with a surface that has a uniform or varied resistance to erosion.

5.2.4 Is the dominant process at A on the sketch erosion or deposition?

5.2.5 State the stream order at point A.

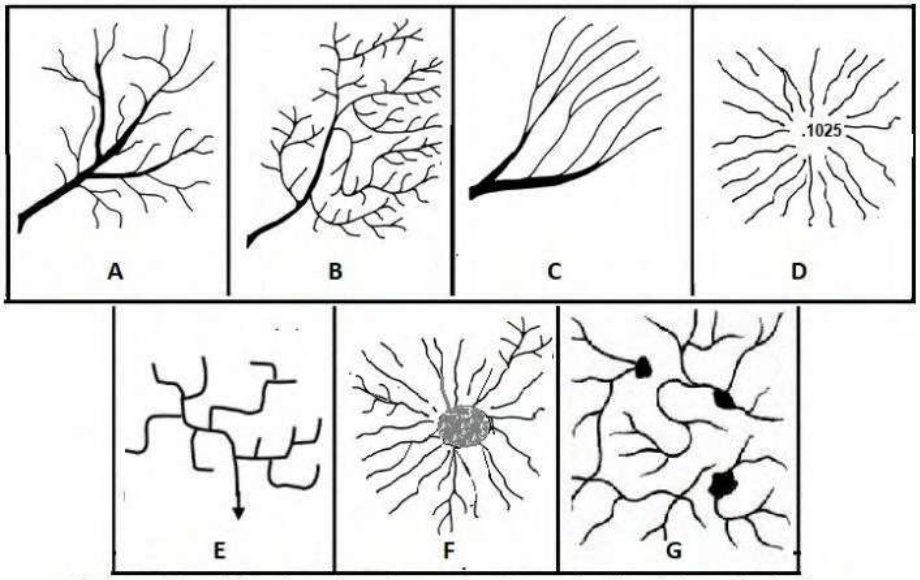
5.2.6 Is area B an interfluve or a watershed?

5.2.7 Is the discharge of the river greater at A or at C? (7 x 1) (7)

ACTIVITY 5.3

Refer to FIGURE 5.3 below and choose the correct letter (A – G) that matches the description of a specific drainage pattern. Write only the letter (A – G) next to the question numbers (5.3.1 to 5.3.8) in the ANSWER BOOK, for example 5.3.9 H. Letters A – G can be used more than once.

FIGURE 5.3: DRAINAGE PATTERNS



[Source: Adapted from lumenlearning.com/geo/chapter/reading-drainage-basins/]

5.3.1 Drainage pattern that formed from rivers flowing into a depression or lake

5.3.2 Drainage pattern formed from rocks of uniform resistance

5.3.3 Drainage pattern commonly found in melting ice regions

5.3.4 Drainage pattern that occurs on a common slope down a linear mountain range

5.3.5 Drainage pattern that develops on alternate layers of hard and soft rocks

5.3.6 Drainage pattern that commonly forms on areas of volcanic mountains

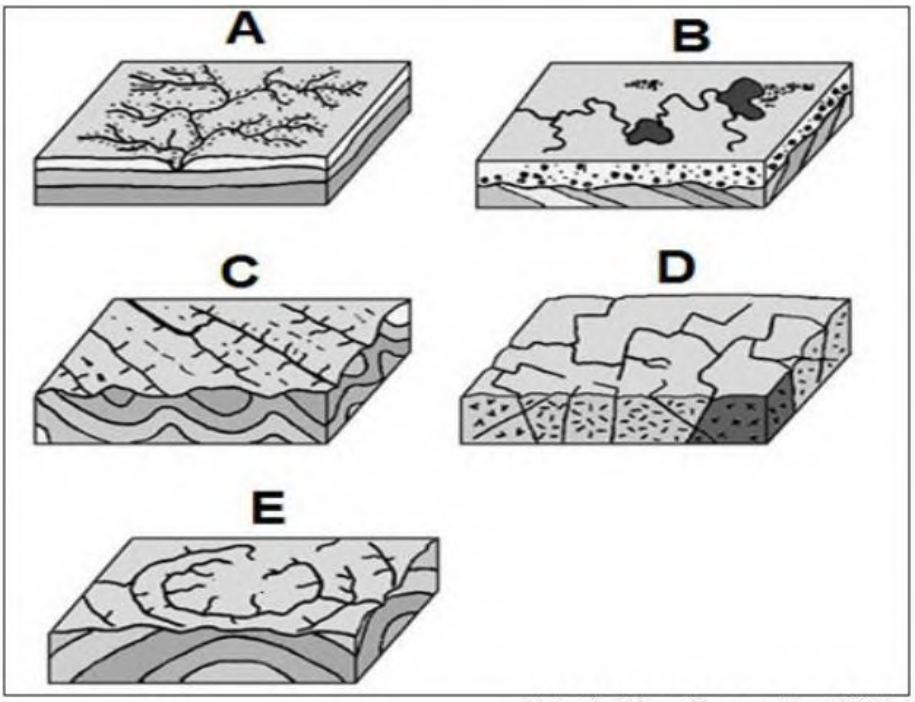
5.3.7 Drainage pattern formed where prominent ridges lie parallel to one another

5.3.8 Drainage pattern in which the main streams and their tributaries display many right-angle bends (8 x 1) (8)

ACTIVITY 5.4

Refer to FIGURE 5.4 on different drainage patterns and match EACH of the descriptions below with one of the drainage patterns A to E. You may choose the same drainage pattern more than once.

FIGURE 5.4: DRAINAGE PATTERNS



[Adapted from Geography GCSE]

5.4.1 The stream pattern associated with rocks that have equal resistance to erosion.

5.4.2 Main streams that are parallel to each other.

5.4.3 Main streams that have 90° bends along its course

5.4.4 Streams with an irregular pattern

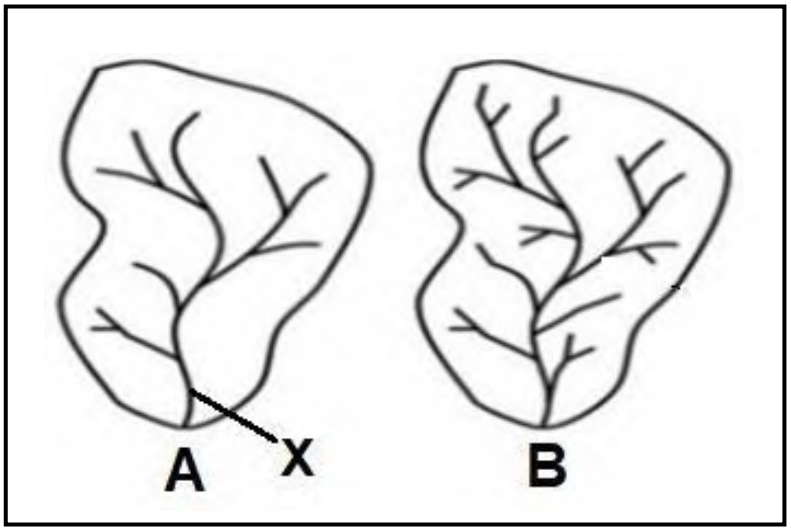
5.4.5 A drainage pattern that forms on rocks that have varying resistance to erosion due to folding

5.4.6 Rivers flowing away from a central point

5.4.7 Tributaries join the main stream at a right angle (7x1) (7)

ACTIVITY 5.5

5.5 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 (5.5.1 to 5.5.7) in the ANSWER BOOK, e.g. 5.5.8 A.



[Source: *https://www.google.com/search?q=drainage+basin&sca_esv &tb*]

5.5.1 Drainage density at **A** is … the density at **B.**

A higher than
B steeper than
C lower than
D the same as

5.5.2 Drainage basin **A** has a … gradient than **B**.

A gentler
B steeper
C softer
D harder

5.5.3 The stream order at point **X** is …

A 2.
B 3.
C 4.
D 5.

5.5.4 The drainage density of drainage basin **B** is different from the density of drainage basin **A** because of the following factors:

A Steeper gradient, and high porosity
B Gentle gradient, and low porosity
C Steeper gradient, and low porosity
D Gentle gradient, and high porosity

5.5.5 Drainage basin **A** is situated on an area with … and …

(i) high rainfall
(ii) gentle gradient
(iii) more vegetation
(iv) saturated soil

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

5.5.6 Watertable at **A** is … than at **B** because of …..

(i) high
(ii) low
(iii) infiltration
(iv) runoff

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

5.5.7 The drainage density of drainage basin **A** is different from the density of drainage basin **B** because of the following factors:

A More vegetation, and high permeability
B Less vegetation, and low permeability
C More vegetation, and low permeability
D Less vegetation, and high permeability

(7 x 1) (7)

ACTIVITY 6.1: RIVER PROFILES

6.1 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 (6.1.1 to 6.1.8) in the ANSWER BOOK, e.g. 6.1.9 D.

6.1.1 The cross-profile of a river shows the shape of the river valley from ...

A source to mouth.
B concave to convex.
C bank to bank.
D width to depth.

6.1.3 Deposition is the dominant process in the ... of the river.

A upper course
B middle course
C lower course
D young course

6.1.4 The volume of water in the middle course of the river is likely to increase because of …

A lateral erosion.
B tributaries joining the river.
C downward erosion.
D no tributaries joining the river.

6.1.5 Rapids are most likely to develop in the …

A lower course.
B middle course and lower course.
C upper course.
D upper course and lower course.

6.1.6 The stream flow (discharge) of a river in the upper course is generally a … flow.

A layered
B laminar
C smooth
D turbulent

6.1.7 An oxbow lake can be formed from a ... in the lower course of the river.

A slip-off slope
B cut-off slope
C meander loop
D meander scar

6.6.8 The processes that a river undergoes from the upper course to the lower course are …

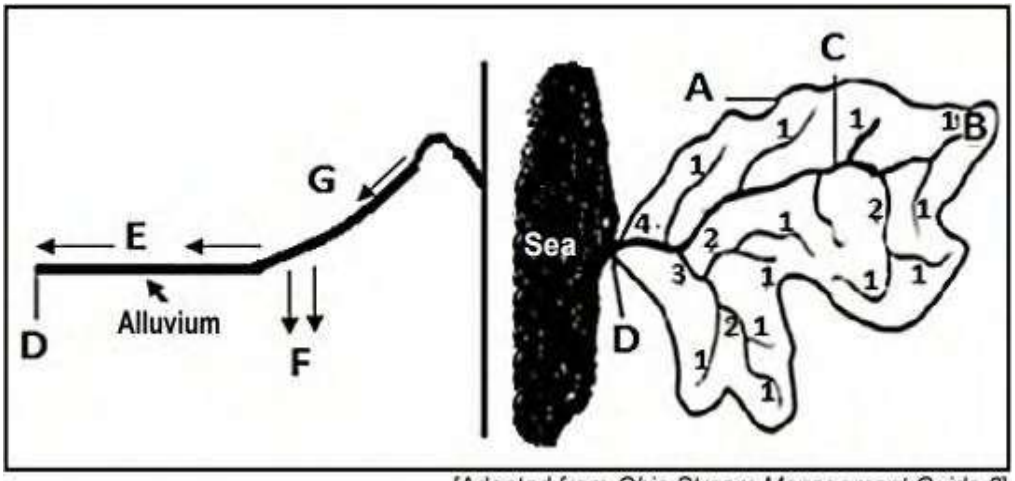
A erosion, transportation and deposition.
B transportation, erosion and deposition.C erosion, deposition and transportation. D deposition, erosion and transportation.

(8 x 1) (8)

ACTIVITY 6.2

6.2 Refer to the drainage basin and its profile in FIGURE 6.2 and answer the questions that follow.

FIGURE 6.2: RIVER PROFILES



[Adapted from *Ohio Stream Management Guide 3*]

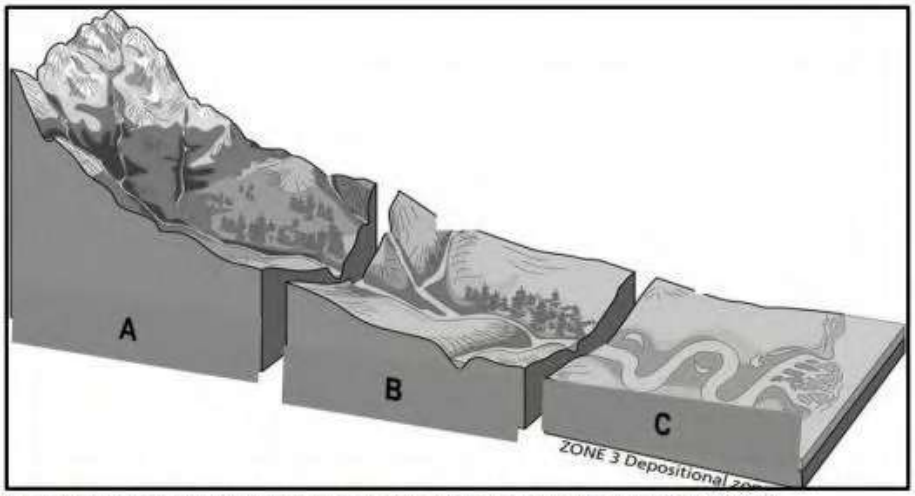
6.2.1 Name ONE source of water for drainage basin A.
6.2.2 Give a term that best describes B.
6.2.3 Name the stream order at point C.
6.2.4 Name a fluvial feature that is likely to form at point D in the river.
6.2.5 Name the process that gave rise to alluvium being found at point E.
6.2.6 Give a term that describes the movement of water at F.
6.2.7 Give the term that describes the high-lying area surrounding drainage basin A.
6.2.8 Give the term that describes the lowest point to which a river erodes.

(8 x 1) (8)

ACTIVITY 6.3

Study the longitudinal profile of river. Match the stages of the river labelled A, B and C to the statements 6.3.1 to 6.3.7. Example 6.3.8 C.

FIGURE 6.3: LONGITUDINAL PROFILE



[Source:https://www.nps.gov/subjects/geology/fluvial-landforms.htm]

6.3.1 Energy levels are low and only deposition takes place.

6.3.2 Has steep, V-shaped valleys

6.3.3 Wide open valleys associated with floodplains and deltas.

6.3.4 Stream flow is very turbulent in this stage of a river.

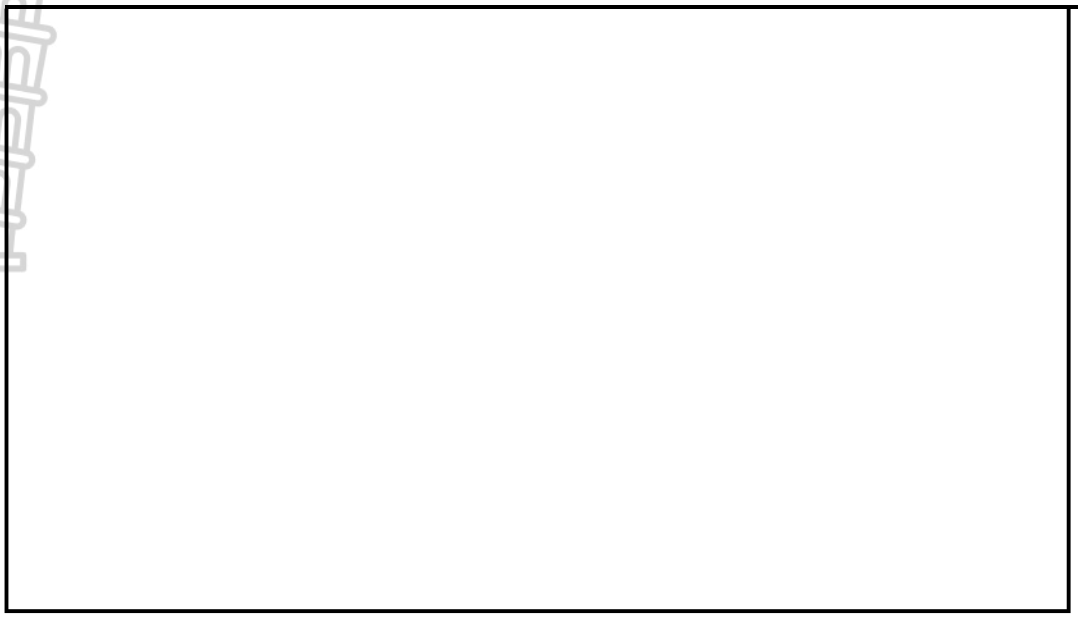
6.3.5 Transportation of materials is the main process in this stage.

6.3.6 Waterfalls and rapids are common landforms found in this stage.

6.3.7 Vertical erosion mainly occurs in this stage. (7 x 1) (7)

ACTIVITY 7.1: FLUVIAL FEATRURES

Fluvial features FIGURE 7.1



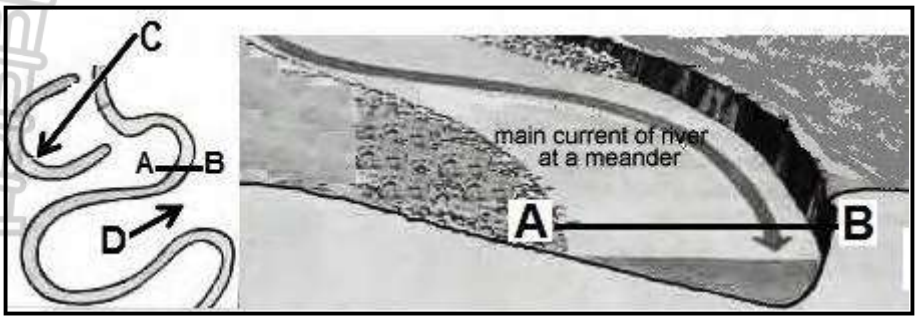
[Adapted from *McKnight's Physical Geography: A Landscape Appreciation*, 10th edition]

7.1 Match the statements below to the diagrams of fluvial features labelled A, B, C and D in FIGURE .7.1

7.1.1 The river may result in the formation of oxbow lakes.
7.1.2 Vertical erosion is dominant in this diagram.
7.1.3 The river shows mainly a well-developed meandering stream channel pattern.
7.1.4 The river deposits silt on the river bed forming a braided stream pattern.
7.1.5 River deposition occurs in the shape of a fan.
7.1.6 The river is rejuvenating itself.
7.1.7 The river is in its upper course. (7x1) (7)

ACTIVITY 7.2

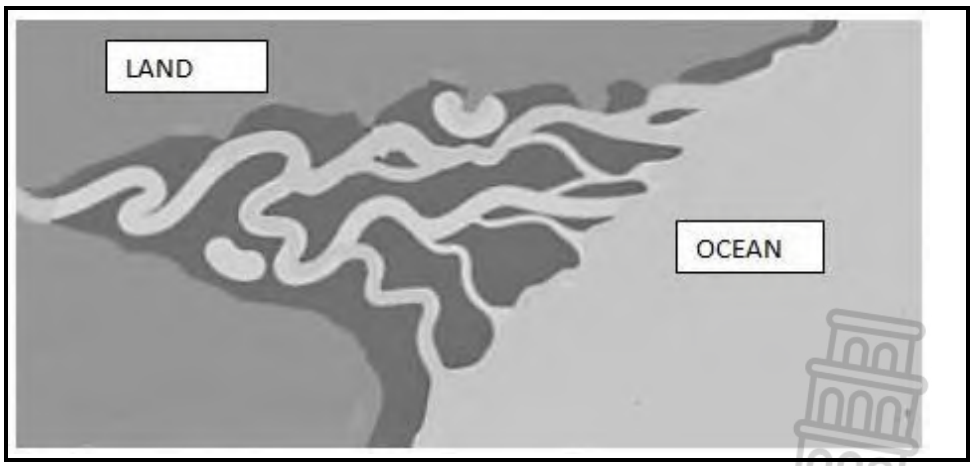
FIGURE 7.2: SECTION OF A RIVER



7.2.1 Name the course of the river depicted in FIGURE 7.2.
7.2.2 Name river bank **B**.
7.2.3 Give a reason for the deposited material at river bank **A**.
7.2.4 Describe the shape of river bank **B.**
7.2.5 Name ONE characteristic of a river channel that can be seen in a cross-section between **A** and **B.**
7.2.6 Did river erosion or deposition initially form the oxbow lake (C)?
7.2.7 State ONE difference between an oxbow lake and a meander scar.
7.2.8 What is the narrow area **D** within the meander loop called? (8x1) (8)

ACTIVITY 7.3

FIGURE 7.3: Fluvial feature



Source: Google images

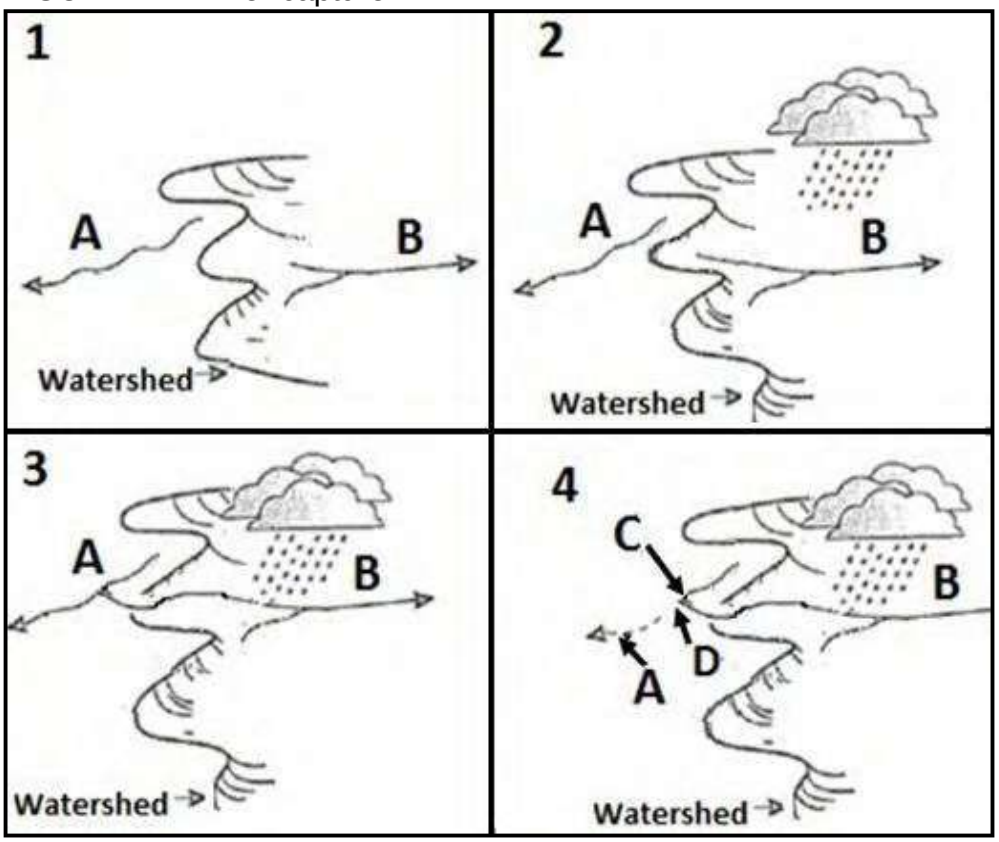
7.3 Refer to FIGURE 7.3 which illustrates a fluvial feature. Choose the correct word(s) from those given within brackets. Write only the word(s) next to the question number (7.3.1 – 7.3.7) in your ANSWER BOOK.

7.3.1 The fluvial feature is a/an (delta / alluvial fan).
7.3.2 The feature is formed in the (upper / lower) course of the river.
7.3.3 The river flowing in this course has a (turbulent/laminar) flow.

7.3.4 The feature forms over a (steep / gentle) gradient.
7.3.5 The feature is formed at the (source / mouth) of the river.
7.3.6 The fluvial process responsible for this feature developing is (erosion / deposition).
7.3.7 The river channels in the fluvial feature are called (tributaries /distributaries). (7x1) (7)

ACTIVITY 7.4

FIGURE 7.4: River capture.



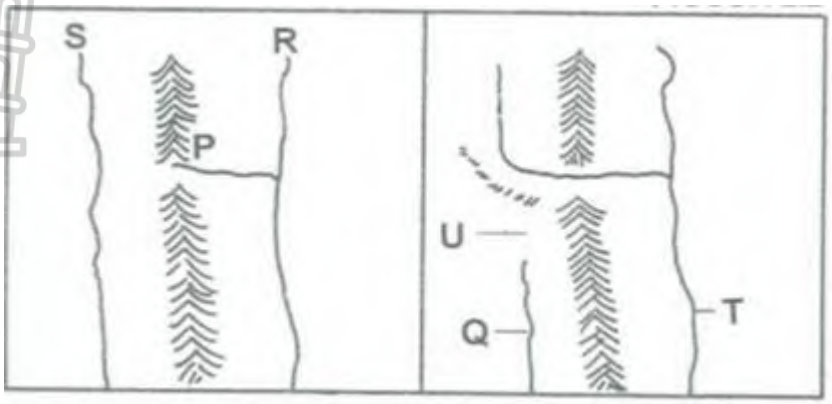
7.4 FIGURE 7.4 shows sketches (1 to 4) based on river capture.

7.4.1 Refer to sketch **1**. Which one, river **A** or river **B**, is likely to be the captor stream?
7.4.2 Name the climatic factor causing river **B** in sketch **2** to erode at a faster rate.
7.4.3 What type of erosion caused the watershed to move towards river **A** in sketch **2**?
7.4.4 Refer to sketch **3**. Which one, river **A** or river **B**, is the captured stream?
7.4.5 Refer to sketch **4**. Name the feature of river capture at **C**.
7.4.6 Refer to sketch **4.** Name the feature of river capture at **D**.
7.4.7 What is the term used to describe river **A** which has been reduced in volume in sketch **4**?

7.4.8 Does river **A** or river **B** flow at a lower altitude in sketch **2**? (8x1) (8)

ACTIVITY 7.5

FIGURE 7.5



7.5 Refer to FIGURE 7.5 illustrating river capture (stream piracy). Choose the correct terms/letters from those given in brackets to make all the statements below TRUE. Write only the terms/letters next to the question number (7.5.1 – 7.5.7) in the ANSWER BOOK.

7.5.1 Stream (**R/S**) is situated higher above sea level.

7.5.2 (Headward/Lateral) erosion will take place at **P**.

7.5.3 **Q** is the (misfit/pirate) stream.

7.5.4 Rejuvenation will take place in river (**Q/T**).

7.5.5 Area **U** is known as the (wind gap/elbow of capture).

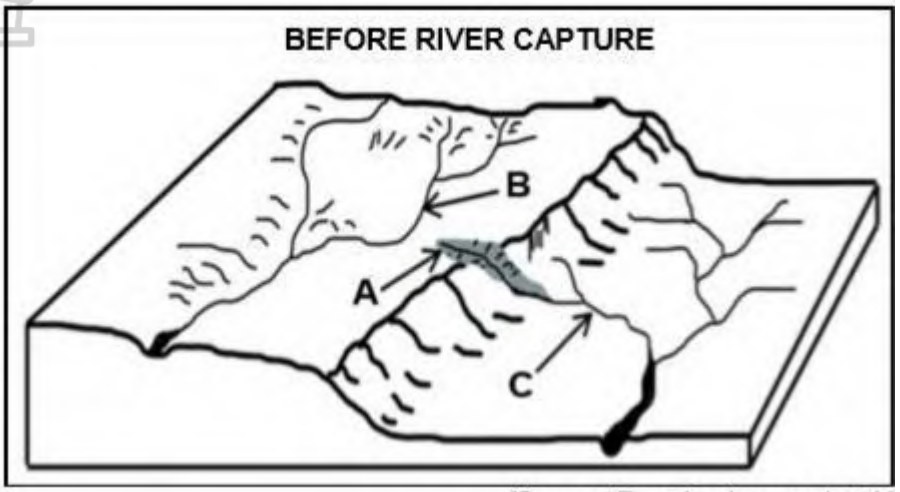
7.5.6 Erosive ability of river(**Q/T**) will increase

7.5.7 Volume of water will decrease in river (**Q/T**). (7x1) (7)

ACTIVITY 7.6

7.6 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 (7.6.1 to 7.6.7) in the ANSWER BOOK, e.g. 7.6.7 D.

Refer to the sketch below to answer QUESTIONS 7.6.1 to 7.6.3.



[Source: Examiner's own sketch]

7.6.1 … erosion at A is responsible for the lengthening of the river.

A Vertical
B Lateral
C Sheet
D Headward

7.6.2 The landform caused by the type of erosion in QUESTION 7.6.1 is a …

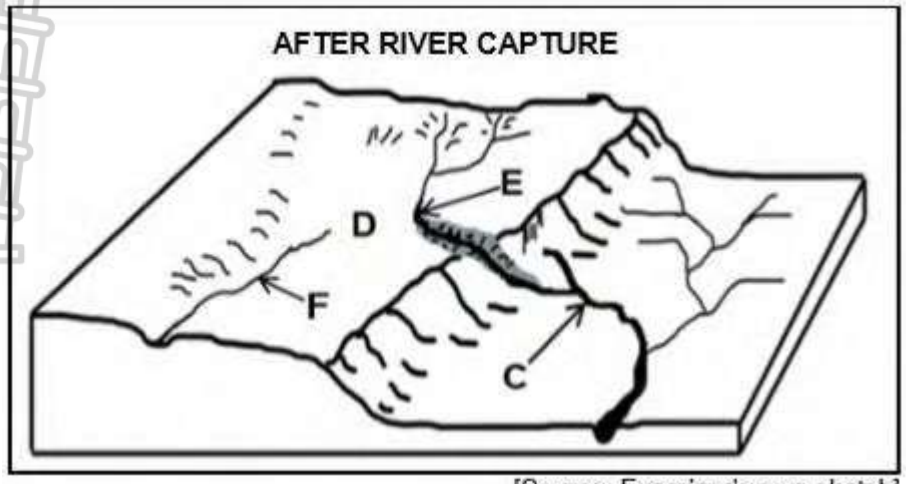
A spur.
B rapid.
C gorge.
D meander.

7.6.3 River C will eventually capture river B because it flows on a … gradient and over … rock.

(i) gentler
(ii) steeper
(iii) softer
(iv) harder

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

Refer to the sketch below to answer QUESTIONS 7.6.4 to 7.6.7.



[Source: Examiner's own sketch]

7.6.4 River C is known as the … stream.
A captive
B captor
C captured
D misfit

7.6.5 Feature D is referred to as …
A a waterfall.
B river gravel.
C a wind gap.
D an elbow of capture.

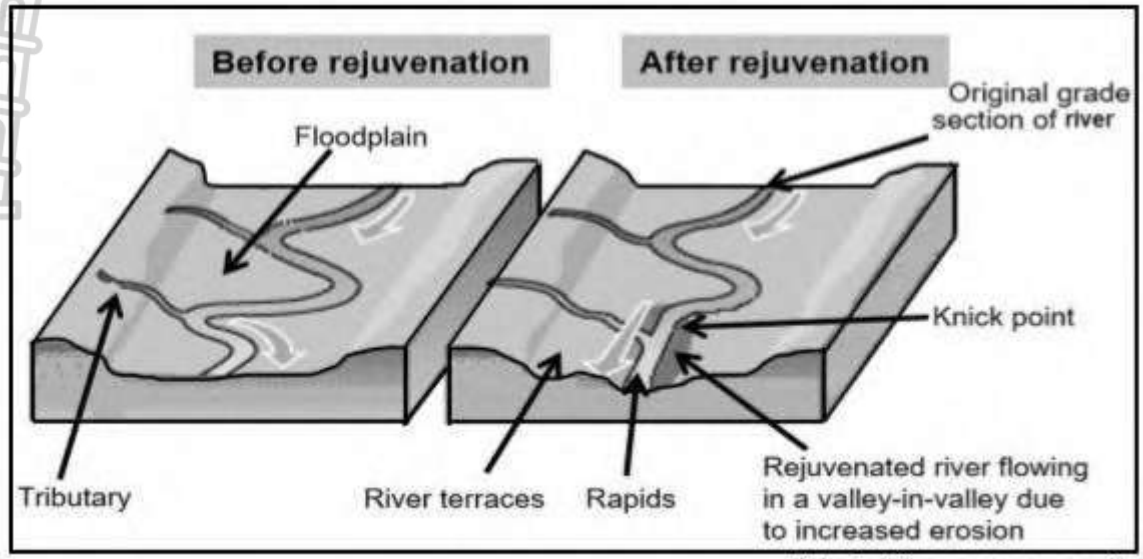
7.6.6 The resultant fluvial landform of river capture at E is a/an …
A meander.
B waterfall.
C misfit stream.
D oxbow lake.

7.6.7 The characteristics of river F are that it flows in a … valley and the volume of water …
(i) wide
(ii) narrow
(iii) increases
(iv) decreases
A (i) and (iii)
B (ii) and (iv)
C (i) and (iv)
D (ii) and (iii)

(1x7) (7)

ACTIVITY 7.7

FIGURE 7.7: River rejuvenation



[Adapted from goconqr.com]

7.7 Refer to the sketch of river rejuvenation. Choose the correct word(s) from those given in brackets. Write only the word(s) next to the question numbers (7.7.1 to 7.7.7) in the ANSWER BOOK.

7.7.1 River rejuvenation is the process where a river erodes (laterally/ vertically) again.

7.7.2 The point where the old erosion meets with the new is called a (valley/ knickpoint).

7.7.3 River rejuvenation is caused by a (drop in sea level/watershed changing its position).

7.7.4 River terraces form (before/after) rejuvenation.

7.7.5 (Valley-in-valleys/Rapids) form on the floodplain.

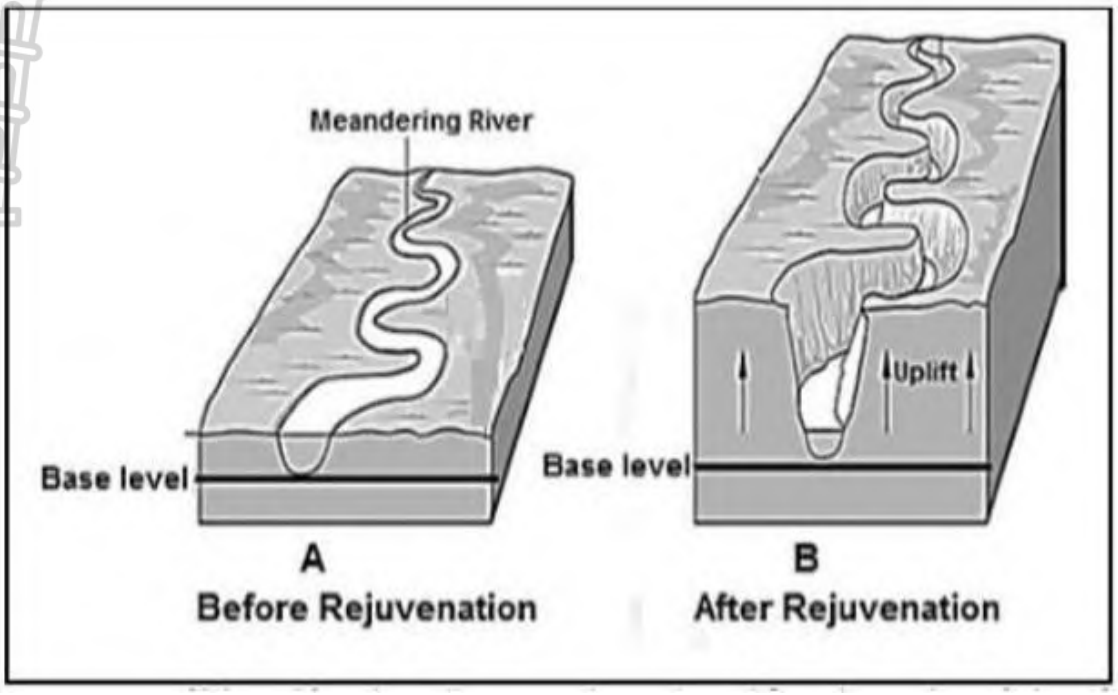
7.7.6 The tributaries after rejuvenation lengthen due to (lateral/headward) erosion.

7.7.7 River rejuvenation will cause the river profile to be (graded/ungraded).

(7x1) (7)

ACTIVITY 7.8

FIGURE 7.8: River rejuvenation



7.8.1	Define the concept rejuvenation	(1x2)	(2)
7.8.2	What type of erosion associated with rejuvenation	(1x1)	(1)
7.8.3	Name TWO causes of rejuvenation	(2x1)	(2)
7.8.4	Identify the force of upliftment associated with rejuvenation	(1x1)	(1)
7.8.5	Name one feature associated with rejuvenation	(1x1)	(1)
7.8.6	Identify type of meander after rejuvenation at diagram B	(1x1)	(1)
		(8 X 1)	(8)

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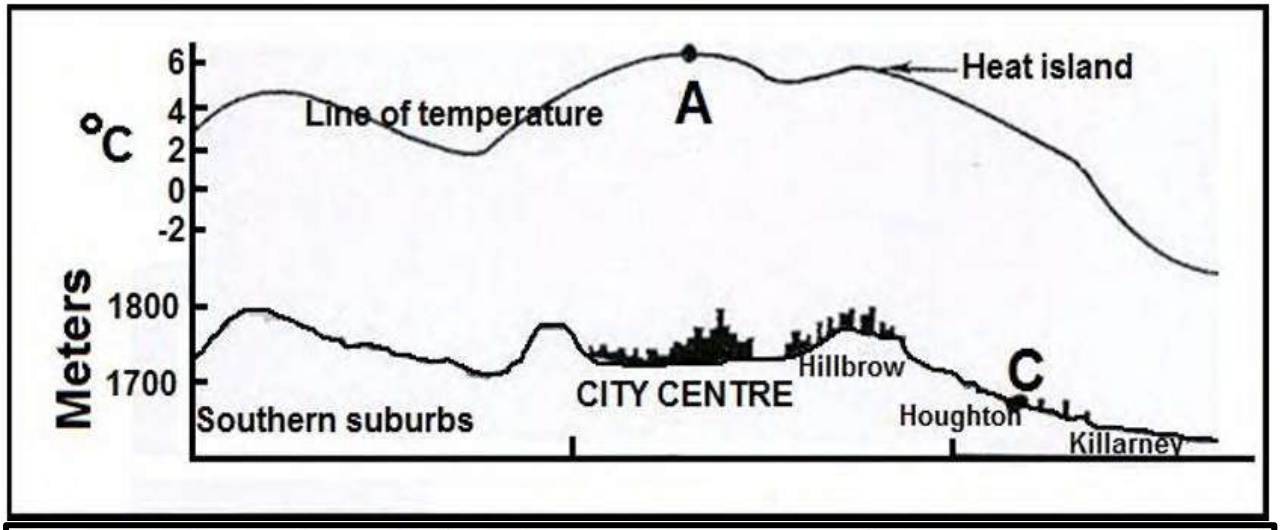
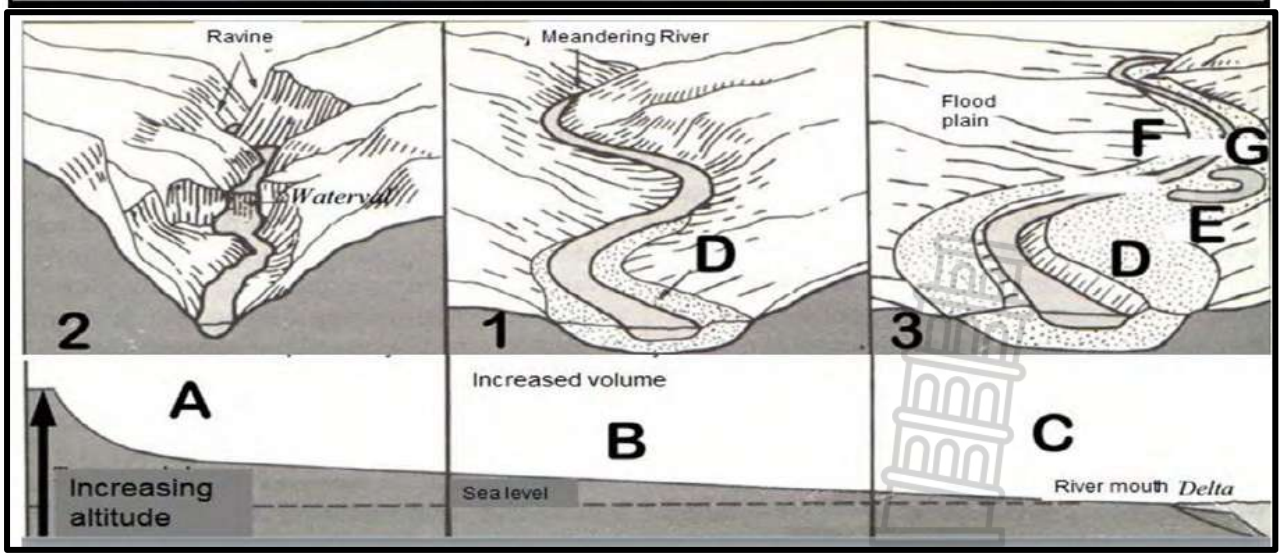


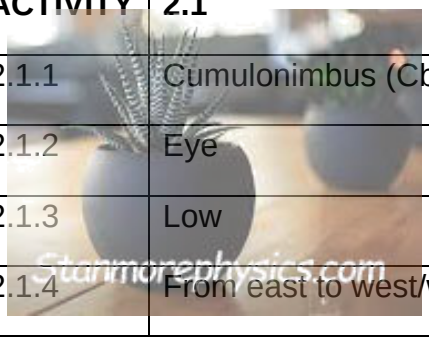


2024 COLLECTIBLE MARKS ANSWERS

NMM

ACTIVITY	**1.1**		
1.1.1	60° S		
1.1.2	Low		
1.1.3	Clockwise		
1.1.4	Polar front		
1.1.5	Mature		
1.1.6	Front section of the cold moving air mass		
1.1.7	4		
1.1.8	Clockwise rotation of air OR Westerlies lie North of the polar front and Easterlies lie south of the polar front	(1x8)	(8)
ACTIVITY	**1.2**		
1.2.1	3° C		
1.2.2	- 2° C		
1.2.3	North west/ West of North west		
1.2.4	25 knots		
1.2.5	Between 988 and 992 hPa		
1.2.6	8/8 or overcast		
1.2.7	Rain	(1x7)	(7)
ACTIVITY	**1.3**		
1.3.1	Mid – latitude cyclone		
1.3.2	Low		
1.3.3	Clockwise		
1.3.4	Polar front		
1.3.5	60°		
1.3.6	Stage 4		

1.3.7	Mature	(1x7)	(7)
ACTIVITY	**1.4**		
1.4.1	From west to east / eastwards		
1.4.2	Easterly		
1.4.3	Winter		
1.4.4	Cold front		
1.4.5	Cumulonimbus		
1.4.6			
1.4.7	Eye		
1.4.8	Front D	(1x8)	(8)
ACTIVITY	**1.5**		
1.5.1	Cumulonimbus		
1.5.2	Cold air		
1.5.3	Cold sector		
1.5.4	West to east/eastward		
1.5.5	Cold front		
1.5.6	Steep		
1.5.7	Cold front occlusion	(7 x 1)	(7)
ACTIVITY	**2.1**		
2.1.1	Cumulonimbus (Cb)		
2.1.2	Eye		
2.1.3	Low		
2.1.4	From east to west/westwards/westerly direction		



2.1.5	Heavy rainfall/ Thunderstorm/hail/torrential rainfall		
2.1.6	Subsiding /Descending/ Sinking / Downwards		
2.1.7	Diverging		
2.1.8	Dissipating/Degenerating/ Decaying	(1x8)	(8)
ACTIVITY	**2.2**		
2.2.1	Tropical cyclone		
2.2.2	Low pressure		
2.2.3	Late Summer and Early Autumn		
2.2.4	Tropical easterlies/ South east trade winds		
2.2.5	Hadley cell		
2.2.6	Reunion		
2.2.7	It is the 5th cyclone to have happened for that season		
2.2.8	Cumulonimbus	(1x8)	(8)
ACTIVITY	**2.3**		
2.3.1	Eye		
2.3.2	Descending /Sinking		
2.3.3	Cumulonimbus		
2.3.4	West /westwards/ from east to west		
2.3.5	Mature		
2.3.6	Diverging		
2.3.7	Coriolis force is zero/ absence of Coriolis force	(1x7)	(7)
ACTIVITY	**2.4**		
2.4.1	Eye		

2.4.2	Low		
2.4.3	Heavy		
2.4.4	Up draughts		
2.4.5	Diverging		
2.4.6	High		
2.4.7	Pressure		
2.4.8	Wind speed	(1x8)	(8)
ACTIVITY	**3.1**		
3.1.1	Clockwise		
3.1.2	Converges		
3.1.3	Lower		
3.1.4	Fog		
3.1.5	Lower		
3.1.6	A		
3.1.7	Q	(1x7)	(7)
ACTIVITY	**3.2a**		
3.2.1	A (South AtlanticHigh)		
3.2.2	B (Kalahari High)		
3.2.3	B (Kalahari High)		
3.2.4	A (South Atlantic High)		
3.2.5	B (Kalahari High)		
3.2.6	C (South Indian High)		
3.2.7	A (South Atlantic High)	(1x7)	(7)

ACTIVITY	**3.2b**		
3.2.1	A		
3.2.2	A		
3.2.3	A		
3.2.4	B		
3.2.5	B		
3.2.6	B		
3.2.7	A	(7 x 1)	(7)
ACTIVITY	**3.2c**		
3.2.1	Summer		
3.2.2	Warm moist		
3.2.3	Cumulonimbus		
3.2.4	Torrential rainfall/Thunderstorm		
3.2.5	Curse		
3.2.6	Inversion layer		
3.2.7	Kalahari high pressure	(7 x 1)	(7)
ACTIVITY	**3.3**		
3.3.1	Winter		
3.3.2	Kalahari		
3.3.3	Coastal		
3.3.4	Eastwards		
3.3.5	Offshore		
3.3.6	Clear		
3.3.7	Onshore		
3.3.8	Increases	(1x8)	(8)

ACTIVITY	**3.4**		
3.4.1	Winter		
3.4.2	Hot and dry		
3.4.3	South Indian		
3.4.4	Coastal		
3.4.5	Veld fires		
3.4.6	Low		
3.4.7	Offshore		
3.4.8	Heating	(1x8)	(8)

ACTIVITY 4.1			
4.1.1	C/overcast		(1)
1.1.2	C/thunderstorms		(1)
1.1.3	B/cumulonimbus		(1)
1.1.4	C/south easterly		(1)
1.1.5	B/north east		(1)
1.1.6	A/ridging from the Atlantic Ocean		(1)
1.1.7	D/uneven distribution of cold and warm air masses (1)	(7 x 1)	(7)
ACTIVITY 4.2			
4.2.1	Warm		(1)
4.2.2	Indian		(1)
4.2.3	South Atlantic		(1)
4.2.4	Moisture		(1)
4.2.5	East		(1)
4.2.6	Hail		(1)
4.2.7	Lightning		
4.2.8	Summer	(8 x 1)	(8)

ACTIVITY 4.3a			
4.3.1	C		
4.3.2	D		
4.3.3	A		
4.3.4	A		
4.3.5	C		
4.3.6	B		
4.3.7	A	(7 x 1)	(7)
ACTIVITY 4.3b			
4.3.1	B		
4.3.2	C		
4.3.3	A		
4.3.4	C		
4.3.5	B		
4.3.6	C		
4.3.7	B		
4.3.8	A	(8 x 1)	(8)
ACTIVITY 4.4			
4.4.1	A		
4.4.2	B		
4.4.3	A		
4.4.4	A		
4.4.5	B		
4.4.6	B		
4.4.7	B	(7 x 1)	(7)
ACTIVITY 5.1			
5.1.1	A		
5.1.2	D		
5.1.3	B		
5.1.4	C		
5.1.5	B	(5 X 1)	(5)
ACTIVITY 5.2			
5.2.1	Dendritic		(1)
5.2.2	Acute angles/Small angles/Mention any angle less than 90°		(1)
5.2.3	Uniform		
5.2.4	Erosion		
5.2.5	Stream Order 2		
5.2.6	Interfluve		
5.2.7	C	(7 x 1)	(7)
ACTIVITY	**5.3**		

5.3.1	F		(1)
5.3.2	A / B		(1)
5.3.3	G		(1)
5.3.4	A / B / C		(1)
5.3.5	B (1)		(1)
5.3.6	D		(1)
5.3.7	C		(1)
5.3.8	E	(8 x 1)	(8)
ACTIVITY	**5.4**		
5.4.1	A		(1)
5.4.2	C		(1)
5.4.3	D		(1)
5.4.4	B		(1)
5.4.5	C		(1)
5.4.6	E		(1)
5.4.7	C		(1)
		(7x1)	(7)
ACTIVITY 5.5			
5.5.1	C		
5.5.2	A		
5.5.3	B		
5.5.4	C		
5.5.5	B		
5.5.6	A		
5.5.7	A	(7x1)	(7)
ACTIVITY	**6.1**		
6.1.1	C		(1)
6.1.2	A		(1)
6.1.3	C		(1)
6.1.4	B		(1)
6.1.5	C		(1)
6.1.6	D		(1)
6.1.7	C		(1)
6.1.8	A		(1)
		(8 x 1)	(8)
ACTIVITY	**6.2**		
6.2.1	Rainfall/Precipitation (1) Melting snow (1) Groundwater (1) Springs (1) River/surface run-off (1)		

	[Any ONE]		
6.2.2	Catchment/Source		(1)
6.2.3	Third order		(1)
6.2.4	Delta/fluvial island/alluvial island		(1)
6.2.5	Deposition		(1)
6.2.6	Infiltration/percolation/seepage		(1)
6.2.7	Watershed/Drainage divide		(1)
6.2.8	Permanent base level/ Ultimate base level		(1)
		(8 x 1)	(8)
ACTIVITY	**6.3**		
6.3.1	C		(1)
6.3.2	A		(1)
6.3.3	C		(1)
6.3.4	A		(1)
6.3.5	B		(1)
6.3.6	A		(1)
6.3.7	A		(1)
		(7 x 1)	(7)

ACTIVITY 7.1

7.1.1 C (1)

7.1.2 A (1)

7.1.3 C (1)

7.1.4 B (1)

7.1.5 D (1)

7.1.6 A (1)

7.1.7 A (1)

ACTIVITY 7.2

7.2.1 Lower course/old stage/plain stage (1)

7.2.2 Undercut slope/outer slope/outer bank/cut bank/cut slope/river cliff (1)

7.2.3 There is a slow movement of water (1)

Carrying capacity decreases (1)

The shallowness of the bank (1)

[ANY ONE]

7.2.4 Concave (1)

7.2.5 Width (1)

Depth (references to deep) (1)

Bank shapes (1)

Symmetry (1)

[ANY ONE]

7.2.6 Erosion (1)

7.2.7 An oxbow lake has water (1)/a meander scar is dry (1)

[ANY ONE]

7.2.8 The (meander) neck (1) (8 x 1) (8)

ACTIVITY 7.3

7.3.1 delta

7.3.2 lower

7.3.3 laminar

7.3.4 gentle

7.3.5 mouth

7.3.6 deposition

7.3.7 distributaries (7 x 1) (7)

ACTIVITY 7.4

7.4.1 B

7.4.2 Rainfall/precipitation

7.4.3 Headward erosion

7.4.4 A

7.4.5 Elbow of capture

7.4.6 Wind gap

7.4.7 Misfit steam

7.4.8 B

ACTIVITY 7.5

7.5.1 S

7.5.2 Headward

7.5.3 Misfit

7.5.4 T

7.5.5 Wind gap

7.5.6 T

7.5.7 Q

ACTIVITY 7.6

7.6.1 D (1)

7.6.2 C (1)

7.6.3 C (1)

7.6.4 B (1)

7.6.5 C (1)

7.6.6 B (1)

7.6.7 C (1)

ACTIVITY 7.7

7.7.1 vertically (1)

7.7.2 knickpoint (1)

7.7.3 a drop in sea level (1)

7.7.4 after (1)

7.7.5 Valley-in-valleys (1)

7.7.6 headward (1)

7.7.7 ungraded (1)

ACTIVITY 7.8

7.8.1 Process when the river is **re-energised** and **erode downward** again.

7.8.2 Downward erosion

7.8.3 Increase in volume of water

One river flowing over softer rocks

One river flowing over steeper gradient

7.8.4 Tectonic/Isostatic

7.8.5 Valley in valley

Knick point

Incised meander

Terraces

7.8.6 Entrenched/Incised meander