# HILLCREST HIGH SCHOOL

## GEOGRAPHY PAPER 1

**GRADE: 10** **TIME: 2 HOURS**

**NOVEMBER 2019** **MARKS: 170**

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**INSTRUCTIONS:**

1. Attempt all questions.
2. Write neatly and clearly
3. Read questions and source material carefully before answering.

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## Section A

### Climatology

### Question One

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

1.1 Which of the following is not recognised as a greenhouse gas? (Absorbs heat energy from the sun)

A Methane

B Water vapour

C Carbon dioxide

D Oxygen

1.2 Incoming solar radiation is called …

A convection.

B insolation.

C reflection.

D conduction.

1.3 The ocean current flowing along the east coast of South Africa is the … current.

A Indian

B Benquela

C Mozambique

D Atlantic

1.4 Clouds that rise to great vertical heights are …

A cumulus

B cumulo-nimbus.

C cirrus.

D strato-cumulus.

1.5 Lines joining places of the same atmospheric pressure are called:

A Isotherms

B Isobars

C isohyets

D contours

1.6 The layers of the atmosphere where there is an increase in temperature with altitude, are the…

A troposphere and thermosphere.

B mesosphere and stratosphere.

C stratosphere and thermosphere.

D troposphere and mesosphere.

1.7 **Frontal rain** is the type of rainfall that is more common in the … Province during winter.

A Free State

B Western Cape

C Kwa Zulu natal

D Gauteng

1.8 **Dew point** occurs when:

A air temperature increases and evaporation occurs

B air temperatures decreases and evaporation occurs

C. air temperature decreases and condensation occurs

D water vapour freezes

1.9 **Frontal rainfall** occurs because:

A cold and warm air masses mix and clouds from

B The air is heated by the ground and rises causing clouds

C colder air meets with moist warm air and forces it to rise

D air is forced to rise by mountain ranges

1.10 **Aspect** refers to:

A. the effect the direction in which a slope faces has on temperature

B. the fact that cold air collects in valleys at night

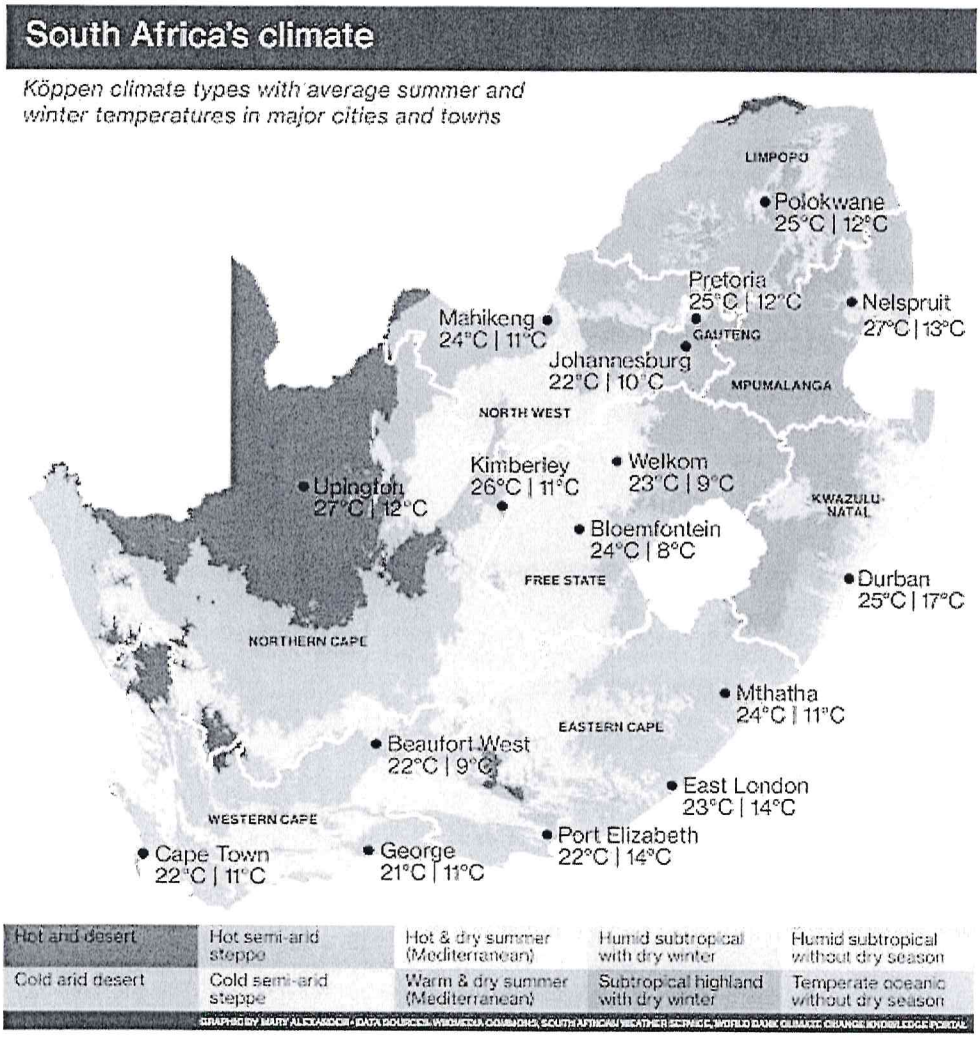
C the amount of insolation reaching the earth's surface

D. the effect that altitude has on temperatures

(10)

**Question Two** Factors affecting temperature

Refer to the map below showing average temperatures across South Africa and answer the questions that follow.




*Source: https://southafrica-info.com*

2.1 Name the factor affecting temperature that:

a. Causes temperatures in Polokwane and Pretoria to be warmer on average than places further south. (1)

b. Explain one reason for this factor. (2)

2.2. Compare the temperatures for Durban and Bloemfontein:

a. Which city is warmer during winter? (1)

b. Which city has the largest temperature range? Calculate this range? (2)

c. Which place has a maritime climate? (1)

2.3 Explain how distance from the sea influences the summer and winter temperatures of Durban and Bloemfontein. (4)

2.4 Explain why Lesotho on the escarpment experiences more frequent snowfalls than elsewhere in South Africa. (2)

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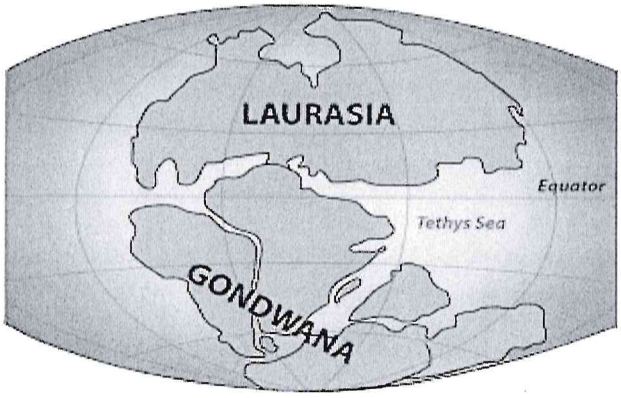
## SECTION B

## GEOMORPHOLOGY

### Question One

Refer to FIGURE below which shows Laurasia and Gondwanaland 200 million years ago.




TRIASSIC
200 million years ago

1.1 What theory is illustrated above? (1)

1.2 What was the name of the single continent that existed before Laurasia and Gondwanaland? (1)

1.3 Plate tectonics explains the theory illustrated.

a. what is a tectonic plate? (1)

b. Outline briefly how and why tectonic plates move. (4)

1.3 Plate tectonics explains the theory illustrated.

a. what is a tectonic plate? (1)

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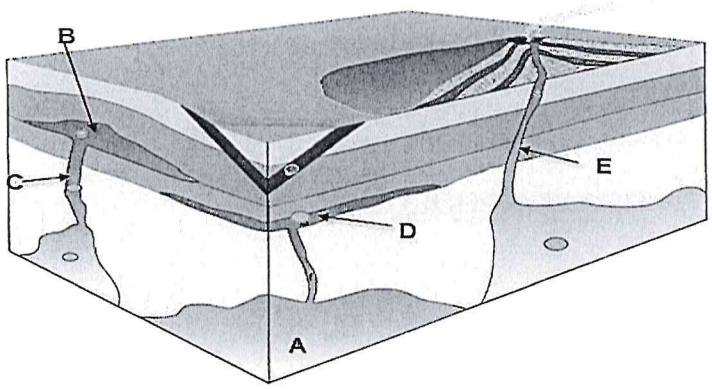
1.4 Describe two pieces of evidence that were used to support the theory illustrated (4)

## Question Two

Refer to the diagram showing various igneous intrusions.




2.1 Name the igneous intrusions indicated by letters A, B, C and D, using the list below:

**dyke, sill, batholith and laccolith**. (4)

2.2 What causes intrusive igneous features to form? (2)

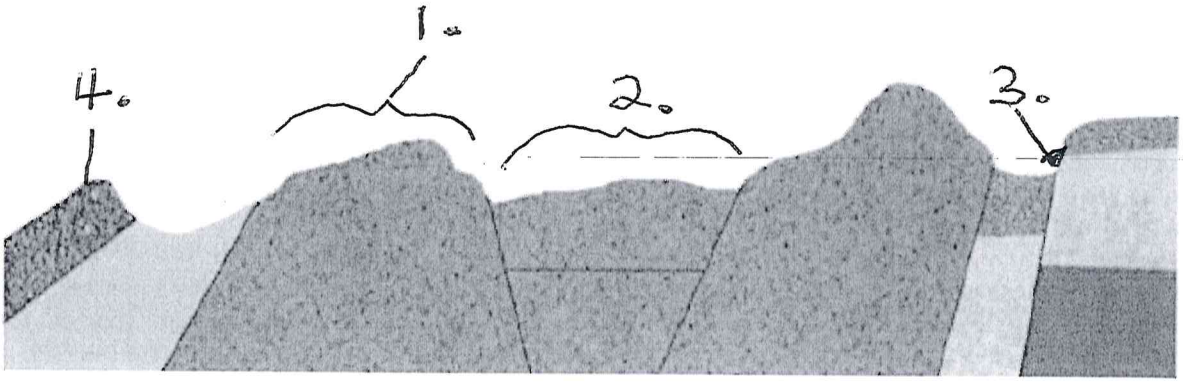
2.3 Name one extrusive feature on this landscape. (1)

2.4 Which letter indicates a volcanic pipe? (1)

2.5 Name ONE intrusive igneous feature that is associated with granite. (1)

## Question Three

Study the figure below showing a cross section of a landscape that has undergobne faulting.




3.1 What is a fault? (1)

3.2 Explain the difference between a tensional and compressional forces in fault formation. (2)

3.3 Refer to the rift valley formed at **2**. Describe how rift valleys form. (4)

3.4 Name the feature formed at **1** as a result of a block of rock being thrust above the surface. (2)

3.5 The feature at **4** has formed as a result of rock layers being tilted. Name the process that caused the rock layers to tilt. (2)

3.6 Name one landform that will form in areas like 4 where rock layers are tilted. (2)

3.7 Identify the type of fault at 3. (1)

3. 8 Redraw the fault at 3.Show the following on the diagram:

(a) The type of forces involved and direction of the force

(b) Fault plane (3)

## Question Four

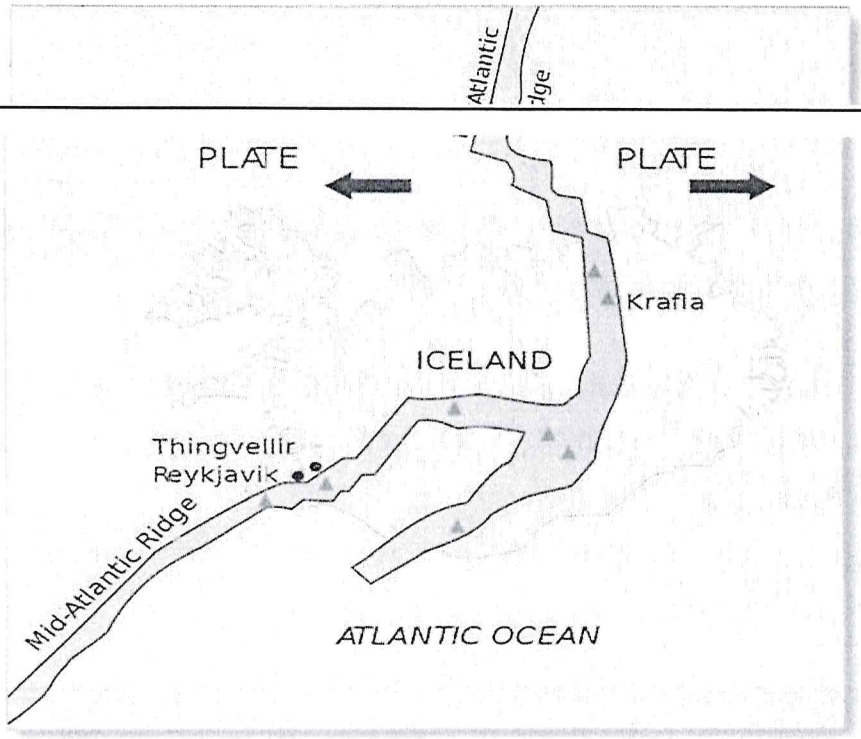
Read the following source.

### Iceland

The longest range of mountains on Earth, known as the Mid-Atlantic Ridge, are not on land, but lie far below sea-level on the Atlantic Ocean sea-floor, about 4 km down. This undersea range, rising to about 3 000 m above the sea-floor, marks the edge of a still diverging tectonic plate boundary that separates the Eurasian Plate and the North American Plate in the North Atlantic, and the African Plate from the South American Plate in the South Atlantic.

The Mid-Atlantic Ridge runs for over 11 000 km from near Bouvet Island in the South Atlantic, to just south of the Arctic Circle, where it becomes the Reykjanes Ridge, on top of which outcrops the volcanically active island of Iceland. Covering an area of about 103 000 km$^2$ and with a population of just 320 000, it is a sparsely inhabited island that is geologically still very active. Here, it is quite possible to stand with one foot on the Eurasian Plate, and another on the North American Plate, which continue to move apart by about 1 cm per year.

Because these plates are divergent, the Earth's crust (the lithosphere) is stretched thin, allowing hot molten rock (magma) from the Earth's core to rise up and heat the Earth's crust. Where this fractures, molten lava may flow through fissures to form active volcanoes that spew fiery eruptions of lava and ash into the sky. And where volcanoes form beneath icecaps, melt-water is turned to steam; adding to the spectacle. Elsewhere, water-filled caverns can become super-heated by the hot magma, leading to spectacular eruptions of water known as geysers. Iceland takes full advantage of this geothermal activity, which is harnessed to provide the country with over 80% of its energy needs. Hot water from underground through pipes beneath the roads in the capital city of Reykyavik, creating 'thermal blankets' to keep the roads snow- and ice-free in winter.




*The position of Iceland in relation to the Mid-Atlantic Ridge.*

Image: Wikimedia Commons

4.1 What type of plate boundary occurs at the Mid-Atlantic Ridge? Explain your answer.

**constructive, destructive, conservative** (1)

4.2 Explain with the aid of a diagram what is happening at the mid-Atlantic ridge. (4)

4.3 What type of Volcano is described in the article? Provide evidence from the source. (4)

4.4 Describe two positive and two negative effects that volcanic activity has on humans and their environment in Iceland. (4)

4.5 What two measures should the government consider to safeguard the population of Iceland from volcanic activity. (4)

4.6 Are conditions suitable for the formation of fold mountains at the Mid-Atlantic Ridge? Explain your answer. (3)

## Question Five

**Study the extract below about the Indian Ocean Tsunami and answer the questions that follow.**

INDIAN OCEAN TSUNAMI 2004

Primary effects of the tsunami

- The wave killed people in 14 different countries around the Indian Ocean totalling over 250 000.
- The highest death toll was on the Indonesian island of Sumatra where over 130 000 were killed and over 30 000 remain missing.
- In Sumatra over 500 000 people were made homeless, over 80 000 houses were destroyed as well as serious damage was caused to any ports, boats, roads, bridges, hospitals, forests and crops within 1 km of the shore.


- 8 people were killed in South Africa which is over 8000 km from the epicentre.
- In Sri Lanka, a train was derailed by the force of the wave killing over 1 000.

[Source: htttp/www.4w.tagplus.com]

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5.1 What causes a Tsunami? (1)

5.2 Define the term epicentre. (2)

5.3 Suggest two reasons for the high death toll in Indonesia. (4)

5.4 Describe two threats to the survivors of the tsunami in Sumatra. (2)

5.5 Suggest TWO ways in which the impacts of tsunamis can be reduced. (2)

## SECTION B - POPULATION STUDIES

### Question One

Give an explanation of each of the following demographic indicators:

1.1 Life expectancy

1.2 fertility rate

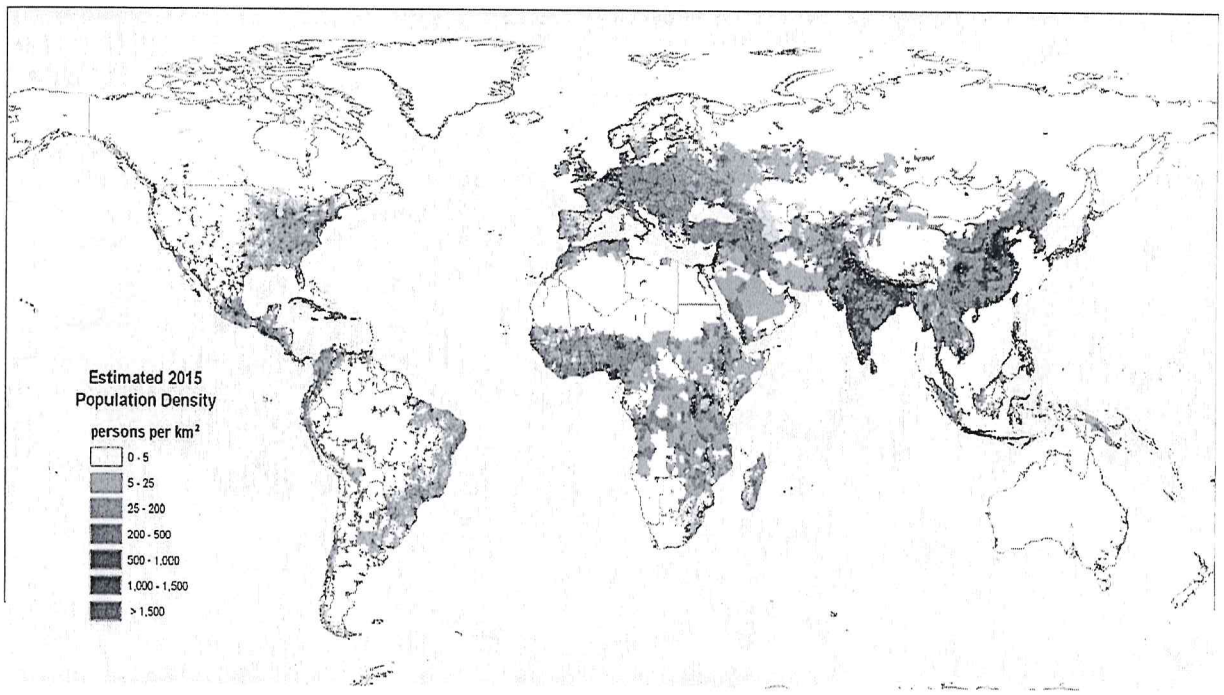
1.3 natural increase

1.4 dependency ratio (4)

1.5 Explain how natural increase in 1.3 is arrived at. (2)

### Question Two

Refer to the World Map, which shows the global population density, before answering the questions that follow.




2.1 Define population density. (2)

2.2 What does the map suggest about the population distribution of the world? Explain your answer. (3)

2.3. Explain how and why the following may have affected population density:

a. coastlines

b. high latitudes (6)

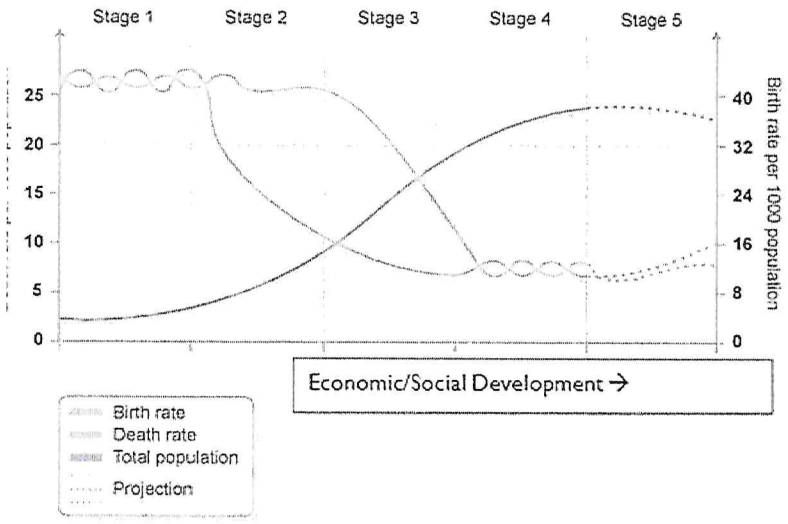
2.4 Suggest a reason for:

a. the low population density in the western parts of South Africa.

b. the high density in most of Europe. (4)

**Question Three**

Refer to the graphic showing the demographic transition model. Match up each of the stages numbered 1-4 with the stages below:




3.1

**Declining, Late expanding, high stationary, early expanding ,**

3.1 Account for the low natural increase that occurs in stage 1. (2)

3.2 Suggest two reasons for the rapid decline in death rates in stage 2. (4)

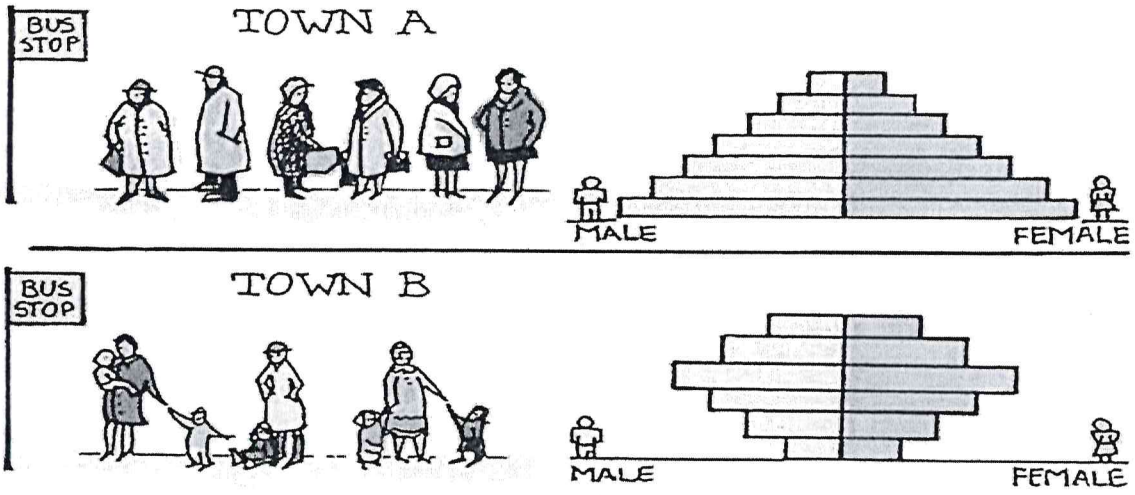
3.3 Describe the relationship between development and population growth. (2)

3.4 Outline two strategies that developing countries in stage 2 can implement to slow rapid population growth. (4)

3.5 suggest why population control strategies can be problematic. (4)

## Question Four

The Figure below show population pyramids for two hypothetical towns.




4.1 What is the purpose of a population pyramid? (2)

4.2 Study the cartoon of the people at the bus stop and the pyramid shapes carefully. Do the population pyramids match with the town's population? Explain your answer. (4)

4.3 Explain why **Town B** is likely to experience a rapid population growth in the near future. (3)

4.4 How will this rapid growth affect social development **in town B**. (2x2=4)

4.5 Outline one problem that the economy of town A is likely to face in the future. Suggest two solutions to the problem (6)

## Question Five

Read the case study carefully before you answer the questions that follow.

Mandla Tsitsa (pseudonym) with his wife (Violet) and their two children (Phokie and Lazie) in 2016 moved to England. The following are his reasons for their move:

I was twice overlooked for promotion because the company where I worked followed a policy of affirmative action. After two armed robberies took place at our house and our car was hijacked, it made me realise that there are no prospects for me and my family and as I did not feel safe, I began to look for other options.

After I started finding out about other possibilities, I saw that there were many opportunities for me in England, as an electrical engineer. England needs more skilled people like me. It did not take long for me to find an excellent job in London and they were willing to carry our relocation costs (even for our pets). All necessary documentation was also handled by the firm in England.

Our children can now safely roller-skate, ride on their bikes, and can make use of an excellent public transport system. The weather is not the same as in Butterworth and we miss our relatives a lot, but if I consider everything, I feel that England has a better future for us.

[Adapted from Google]

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5.1 Give the geographical term that best describes the movement of the Tsitsa family (1)

5.2 Choose the correct word in relation to the Tsitsa family's relocation from South Africa to England.

(a) Regional / International

(b) Voluntary / Forced

(c) Permanent / Temporary (3)

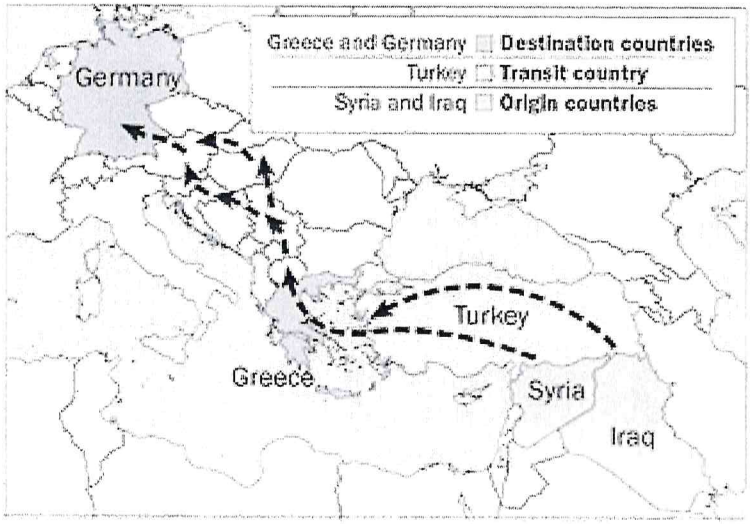
5.3 Describe one economic and one social factor that attracted the Tsitsa family to England. (4)

5.4 Outline two impacts of the migration of the Tsitsa's on South Africa. (4)

Question Six

Refer to the map and the short extract describing the movement of refugees across Europe.

## Syrian and Iraqi migration to Europe in 2015 and 2016




Note: Migration paths are representational, not precise. Migrants from Syria and Iraq have settled in many European countries, but Germany received the most in 2015 and 2016.
Source: National Geographic: "The World's Congested Human Migration Routes in 5 Maps"
"The Digital Footprint of Europe's Refugees"

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*By the end of 2016, nearly 5.2 million refugees and migrants reached European shores, undertaking treacherous journeys from Syria, Iraq, Afghanistan and other countries torn apart by war and persecution.*

*For some, this desperate journey will be their last. Thousands have lost their lives or have gone missing since 2015, and an increasing number of women and unaccompanied children continue to take perilous journeys in search of safety.*

6.1 Explain the term refugee. (1)

6.2 Describe three common reasons for refugee migration in the world today. (3)

6.3 Discuss the challenges this migration has caused for the European countries they arrived at. (2x3=6)

6.4 Suggest one hardship refugees suffer when they reach their destination. (1)