KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12



GEOGRAPHY

COMMON TEST

MARCH 2024

MARKS: 60

TIME: 1 hour

N.B. This question paper consists of 8 pages.

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INSTRUCTIONS AND INFORMATION

1. The paper consists of **TWO** QUESTIONS:

   QUESTION 1: CLIMATE AND WEATHER

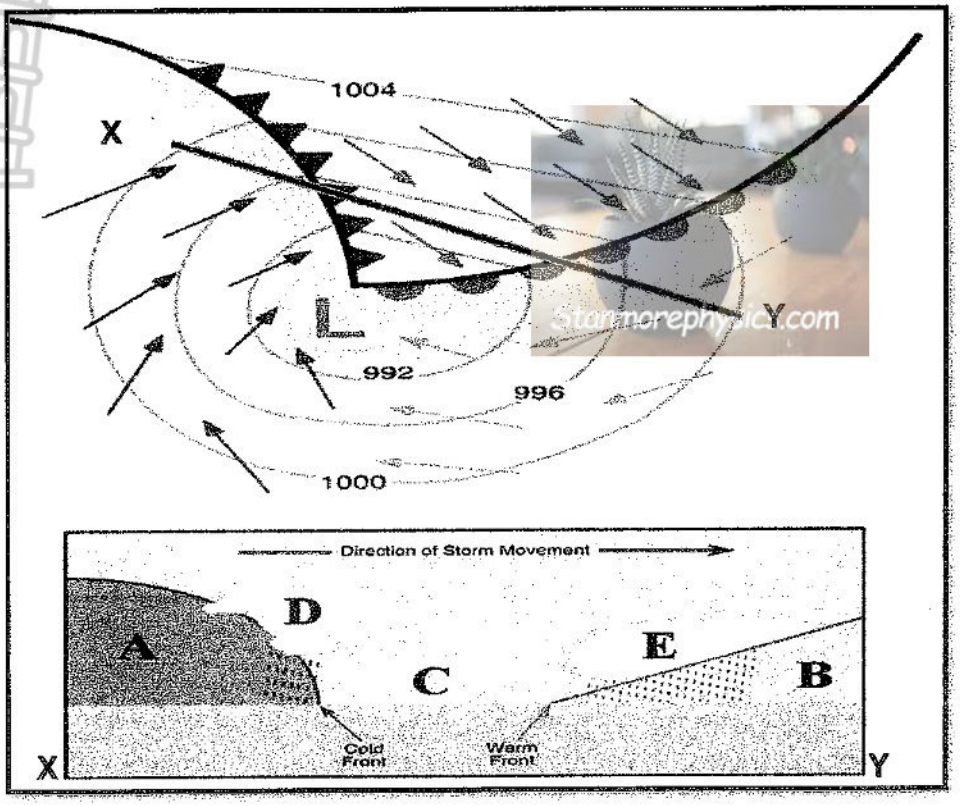
   QUESTION 2: GEOMORPHOLOGY

2. Answer **ALL** questions.

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QUESTION 1 : CLIMATE AND WEATHER

1.1 Refer to a plan view and a cross section of a mid-latitude cyclone from **X** to **Y**.



[Source: Adapted from www.physicalgeopgraphy.net]

1.1.1 Name the stage of development of the mid- latitude cyclone represented in the diagram above. (1 x 1)(1)

1.1.2 In which direction is the air circulating in the above weather system? (1 x 1)(1)

1.1.3 With reference to temperature, describe the air characteristic at **A**. (1 x 1)(1)

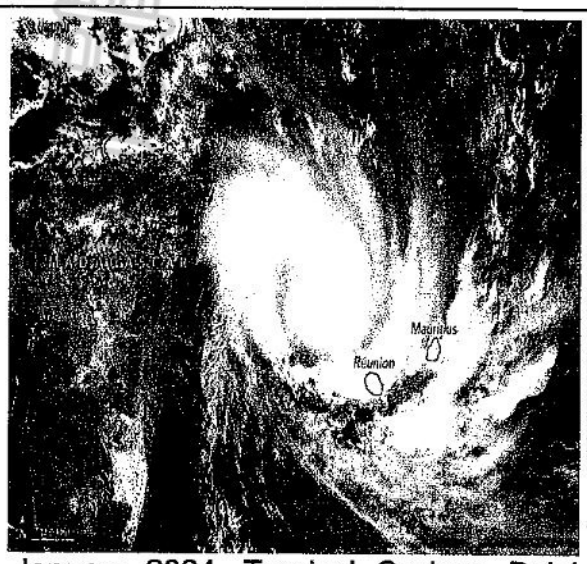
1.1.4 Describe the pressure gradient along the warm front in sector **B**. (1 x 1)(1)

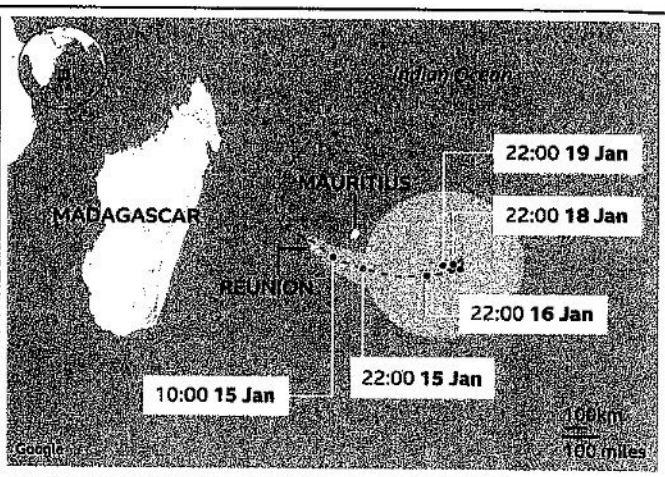
1.1.5 What does the letter **C** represent, the warm or cold sector? (1 x 1)(1)

1.1.6 Which cloud type, **D** or **E** will produce more intense rainfall? (1 x 1)(1)

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1.2 Refer to the infographic below on Tropical Cyclone Belal.





Note: Cone shows uncertainty in forecast, not all areas that will be impacted

Source: GDACS. All times GMT BBC

In January 2024, Tropical Cyclone Belal lashed Réunion and Mauritius, islands in the southwest Indian Ocean east of Madagascar, with torrential rain and flooding.

NASA's Terra satellite acquired the top image at about 06:00 Universal Time on January 14. The storm strengthened that day to a category-2 tropical cyclone, with sustained winds of at least 177 kilometers per hour.

Belal made landfall over northwestern Réunion on the morning of January 15 bearing sustained winds near 190 kilometers per hour. Mauritius, located 226 kilometers northeast of the French island of Réunion, was also hit by strong winds and heavy rain as Belal's centre passed south of the island nation. According to news reports, authorities in Réunion issued the highest storm alert (purple); officials in Mauritius issued a category-3 cyclone warning, the second-highest alert of the island's warning system. Tropical cyclone Belal caused heavy flooding, trees were snapped and uprooted with major damage to homes and at least three deaths in Mauritius on Monday as cars were washed away by surges of water in the Indian Ocean island's capital city and elsewhere.

Scientists say human-caused climate change has intensified extreme weather in the region.

Source: https://earthobservatory.nasa.gov/images/152328/tropical-cyclone-belal

1.2.1 According to the extract, what is a *category 3 tropical cyclone*? (1 x 1) (1)

1.2.2 How many tropical cyclones occurred before tropical cyclone Belal? Give a reason for your answer. (1 + 1)(2)

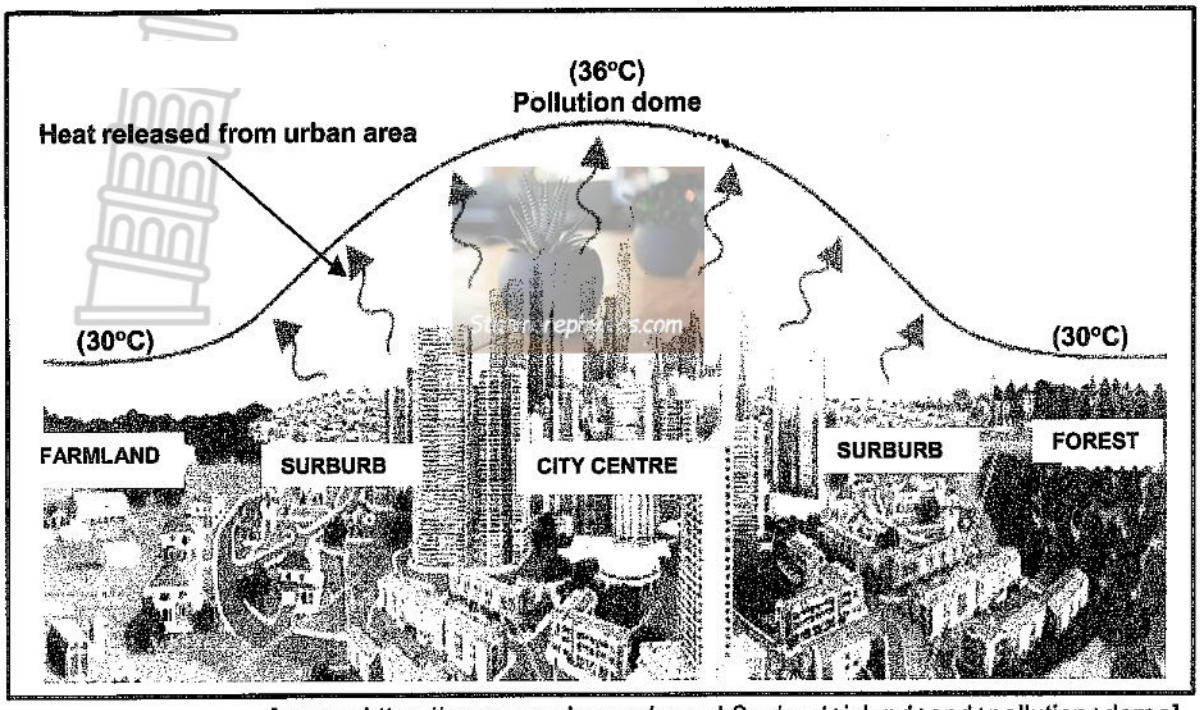
1.2.3 Explain a possible reason for tropical cyclone Belal increasing in intensity from a category- 2 cyclone on 14 January to a category-3 cyclone on 15 January 2024. (1 x 2)(2)

1.2.4 Suggest how the satellite tracking of tropical cyclone Belal helped in reducing the loss of lives in Réunion and Mauritius islands. (1 x 2)(2)

1.2.5 Write a paragraph of approximately EIGHT lines, outlining the possible impacts of tropical cyclone Belal on the economy of the islands of Réunion and Mauritius. (4 x 2)(8)

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1.3 Refer to the sketch below depicting micro climate.



[source:https://www.google.com/search?q=heat+island+and+pollution+dome]

1.3.1 Give the term used to describe the warm air over the city centre. (1 x 1) (1)

1.3.2 Calculate the difference in temperature between the city centre and the forest? (1 x 1) (1)

1.3.3 Explain ONE reason from the diagram, why this difference occurs. (1 x 2) (2)

1.3.4 State ONE impact the pollution dome can have on the health of people living in the central parts of the city. (1 x 1) (1)

1.3.5 Explain why the shape of the pollution dome is not the same during the day and night. (2 x 2) (4)

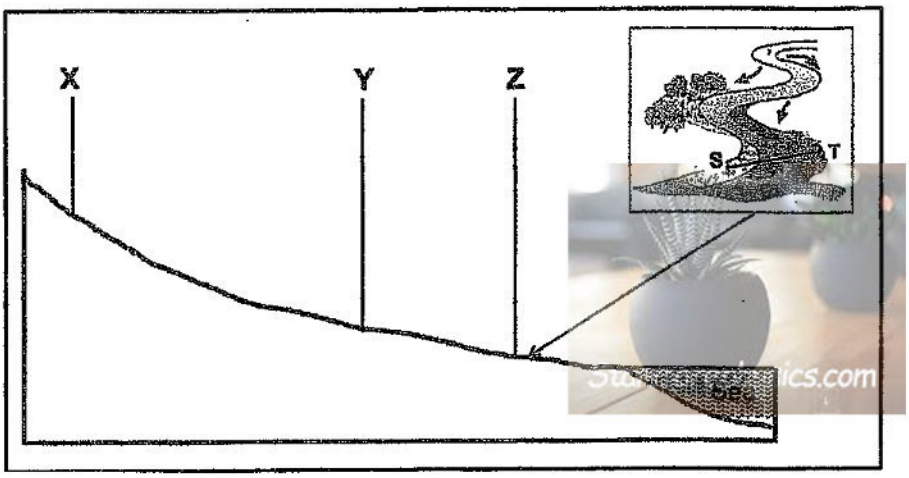
[30]

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QUESTION 2: GEOMORPHOLOGY

2.1 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 (2.1.1 to 2.1.6) in the ANSWER BOOK, e.g. 2.1.7 D.

Points **X, Y** and **Z** shows the different stages (courses) from the source to the Mouth of a river and the points **S-T** along the meander found at **Z**.



Examiner's own sketch/Nov 2021

2.1.1 The profile of a river from bank to bank shown by the line labelled **S-T,** show the … of the river.

A volume
B width
C length
D gradient

2.1.2 The stages (courses) represented **X, Y** and **Z** are …

A middle, upper, lower.
B lower, middle, upper.
C upper, middle, lower.
D upper, lower, middle.

2.1.3 … describes the river valley at **Z**.

A Wide and shallow
B Wide and deep
C Narrow and shallow
D Narrow and deep

2.1.4 At **X** the river has turbulent flow due to a … riverbed.

A steep and level
B gently sloping and even
C rough and uneven
D smooth

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2.1.5 Slope **S** on the meander is the … slope.

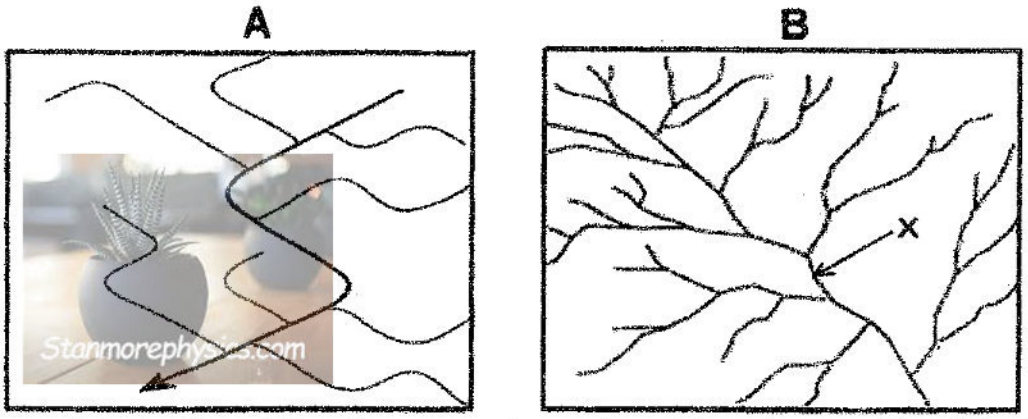
A slip-off
B concave
C undercut
D steep

2.1.6 Slope **T** on the meander is associated with a …

A steep gradient and deposition.
B. gentle gradient and erosion.
C. convex slope with erosion.
D. concave slope with erosion.

(6x1) (6)

2.2 Refer to the drainage patterns illustrated in sketches **A** and **B** below.



[Adapted from https://www.google.com/search?+<rainage+pattern&tbml]

2.2.1 Identify drainage pattern in sketches **A** and **B**. (2x1) (2)

2.2.2 State the underlying rock structure and rock type on which the drainage pattern in **A** developed. (1+1) (2)

2.2.3 Explain how the underlying rock structure influenced the drainage pattern in **B**. (1x2) (2)

2.2.4 Determine the stream order at point **X** in sketch **B**. (1x2) (2)

2.2.5 The drainage density in sketch **A** is (high/low) (1x1) (1)

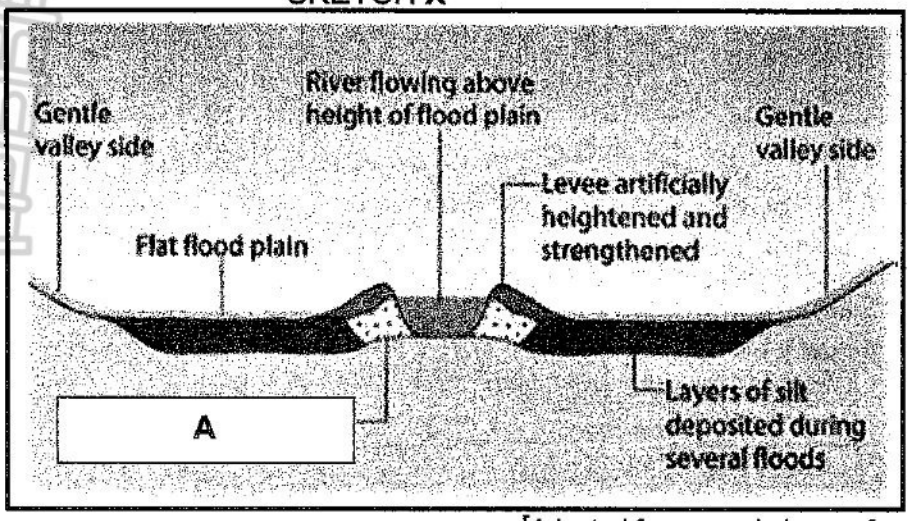
2.2.6 Choose the CORRECT word between brackets to make the statement TRUE. The higher the stream order, the (higher/lower) the drainage density. (1x1) (1)

2.2.7 Explain how the slope (gradient) influences the drainage density in sketch **B**. (1x2) (2)

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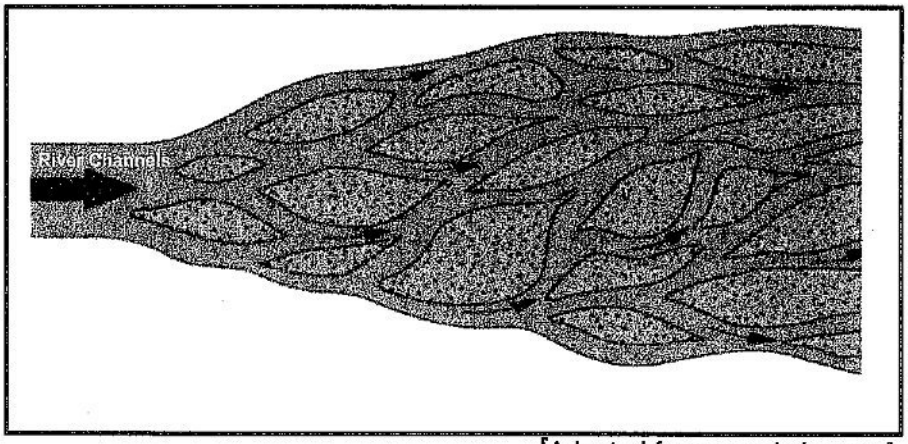
2.3 Refer to the sketches **X** and **Y** on fluvial landforms below.

SKETCH **X**



[Adapted from google images]

SKETCH **Y**



[Adapted from google images]

2.3.1 The fluvial landforms shown in the sketches **X** and **Y** are mainly found in the (middle/lower) course. (1x1) (1)

2.3.2 Identify fluvial landform **A** in sketch **X**. (1x1) (1)

2.3.3 Explain how fluvial landform **A** develops. (2x2) (4)

2.3.4 Discuss ONE positive impact of fluvial landform **A** to farmers located on the flood plain. (1x2) (2)

2.3.5 Identify fluvial landform illustrated in sketch **Y**. (1x1) (1)

2.3.6 In sketch **Y** the main river is forced to split into smaller channels called ... (1x1) (1)

2.3.7 Explain how fluvial landform identified in QUESTION 2.3.5 develops. (1x2) (2)

TOTAL: [30]
GRAND TOTAL: 60

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