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Name:	Class	Class Register Number/ Centre No./Index No.
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MID-YEAR EXAMINATION 2017 SECONDARY 4

Geography

2236

Paper 1

Thursday 11 May 2017

1 hour 40 min

READ THESE INSTRUCTIONS FIRST

Do not open this booklet until you are told to do so.

Write your name, class and index number clearly in the spaces provided at the top of this page.

Write in dark blue or black pen on both sides of the paper.

You may use a pencil for any diagrams, graphs or rough working.

Do not use highlighters or correction fluid.

Section A

Answer Question 1

Section B

Answer one question.

Write all answers on the Answer Booklets provided.

Candidates should support their answers with the use of relevant examples.

Sketch maps and diagrams should be drawn wherever they serve to illustrate an answer.

At the end of the examination, submit Sections A and B separately.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of 10 printed pages.

[Turn over]

Section A
This question is compulsory.

1. Some students were investigating two local beaches made up of different materials. The beaches were about 5 km apart in a popular tourist area.
 The beaches are shown in Fig. 1 on Page 3. They decided to test the following hypotheses:

Hypothesis 1: *The size of beach material increases away from the low water mark.*

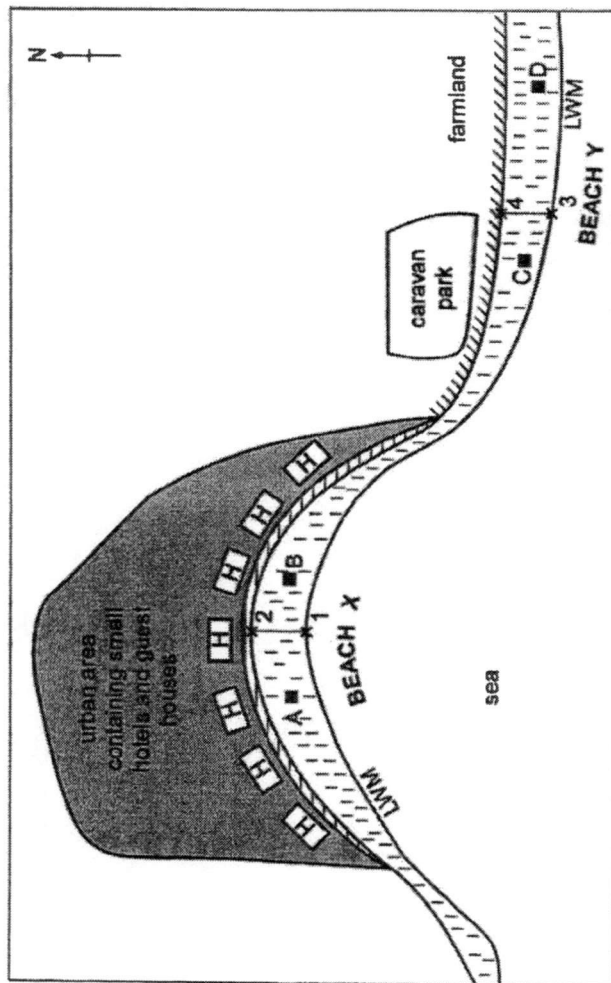
Hypothesis 2: *The environmental impact of tourism varies between the two beaches.*

- a. To investigate Hypothesis 1, the students used a tape measure to plot a transect line from the edge of the sea at the low water mark to the top of each beach. They then used a quadrat to systematically sample the beach material at points along the transect line of each beach.
- i. Describe how data was collected using a quadrat. [4]
 - ii. What is systematic sampling? [1]
 - iii. Give two advantages of using systematic sampling. [2]

Fig. 1 for Question 1

Sketch map of beaches

Not to scale



Key

large urban area containing small hotels and guest houses

sea

cliff

beach

LWM

x1 x2

A B C D

- b. The results of the investigation at selected sites are shown in Table 1, below.

Results of beach material investigation at selected sites

	Beach material (%)		
	Sand	Shingle	Pebbles
Site 1 – Beach X	90	10	0
Site 2 – Beach X	95	5	0
Site 3 – Beach Y	75	20	5
Site 4 – Beach Y	0	50	50

Table 1

- i. Complete the pie graph for site 3 at beach Y in Fig. 2 in Answer Booklet. [2]
- ii. Describe how proportions of the three materials (Sand, Shingle, Pebbles) differ between beaches X and Y. [3]
- iii. For which beach is **Hypothesis 1**: *The size of beach material increases away from the low water mark* true?
Support your conclusion with data from Table 1 and Fig. 2. [3]

- c. To investigate **Hypothesis 2: The environmental impact of tourism varies between the two beaches**, the students produced a bipolar scoring index which they used to survey the amount of litter on the beaches at four different sites (A, B, C and D), shown in Fig. 1. Fig. 3 shows their bipolar scoring sheet.

Scoring system for the survey of the impacts of tourism

Site:						
	-2	-1	0	1	2	
Lots of glass						No glass
Lots of paper						No paper
Lots of wood						No wood
Lots of plastic						No plastic
Lots of other litter (eg cigarette ends, food)						No other litter

Fig. 3

The results of the survey of the impacts of tourism are shown on Fig. 4.

Results of the survey of the Impacts of tourism

	Beach X		Beach Y	
	Site A	Site B	Site C	Site D
Glass	1	2	-1	0
Paper	1	2	-2	0
Wood	2	2	-1	-1
Plastic	2	2	-2	1
Other litter	1	2	-2	0
Total score	7	10	-8	0

Fig. 4

- i. Complete Fig. 5, in the Answer Booklet, by plotting the results for plastic at sites C and D. [2]

- ii. Do the results of the bipolar litter survey in Figs 4 and 5 support **Hypothesis 2:**
The environmental impact of tourism varies between the two beaches? Explain your conclusion. [3]
- d. Suggest another hypothesis that the students could have investigated to compare the **natural** features of the two areas of coast they studied. Describe how they could investigate the hypothesis you have chosen. [5]

Section B

Answer one question from this section

- 2a. The Bahamas are a group of islands in the Atlantic Ocean where coral reefs have developed. Figs. 2A and 2B show the largest island, Andros Island, and the location of the nearby coral reefs.

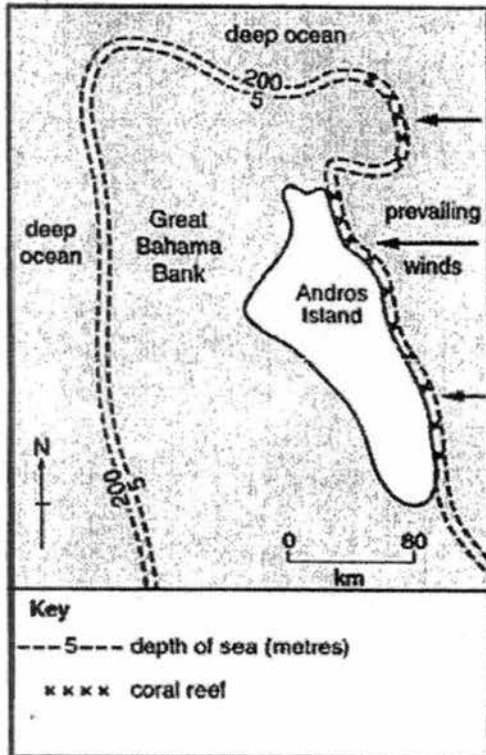


Fig. 2A

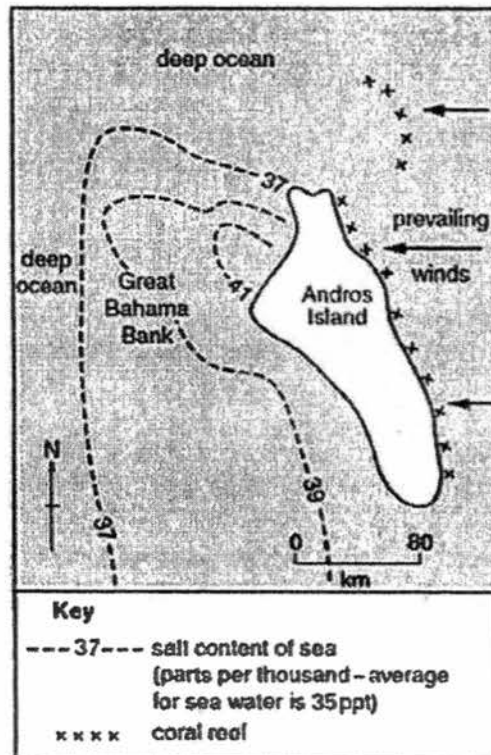
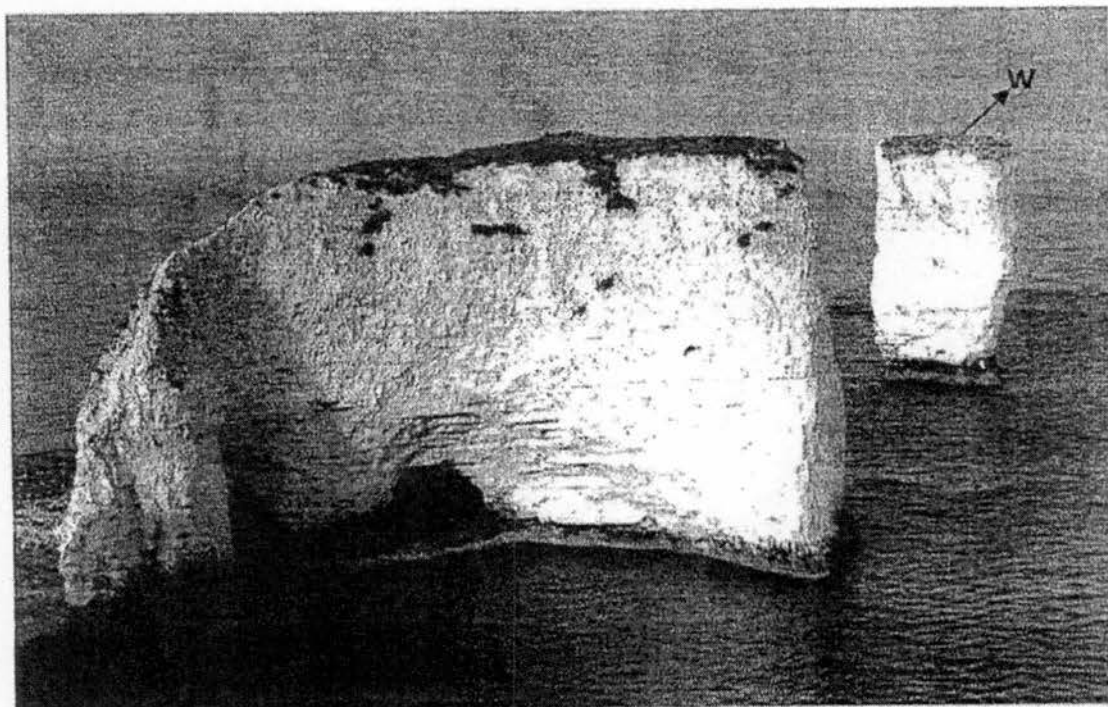


Fig. 2B

Using information from Figs. 2A and 2B, describe where the coral reefs are found and account for the location of these coral reefs. [6]

b. Study Photograph A, which shows a limestone coast.



Photograph A

With the help of well-labelled diagrams, explain the formation of coastal feature W. [6]

c. Explain why coastal erosion is much more rapid on some coasts than others. [5]

d. 'Investment in tourist destinations is the main reason for the growth of global tourism.'
How far do you agree with this statement? Support your answer using evidence. [8]

3a. Study Figs 3A and 3B, which show information about areas in Italy which attract tourists.

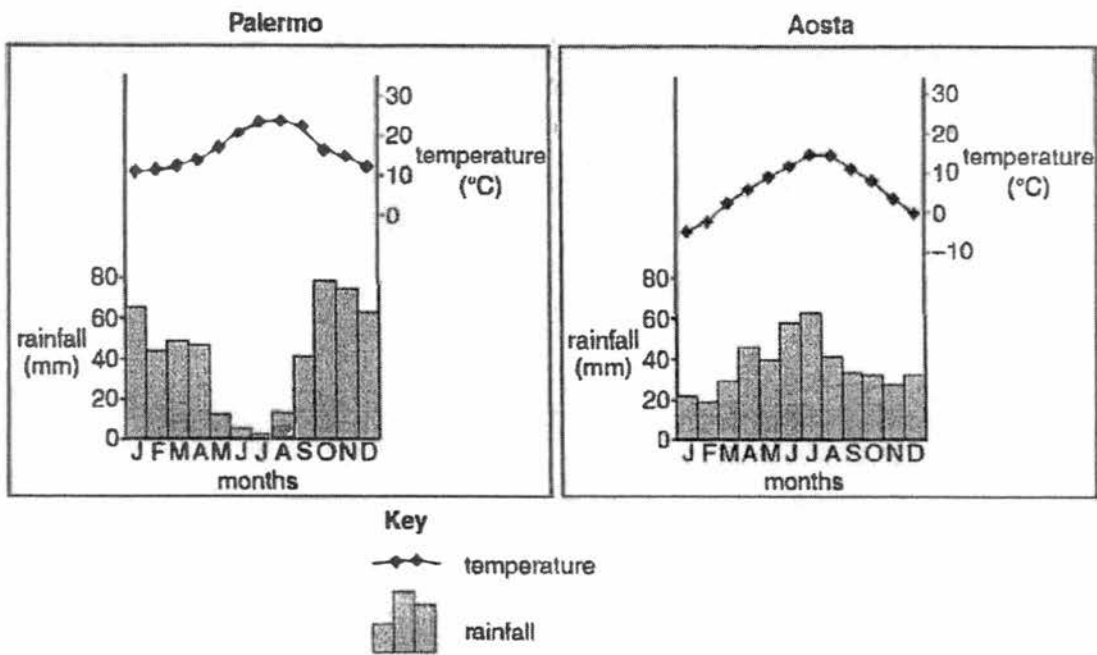


Figure 3A



Figure 3B

- i. Using only evidence from the climate graph for Palermo on Fig 3A, explain why it attracts large numbers of tourists between May and August. [3]
 - ii. Using Figs 3A and 3B only, suggest reasons why Aosta attracts tourists all year round. [4]
 - iii. Suggest how tourism may bring about possible benefits and problems for the locals. [5]
- b. Study Fig. 4, which shows newspaper headlines about the effects of tourism on an island in the Indian Ocean.

CORAL REEFS THREATENED BY TOURISM

PLANS ANNOUNCED TO RECLAIM COASTAL WETLANDS FOR RUNWAY EXTENSION TO INTERNATIONAL AIRPORT

100 ROOM RESORT AND CASINO TO OPEN IN SANDY BAY

Fig. 4

Based on Fig. 4, explain how tourism on the island could be developed in a sustainable way. [5]

- c. Using examples, evaluate the effectiveness of the role played by visitors and tour operators in developing sustainable tourism. [8]

END OF PAPER

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**MID-YEAR EXAMINATION, 2017
SECONDARY FOUR**

GEOGRAPHY

2236/02

Paper 2

3 May, Wednesday

1 hour 30 minutes

Additional
Materials:

Answer Booklets
Insert

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number clearly in the spaces provided at the top of this page and on all answer booklets / writing paper used.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use correction fluid.

Section A

Answer one question.

Section B

This question is **compulsory**.

Candidates should support answers with the use of relevant examples.

Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of 6 printed pages.

Section A

Answer one question from this section.

- 1 (a) Fig. 1A and 1B show the climographs of Harbin and Shanghai respectively. Both cities are located in China and their geographical locations are shown in Fig. 1C (Insert).

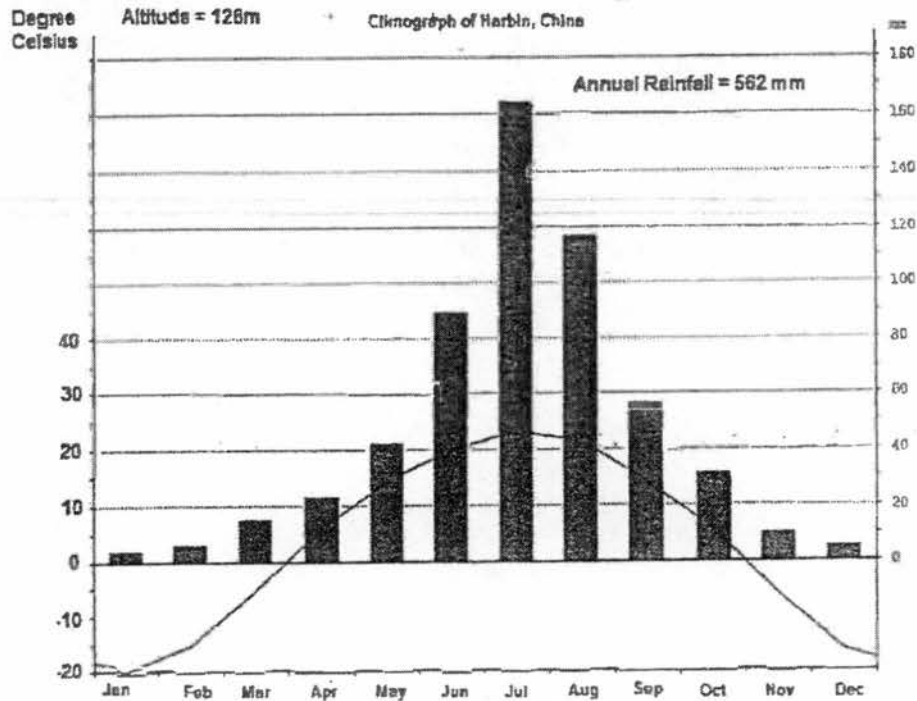


Fig. 1A

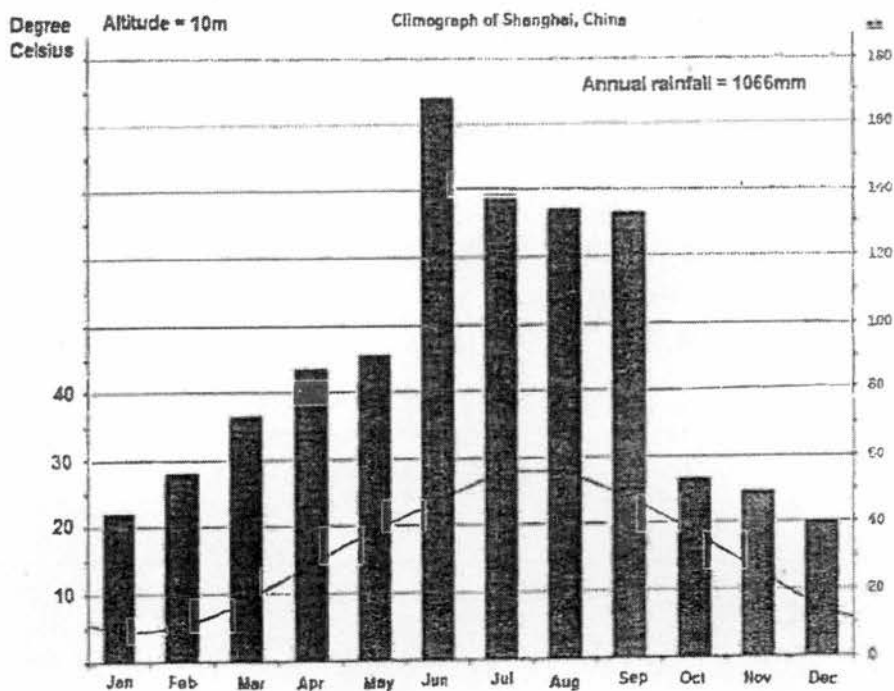


Fig. 1B

- (i) Compare the climatic conditions of Harbin and Shanghai. [3]
- (ii) Using information from Fig. 1A, 1B and Fig. 1C (Insert), explain the variation in the temperatures between Harbin and Shanghai. [6]
- (b) Fig. 2 shows the concentration of carbon dioxide (CO₂) and the average annual surface temperature of the Earth.

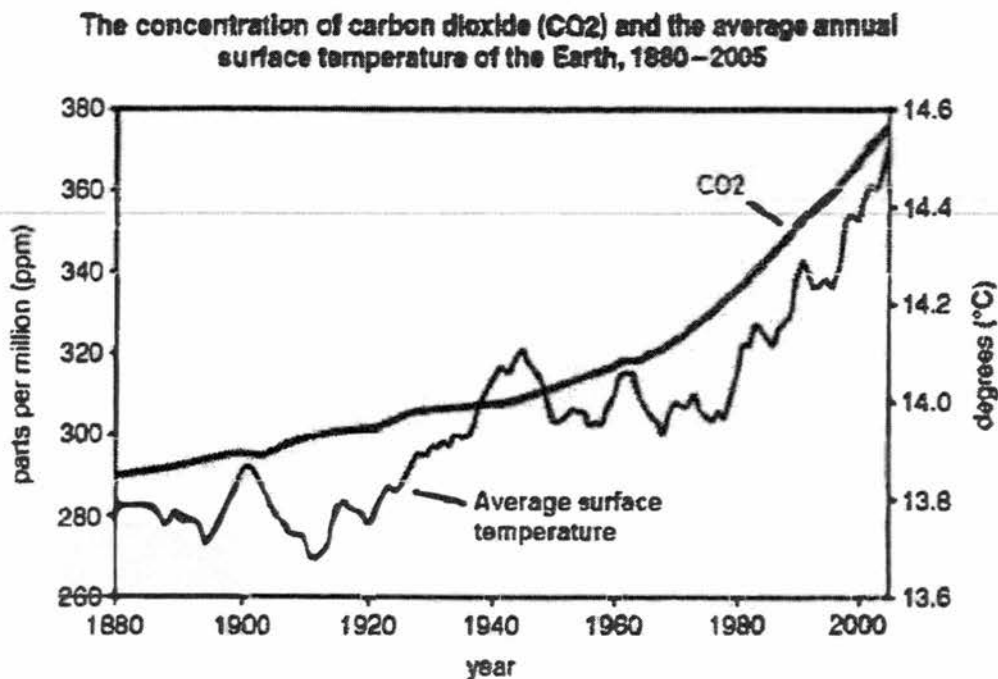


Fig. 2

Describe and explain the impact of changes in the concentration of carbon dioxide on the average annual surface temperature of the Earth from 1970 to 2000. [4]

- (c) How does climate change affect people? [4]
- (d) 'Human activities are a greater influence on climate change than natural causes.' To what extent do you consider this statement to be true? Give reasons to support your answer. [8]

- 2 (a) Fig. 3 (Insert) shows the hazards associated with the 1985 eruption of Nevado del Ruiz volcano in Colombia.

Describe the extent of the ash fall when the volcano erupted and explain possible risks caused by the eruption. [6]

- (b) Fig. 4 shows the location of some stratovolcanoes found in Colombia.

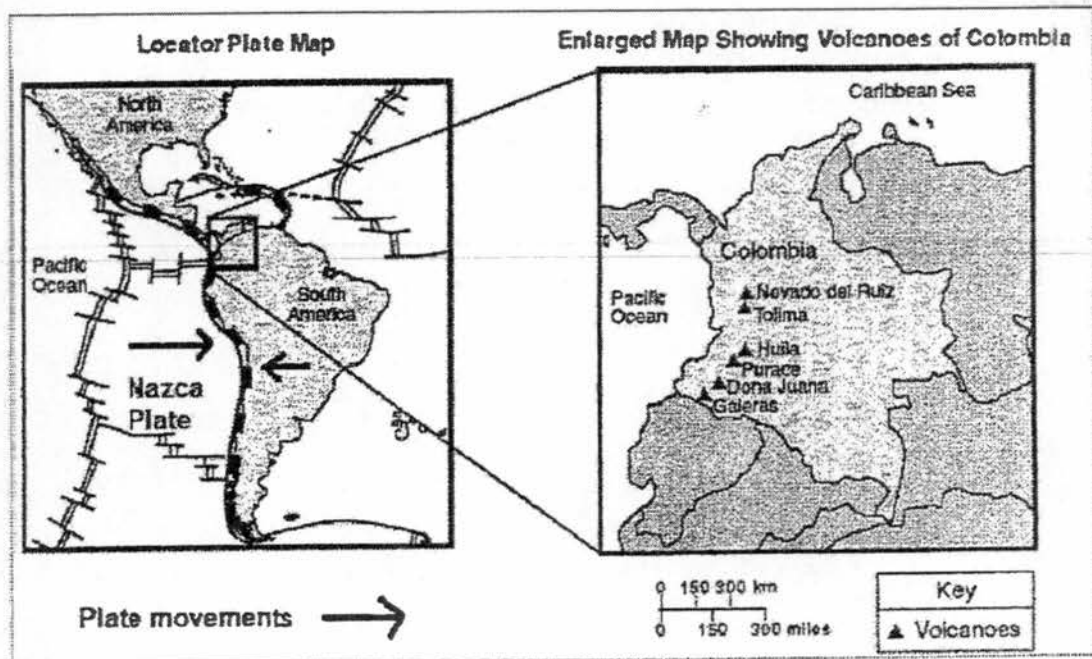


Fig. 4

- (i) With the use of a well-labelled diagram, illustrate the structure of a stratovolcano. [3]
- (ii) With reference to Fig. 4, explain why volcanoes are found along western Colombia. [4]
- (c) Describe the characteristics of tropical cyclones. [4]
- (d) 'The economic impacts of tropical cyclones are more difficult to overcome than the social impacts, when coping with the hazards brought about by the cyclones.'

How far do you agree with this statement? Give evidence to support your answer. [8]

Section B

This question is compulsory.

3.

(ii) Using examples, explain the health and social problems faced by people living in areas where the population growth is greater than the increase in food production. [4]

(a) Fig. 6 shows meat consumption of China and Europe from 1961 to 2009.

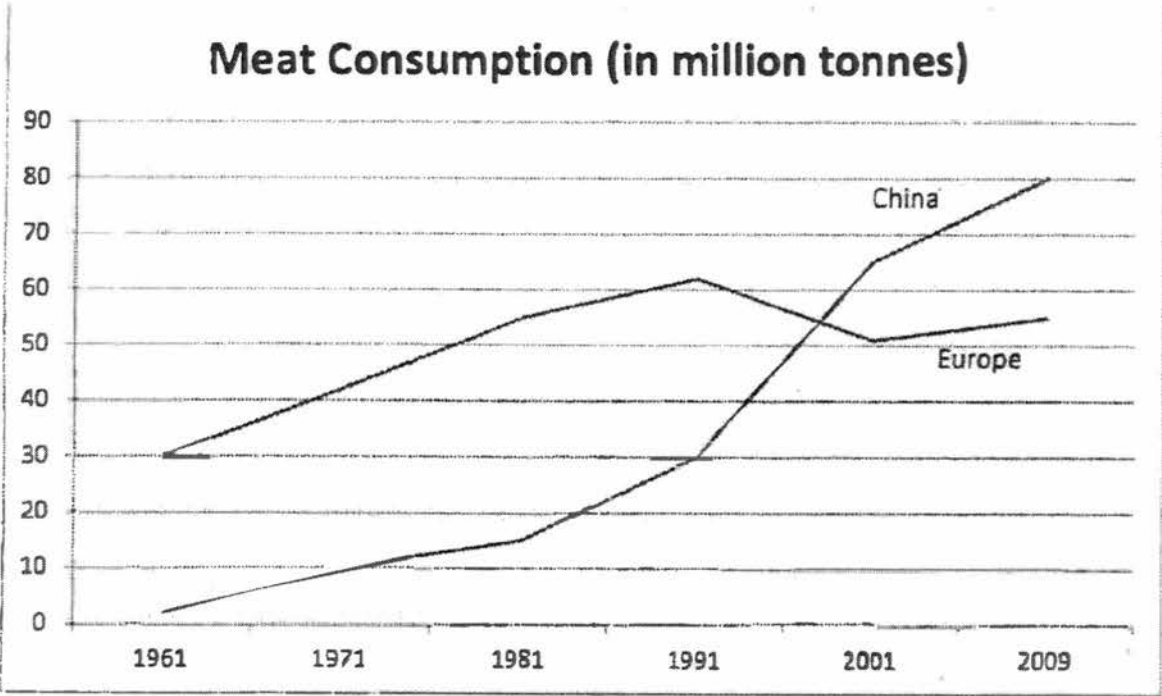


Fig. 6

Describe and account for the variation in changing consumption of meat between China and Europe from 1961 to 2009. [4]

(b) Explain the social and economic factors which result in food shortage in LDCs. [5]

(c) 'The use of biotechnology has been effective in overcoming food shortage.' How far do you agree? Give evidence to support your answer. [8]

-End of Paper-

Name:	Class	Class Register Number/ Centre No./Index No.
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**MID-YEAR EXAMINATION 2017
SECONDARY 4**

Geography

2236

Paper 1

1 hour 40 min

**Section A
Question 1**

ANSWER BOOKLET

Please complete your answers for Question 1 in this booklet.

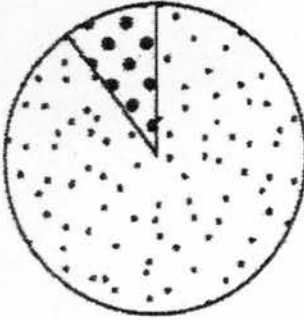
Section A Question 1	
Section B Question 2 / 3	
TOTAL	

Parent's signature: _____

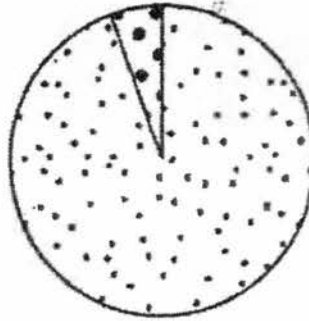
Question 1

(b) (i)

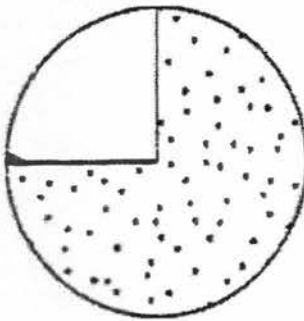
Site 1 – Beach X at low water mark



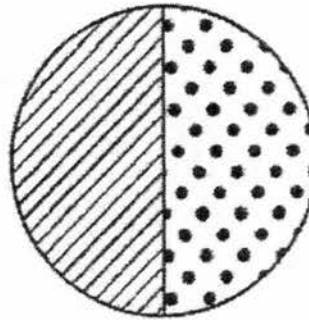
Site 2 – Beach X at the sea wall



Site 3 – Beach Y at low water mark



Site 4 – Beach Y at the foot of the cliff



Key



sand



shingle



pebbles

Fig. 2

(c) (i)

Results of the survey of the impact of tourism

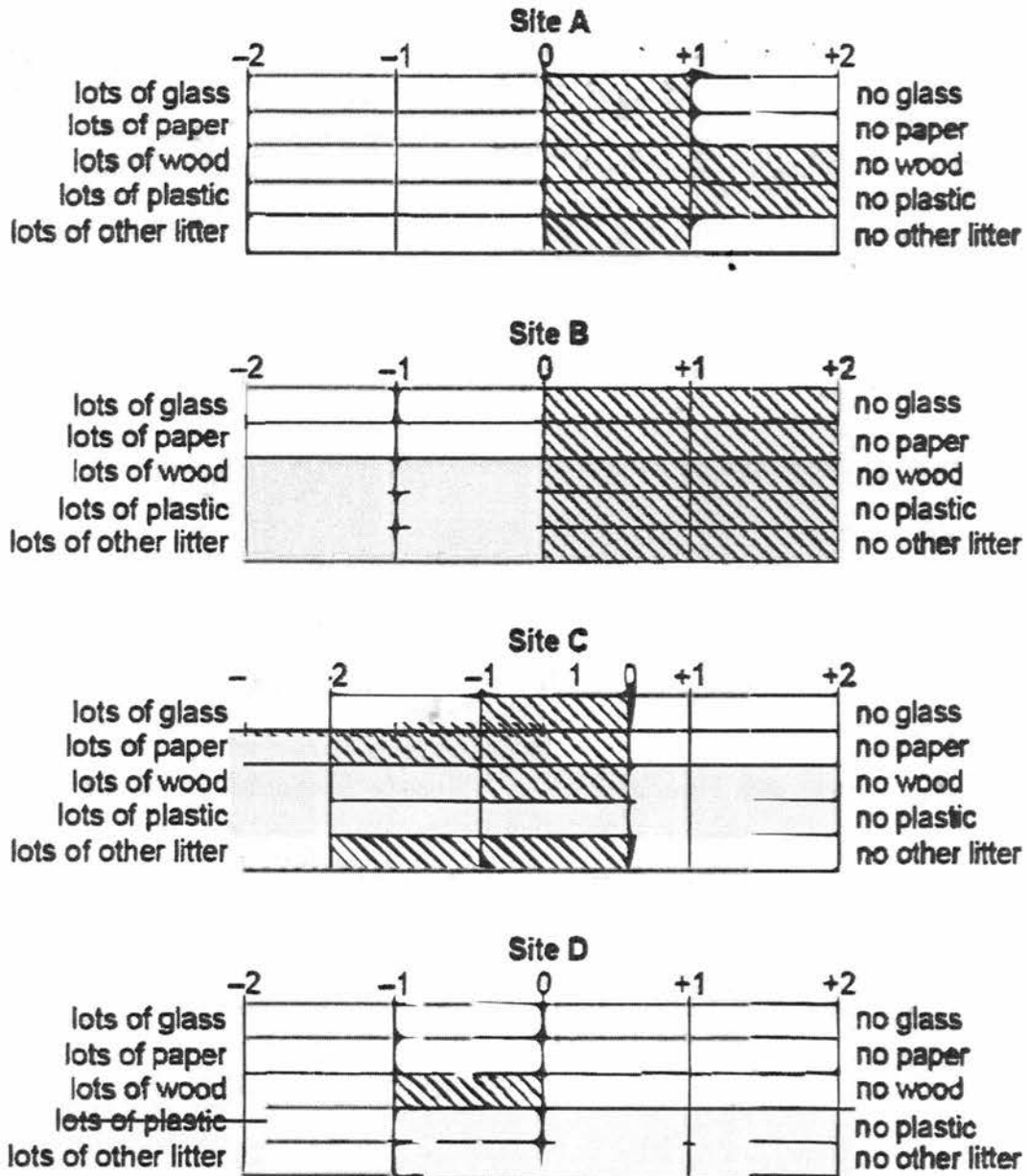


Fig. 5

Sec 4 Geog Mid-Year Examination Paper 1 2017

Suggested Answers

Section A

This question is compulsory.

1. Some students were investigating two local beaches made up of different materials. The beaches were about 5 km apart in a popular tourist area. The beaches are shown in Fig. 1 (Insert).

They decided to test the following hypotheses:

Hypothesis 1: *The size of beach material increases away from the low water mark.*

Hypothesis 2: *The environmental impact of tourism varies between the two beaches.*

- b. To investigate Hypothesis 1, the students used a tape measure to plot a transect line from the edge of the sea at the low water mark to the top of each beach. They then used a quadrat to systematically sample the beach material at points along the transect line of each beach.

- i. Describe how data was collected using a quadrat. [4]

- Quadrat was placed along the transect
- Sample of about 10 to 15 pebbles of beach material were measured
- along the long axis with a ruler or callipers
- location of beach material within quadrat chosen using random number tables

- ii. What is systematic sampling? [1]

- **Taking samples at equal distances / regular intervals / specific order**

- iii. Give two advantages of using systematic sampling. [2]

- **More efficient / Easier because sampling sites are evenly spaced out**
- **Fairer test / less bias than random**

- c. The results of the investigation at selected sites are shown in Table 1, below.

- (i) Complete the pie graph for site 3 at beach Y in Fig. 2 (Insert) in Answer Booklet. [2]

1 mark for dividing line – should be 72 / 18 degrees; allow +/- degree tolerance
1 mark for shading both slices correctly.

- (ii) Describe how proportions of the three materials (Sand, Shingle, Pebbles) differ between beaches X and Y. [3]

Sand:

- **higher proportion / percentage at beach X / Site 1 or 2 mainly sand at both sites on beach X but only at one site on beach Y**

- 90% (Site 1) or 95% (Site 2) as compared to 75% (Site 3) or 0% (Site 4)

Shingle:

- higher proportion / percentage at beach Y / Site 3 or 4 than 1 or 2 at X.
- 20% (Site 3) or 50% (Site 4) compared to 10% (Site 1) or 5% (Site 2).

Pebbles:

- no pebbles at beach X / Site 1 or 2 only pebbles at beach Y / Site 3 or 4
- 5% (Site 3) or 50% (Site 4) compared to 0% for Site 1 or Site 2

- (iii) For which beach is Hypothesis 1: The size of beach material increases away from the low water mark true?

Support your conclusion with data from Table 1 and Fig. 2.

[3]

Hypothesis is true for beach Y (1m)

Recognition that Site 3 is at LWM or site 4 is near cliff / further from LWM

- Sand decreases from 75–0% from Site 3 to 4/ by 75%
- Shingle increases from 20–50% from Site 3 to 4/ by 30%
- Pebbles increase from 5–50% from Site 3 to 4/ by 45%

[Any 2 supporting data; 1 mark each]

- (c) To investigate Hypothesis 2: The environmental impact of tourism varies between the two beaches the students produced a bipolar scoring index which they used to survey the amount of litter on the beaches at four different sites (A, B, C and D), shown in Fig. 1

Fig. 3 shows their bipolar scoring sheet.

The results of the survey of the impacts of tourism are shown on Fig. 4

- (i) Complete Fig. 5, in the Answer Booklet, by plotting the results for plastic at sites C and D. [2]

1 mark each for shading accurate bars at -2 on C and +1 on D for plastic

- (ii) Do the results of the bipolar litter survey in Figs 4 and 5 support Hypothesis 2: The environmental impact of tourism varies between the two beaches? Explain your conclusion. [3]

Yes / hypothesis is true

- Positive or no negative impact at beach X / mostly negative impact at beach Y
- Beach X / Sites A and B cleaner or less litter than Beach Y / Sites C and D (Total scores: 7 (Site 1), 10 (Site 2) compared to -8 (Site 3), 0 (Site 4).)

If disagree / partially agree no marks at all.

If no decision made, mark correct explanation for 1 max.

- d. Suggest another hypothesis that the students could have investigated to compare the natural features of the two areas of coast they studied. Describe how they could investigate the hypothesis you have chosen. [5]

Hypothesis (1 mark)

Can be phrased as a statement or question.

- *Constructive / destructive waves affect the beach X and Y differently.*
- *The beach profile varies between X and Y.*
- *Longshore drift affects the size of beach material at the beaches at X and Y*
- *The direction of sediment movement is influenced by wind direction*
(Investigate This 3: Pg 17)
- *Wave frequency is more frequent at Beach Y*

Look for four logical sequential investigative methods

To avoid double penalising, if the hypothesis is not acceptable, award up to max. of 2 marks for HOW they would carry out their investigation.

Example: Beach profiles:

Mark the line of transect

Measuring pole stuck into beach of water's edge.

Measure 10m up the beach and stick other measuring pole into sand.

Use clinometer to measure angle between to poles.

Record the angle and repeat along the transect line

Repeat for other transect lines

2a. The Bahamas are a group of islands in the Atlantic Ocean where coral reefs have developed. Figs. 2A and 2B show the largest island, Andros Island, and the location of the nearby coral reefs.

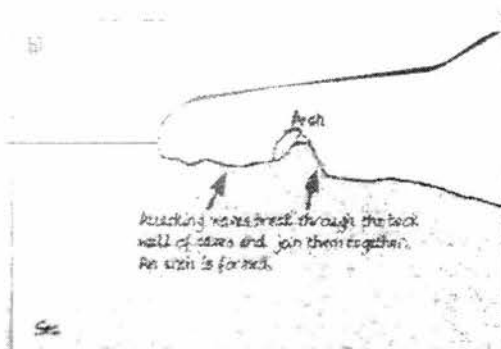
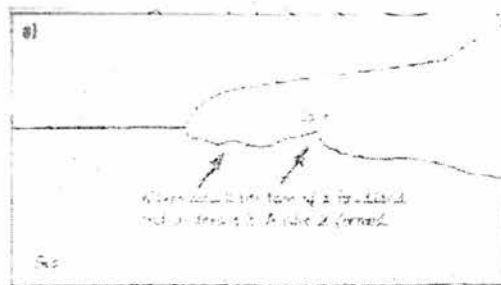
Using information from Figs. 2A and 2B, describe where the coral reefs are found and account for the location of these coral reefs. [6]

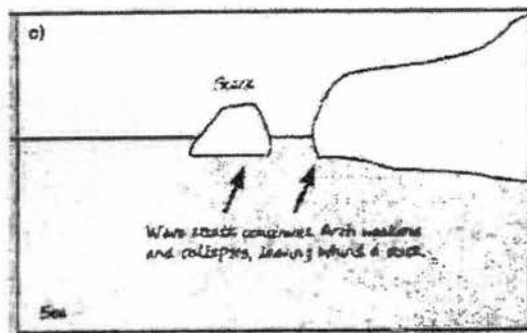
- The corals are found between 5 and 200 m depth,
- As they require sunlight for the algae to photosynthesise
- Corals are also found in areas where salinity is between 35ppt to 37ppt (cannot be 35 or 37)
- Which is average since coral needs average salinity
- Corals are found on eastern coast of the island/windward/windy side/side of prevailing wind,
- As they require strong waves to provide oxygen and food supplies / to prevent sediments from suffocating living corals

2b. Study Photograph A, which shows a limestone coast.

With the help of well-labelled diagrams, explain the formation of coastal feature W. [6]

- Waves attack lines of weakness (joints and faults at the base of the headland/ undercut it.
- Continuous action / Further erosion of waves forms a cave. Caves may develop on each side of the headland. Erosion may eventually join caves together.
- Leaving a bridge of rock known as an arch above the opening.
- Top of the arch may collapse to form a stack.





Note: Diagram – 2m (1m for diagram, 1m for labelling – details must be given)

2c. Explain why coastal erosion is much more rapid on some coasts than others. [5]

- Coastal erosion is more rapid when there are lines of weakness. These joints/ lines of weakness will make the rocks weaker and erosion can occur along these lines.
- Rock composition determines the hardness of rocks and their resistance to erosion, which affects the rate of erosion along coasts. More resistant rocks such as granite and basalt will erode slower than less resistant rocks such as limestone and shale.
- Coastal erosion is more rapid when the wave energy is high which is of destructive waves. The backwash is stronger than swash which erodes the coasts faster.
- Coastal erosion is more rapid on coasts which are exposed and hence the distance of the fetch is long. This will create high wave energy compared to coasts with shorter fetch.
- Coastal erosion is more rapid on coasts without coastal defences compared to coasts with coastal defences.

c. 'Investment in tourist destinations is the main reason for the growth of global tourism.'
How far do you agree with this statement? Support your answer using evidence. [8]

I agree that investment in tourist destinations does help support the growth of global tourism. Destination factors such as building attractions, investment in infrastructure and services and access to information have helped in the growth. Places with more attractions will attract a larger number of tourists. Natural attractions as well as built attractions, such as medical services, theme parks etc, offer something unique and interesting to international tourists. For example, Dubai, has become a major destination and stopover location between Europe and Asia. It has a wide range of retail and luxury outlets. Two of Dubai's most well-known built attractions are: The Burj Al Arab, a 'seven-star' luxury hotel built on an artificial island; and the Palm Islands, the world's largest artificial islands for high-end residential, leisure and entertainment facilities. Hence investment in attractions will help to boost tourism growth as they attract more tourists.

Investment in infrastructure and services also help drive the growth of global tourism. Transportation infrastructure such as airport expansion and development; as well as road and railway links is crucial to help facilitate tourist movement. For example, Singapore's Changi Airport and Bangkok's Suvarnabhumi Airport have undergone considerable expansion to facilitate increased international tourist arrivals. Another type of infrastructure is accommodation. Sufficient hotels must be built to receive the rising number of tourists. Therefore, investment into infrastructure and services will help to increase the country's capacity to cater to higher tourist numbers.

However, there are also other reasons for the growth of tourism. Although the destination's infrastructure and attractions may be built, other reasons such as development in technology as well as demand factors arising from changing profile of tourists will also affect the growth of tourism. Demand factors which include disposable income, leisure time and changing lifestyle all play a part in determining people's ability to travel. With increasing disposable income, people are more willing to spend on activities that improve their quality of life. One such activity is travelling. Countries such as India and China have experienced rapid economic growth hence the number of travellers from the middle and high income groups has been growing.

This shows that other factors aside from investment alone, can also help to push tourism growth.

Level 1 (0 – 3)

At this level answers will be generalized or with minimal support if any given at all. Reasoning is rather weak and expression may be unclear. A basic answer that has little development. Answers lack examples or other evidence, or it is so sketchy that it adds little support to the answer.

Level 2 (4 – 6)

Disagreement or agreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer.

Level 3 (7 – 8)

At this level answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. Examples or other evidence to support answers will be extensive.

3a. Study Figs 3A and 3B, which show information about areas in Italy which attract tourists.

- i. Using only evidence from the climate graph for Palermo on Fig 3A, explain why it attracts large numbers of tourists between May and August. [3]

- **Attractive to tourists as they can enjoy many activities with the warm temperatures and low rainfall**
- **High Temperatures from May to August range from 15°C to 25°C**
- **Low Rainfall between 5 to 15mm each month**

- ii. Using Figs 3A and 3B only, ~~suggest reasons why Aosta attracts tourists all year round.~~ [4]

- **From Dec to Feb, it is winter season as the temperatures are below zero. There is likely to be snow where people can go skiing/ enjoy winter sports**
- **From Feb to Nov, the temperatures are mild with highest temperature at 15°C. People can have many activities such as walking, hiking, camping etc as conditions are comfortable**
- **Except for the months of June and July, rainfall is not very high at below 60mm per month**
- **Aosta is also attractive as there are mountains where people may want to visit for the scenery**

- iii. Suggest how tourism may bring about possible benefits and problems for the locals. [5]

Benefits

- **Income**

The growth in tourism can bring about an increase in the number of tourism-related jobs which can provide the locals with employment. This can help locals earn income which can improve their standard of living.

- **Infrastructure development**

Roads that link airports, cities and tourist sites allow tourists access to local attractions. They also allow local people better access to more markets, health care, education and jobs.

- **Employment opportunities**

Tourism also brings about employment for local workers. Individuals involved in tourism related jobs can earn more income which can better their lives.

Problems

- **Shortage of services**

Tourist infrastructure may require the use of large amounts of land, water and power. This could lead to a shortage of services such as water supplies or power in non-tourist areas. Locals can suffer from a shortage of power or water when they cannot afford to pay as much as the tourists.

- **Increased congestion**

Large numbers of tourists can cause overcrowding in areas close to popular attractions. Due to the large crowd, tourist shops and accommodations can cluster near such areas and make them even more congested. This often causes vehicular

and pedestrian traffic to become congested which can disrupt the lives of the locals. The huge inflow of cars and buses can also contribute to air pollution which may affect the health of the locals

Note that answers must show how the locals are affected, the link must be explicit.

b. Study Fig. 2, which shows newspaper headlines about the effects of tourism on an island in the Indian Ocean.

Based on Fig. 2, explain how tourism on the island could be developed in a sustainable way. [5]

- There could be restrictions to the number of tourists to the coral reef. This will reduce the impact and pressure to the coral reefs.
 - Laws and regulations can be made to control/ stop people from fishing on the reef/ diving/ anchoring.
 - The authorities could ensure that areas are set aside to conserve wildlife. These protected areas eg coastal wetlands should not be cleared from tourism development.
 - The planning authorities could encourage ecotourism. Instead with the protected areas. This will help to educate the tourists on the importance of protecting the environment while they are visiting the areas.
 - There could be restrictions to sensitive areas eg coral reef to ensure that the environment is not destroyed
 - The authorities could also employ locals and use local materials for the building of the resort and casino to develop tourism in a sustainable way that also benefits locals.
- d. Using examples, evaluate the effectiveness of the role played by visitors and tour operators in developing sustainable tourism. [8]

Visitors play an important role in developing sustainable tourism as they can be respectful of the environment and the local people of the place that they are visiting. They should visit without causing damage or offence. For example, in a report in 2007, the Tourism Sustainability Group, set up by the European Commission in 2004, encouraged tourists to select their holiday destinations based on the conservation efforts of the place. This is because tourists want to minimize their carbon footprint while they are on holiday. They may thus consider factors such as the amount of water used and the amount of waste recycled at these destinations. This helps to promote sustainable tourism as visitors' demand will change the way tourism is organised.

Visitor spending can also provide funds to help conserve environment, preserve culture or maintain a tourist attraction. Such visitor spending can include entrance fees or the purchase of souvenirs can be used to conserve a tourist site. Visitor spending can also provide locals with income from employment and businesses. Visitors usually require hotel workers, hotel staff, waitresses and tour guides, which are employment positions that locals can easily fill. The arrival of tourists also gives locals opportunities to set up businesses such as tour companies or shops. Visitors to a destination may realise

the value of conserving and preserving the destination. These visitors also raise awareness about the destination at home by sharing their experiences via word-of-mouth. In turn their visits become more rewarding with the knowledge that they have done their best to avoid damaging these environments.

However, visitors may exhibit behaviours that can damage a tourist attraction. Examples of these behaviours are vandalism and littering. In some cases, the sheer number of tourists alone can damage a tourist site through their collective footsteps, noise or touch.

Large numbers of visitors can also cause a place to lose its identity, such as when dancers deliberately pose for tourists to take photographs. As a result, visitors may complain that a place or performance does not feel 'authentic'. The dilution of local culture becomes more pronounced whenever visitors outnumber locals in an area and commercial activities focus mainly on tourism.

Visitors spend much of their time in a tourist attraction with tour guides or other staff of a tour operator. Therefore, tour operators are often in the best position to regulate tourist behavior. This includes preventing tourists from littering, from vandering into restricted areas or from making too much noise to prevent damage to tourist site. For example, a group known as Phuket Alternative Tours(PAT) which was set up by the team of tour operators in Phuket in 2006. Tour operators who want to operate under PAT are required to sign an Environmental and Cultural Code of Practice, which commits members to operate in an environmentally sustainable way, seek to enhance the natural environment and the way that the industry uses it, and to create awareness about environmental conservation for visitors to Phuket.

Tour guides can also offer valuable feedback to tour operators about the social and environmental conditions of a tourist attraction. Their inputs are often used by local communities and planning authorities to plan tourism management strategies in a tourist attraction. This can help tourism to be more sustainable as the needs of the communities are taken into consideration.

However, tour operators are businesses and need to be profitable to survive. The need to generate profits may override concerns to preserve the environment when addressing these concerns would reduce their profits.

Level 1 (0 – 3)

At this level answers will be generalized or with minimal support if any given at all. Reasoning is rather weak and expression may be unclear. A basic answer with little development. Answers lack examples or other evidence, or is so sketchy that it adds little support to the answer.

Level 2 (4 – 6)

Successful or unsuccessful aspects are supported by appropriate detail. Or, both successful and unsuccessful aspects are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good

expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer.

Level 3 (7 – 8)

At this level answers will be comprehensive and supported by sound knowledge.

Both successful and unsuccessful aspects are considered and well supported.

Reasoning is clear and logical with good expression of language. Examples or other evidence to support answers will be extensive.

Name:	Class:	Class Register Number:
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中正中學

CHUNG CHENG HIGH SCHOOL (MAIN)

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**MID-YEAR EXAMINATION, 2017
SECONDARY FOUR**

GEOGRAPHY

2236/02

Paper 2

3 May, Wednesday

1 hour 30 minutes

Additional
Materials:

Answer Booklets
Insert

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number clearly in the spaces provided at the top of this page and on all answer booklets / writing paper used.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use correction fluid.

Section A

Answer one question.

Section B

This question is compulsory.

Candidates should support answers with the use of relevant examples.

Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of 16 printed pages.

Sec 4 Geography Mid-Year Examination Paper 2

Suggested Answers

Section A

Answer one question from this section.

- 1 (a) Fig. 1A and 1B show the climographs of Harbin and Shanghai respectively. Both cities are located in China and their geographical locations are shown in Fig. 1C (Insert).

Compare the climatic conditions of Harbin and Shanghai.

[3]

- Average annual temperature in Harbin is 1°C , which is lower than Shanghai's 16.5°C .
- Annual temperature range in Harbin is 42°C , which is larger than Shanghai's 22°C .
- Annual precipitation in Harbin is 562mm , which is lesser than Shanghai's 1066mm .

- (i) Using information from Fig. 1A, 1B and Fig. 1C (Insert), explain the variation in the temperatures between Harbin and Shanghai.

[6]

- Harbin is located at higher latitudes than Shanghai and hence the solar angle is lower / sun rays strike at a lower angle
- and the solar energy is spread out over a wider area, resulting in a lower average temperature.
- Harbin is located at higher altitude of 126m , as compared to Shanghai, which is 10m . The higher the altitude, the further it is from the surface of the Earth which emits heat in the form of longwave radiation, hence resulting in lower average temperature.
- Air is also less dense at higher altitudes, which absorbs less heat from the longwave radiation from the earth's surface, resulting in lower average temperature.
- Harbin has a larger annual temperature range as it is located further inland and not influenced by the sea.
- During summer, the air over the land gains heat faster, leading to warmer summers and during winter, the air over the land loses heat faster, leading to colder winters.

[Factors to include are latitude, altitude and distance from the sea – each factor to award max of 2 marks]

- (b) Fig. 2 shows the concentration of carbon dioxide (CO₂) and the average annual surface temperature of the Earth.

Describe and explain the impact of changes in the concentration of carbon dioxide on the average annual surface temperature of the Earth from 1970 to 2000. [4]

- CO₂ has increased rapidly from about 325 to about 370 ppm, an increase of 45 ppm.
- This sharp increase had resulted in an overall sharp increase of average annual surface temperature of the Earth from about 14.0 to 14.5 °C, an increase of about 0.5°C
- CO₂ is a **greenhouse gas** which absorb longwave radiation and
- **more concentration of CO₂ results in more longwave radiation being absorbed**, leading to higher average annual surface temperature of the Earth

- (c) How does climate change affect people? [4]

- Climate change results in melting of glaciers in Greenland and Antarctica, which leads to rising sea level. **Rising sea levels** threaten low-lying areas and islands, resulting in **the loss of homes of people** living in these areas.
- Climate change results in **extreme weather events**, such as more intense tropical storms, flooding and heat waves, which may kill people and also result in significant **economic loss**.
- Climate change could result in increased temperatures and rainfall which encourages the breeding of mosquitoes. This may result in **higher incidences of insect-borne diseases** such as malaria to spread among people.
- Climate change may affect the growing season of crops as **some regions** may be able to grow more types of crops which require **higher temperatures**, but **some regions** may find it too warm to grow certain crops. Hence, **food supply may be affected**.

- (d) 'Human activities are a greater influence on climate change than natural causes.'
To what extent do you consider this statement to be true? Give reasons to support your answer. [8]

I consider this statement to be true to a large extent.

While natural causes will also influence climate change, these natural cycles of periods of warming and cooling, as seen in historical records, may not have as great an influence, compared to human activities. Climate change has been linked to natural causes such as volcanic eruptions and variations in solar output. Changes in magnetic field cause the sun to emit varying amounts of solar radiation. Increase in

magnetic activity results in an increase in solar radiation thus causing global temperatures to increase. The number of sunspots, which are cooler regions on the sun's surface, affect the amount of solar radiation emitted. More sunspots results in more solar radiation being emitted, thus causing increase in temperatures. For example, in 2000, a peak in the number of sunspots coincided with higher solar activity and also increases in global temperatures.

In a volcanic eruption, large volumes of carbon dioxide, water vapour, sulphur dioxide, dust and ash are released into the atmosphere. Together with dust and ash, these particles reflect solar energy back into space. This results in a cooling influence on regional and global temperatures. Eg The eruption of Mount Pinatubo in the Philippines in 1991 lower temperatures in the northern hemisphere by as much as 0.6°C.

While natural causes such as these do influence climate change, the impact is **not** large as the **significance of the resultant increase or decrease** is usually **not long term**. For instance, periods of global dimming which were caused by volcanic eruptions will only last for as long as the **volcanic dust and ash remain in the atmosphere**. Once the dust and ash settle, the **global cooling effect will cause**. In the case of the **Mount Pinatubo eruption in 1991**, the lowering of global temperatures lasted for only two years in some locations.

Human activities do have a greater influence on climate change as these activities lead to the **enhanced greenhouse effect** where global temperatures have been on the rise.

When forests are cleared for mining, farming or construction of infrastructure, fewer trees and plants will absorb carbon dioxide, leading to an increase in carbon dioxide levels. Deforestation also leads to increasing rate of carbon oxidation in the soil, hence increasing the amount of carbon dioxide released from the soil. Forests are cleared extensively in Amazon Forest, Brazil and many parts of Southeast Asia.

Burning of fossil fuels helps to produce energy for industries, particularly manufacturing, transportation as well as domestic and commercial activities. Greenhouse gases are also released as by products when goods are produced. Large consumers of fossil fuels include China and USA. Burning of fossil fuels produce large amounts of carbon dioxide, which contributes to the increase in amount of greenhouse gases in the atmosphere, thus causing more heat to be trapped. This eventually leads to global warming. For example, in 2010, global carbon dioxide emissions totalled 30.6 billion tonnes which is an increase by 5.6% from 2009.

The greenhouse gases emitted as a result of human activities will remain in the atmosphere for a long time. Hence the influence on climate change is longer term than the natural causes. Therefore I consider the statement to be largely true.

Level 1 (0 – 3)

At this level answers will be generalized or with minimal support if any stand were given at all. Reasoning is rather weak and expression may be unclear. A basic

answer that has little development. Answers lack examples or other evidence, or is so sketchy that it adds little support to the answer.

Level 2 (4 – 6)

Disagreement or agreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer.

Level 3 (7 – 8)

At this level answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. Examples or other evidence to support answers will be extensive.

Note: To get L3 – 7/8, there must be an attempt to weigh the influence difference human activities and natural causes on climate change

- 2(a) Fig. 3 (Insert) shows the hazards associated with the 1985 eruption of Nevado del Ruiz volcano in Columbia.

Describe the extent of the ash fall when the volcano erupted and explain possible risks caused by the eruption. [6]

- The ash fall is largely confined to the north-eastern region of the volcano [must have this pt]
- And stretches a distance of 58.5km to Mendez, which is furthest away from the volcano

[Description, 2 pts]

- Volcanic materials produced by volcanic eruptions include lava and pyroclasts that consists of ash, rock fragments and volcanic bombs. These volcanic materials can lead to **widespread damage of property**.
- The pyroclasts when mixed with glacial ice along its path may trigger lahars or mudflows which may kill people and bury properties.
- Inhaling the hot ash and gases such as carbon dioxide, sulphur dioxide, hydrogen and carbon monoxide can result in **serious injury or death**
- Landslides can occur due to the structural collapse of a volcanic cone during a volcanic eruption. Landslides may obstruct the flow of rivers **causing floods**, blocking roads and buried villages and farmlands.

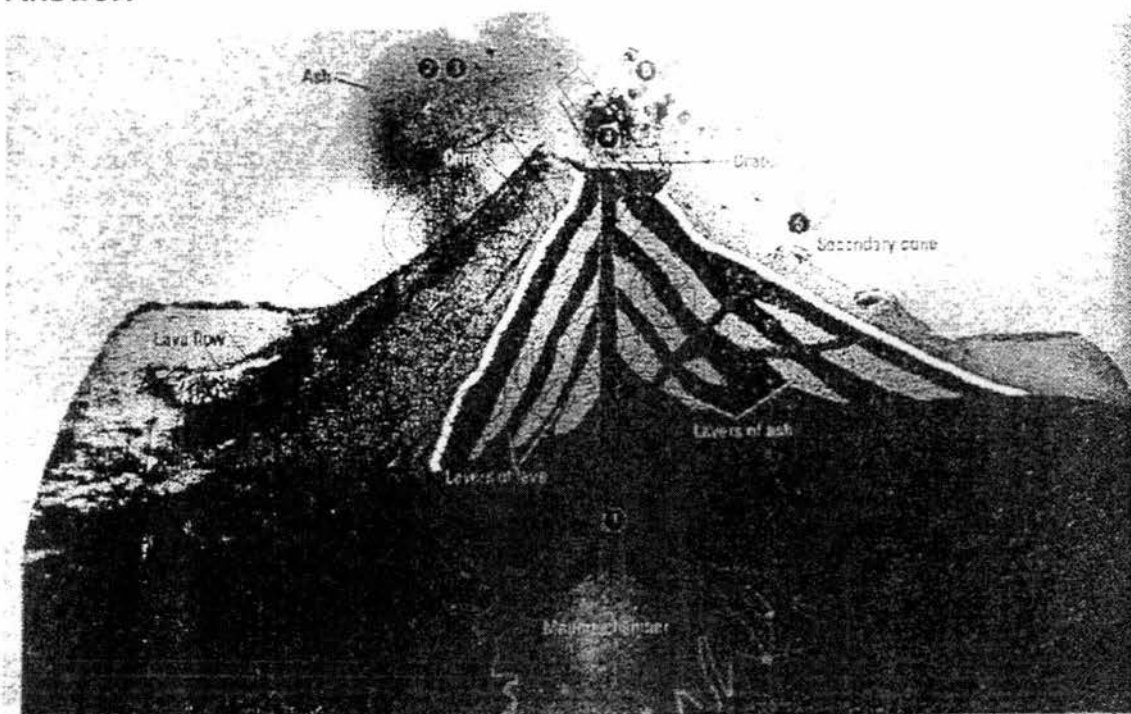
- Ash particles ejected during a volcanic eruption can disrupt human activities over large distances from the volcano. Thick plumes of ash may eventually settle on the ground and block sunlight, **suffocate crops and reduce food production**, hence affect food supply.
- Volcanic ash clouds may contain tiny abrasive glass, sand and rock which pose a **serious danger to aircraft**, hence air space may be closed after a major volcanic eruption.

[Possible risks, 4 pts]

(b) Fig. 4 shows the location of some stratovolcanoes found in Columbia.

- (i) With the use of a well-labelled diagram, illustrate the structure of a stratovolcano. [3]

Answer:



- Drawing of volcano – 1m (to show steeper at the top, gentler at the base)
- Key labels to be included – Vent, crater, secondary cone, layers or lava and ash – 2m (if any labels are missing, max of 1m)

- (ii) With reference to Fig. 4, explain why volcanoes are found along western Columbia. [4]

- When oceanic **Nazca Plate** converges with the continental **South American Plate**,
- the **denser oceanic plate** subducts under the **less dense continental plate**.

- At the same time, the **subducted ocean plate causes the mantle material above it to melt, forming magma**
- Melting of the subducting oceanic plate produces magma, which rises to the earth's surface through **fractures to form volcanoes.**

(c) Describe the characteristics of tropical cyclones. [4]

- Develop over the warm oceans in the tropics
- Range in diameter from 150 km to more than 1,500km
- Wind speeds of 119km per hour or more
- Steep pressure gradient
- Low central pressure
- Centre of the cyclone is calm and with no presence of clouds

[Any 4 points]

(d) 'The economic impacts of tropical cyclones are more difficult to overcome than the social impacts, when coping with the hazards brought about by the cyclones.'

How far do you agree with this statement? Give evidence to support your answer. [8]

I agree with the statement to a large extent.

Economic impacts of tropical cyclones include the costs of repairs of damaged property and infrastructure, and the loss of income due to damaged crops. These costs can amount to a large sum.

The damage to property and infrastructure caused by tropical cyclones can be expensive to repair. E.g the damage caused by Hurricane Katrina which struck the east coast of the USA in 2005, cost an estimated US\$81 billion. A large portion of the cost came from repairs of more than 200,000 homes.

Great economic costs are also incurred from damaged crops. When Tropical Cyclone Yasi hit North Queensland, Australia, in 2011, about 75% of the total banana crop amounting to US\$350 million was lost. Sugar cane farmers also suffered economic losses, as the tropical cyclone destroyed 20% of the total area of their farmland.

The economic costs for all countries affected by tropical cyclones amount to almost US\$26 billion annually. This amount is projected to increase to US\$55 billion by 2100 due to growing population in coastal areas. **Hence economic impacts of cyclones may be difficult to overcome as not all countries will have such large financial resources to restore damages caused by tropical cyclones.**

However, I disagree with the statement, as social impacts of cyclones may also be difficult to overcome.

Social impacts of tropical cyclones include disruption to the water supply, sanitation and hygiene facilities. Damage to water pipes and pumps may result in people not able to get fresh water.

Flooding caused by tropical cyclones may cause sewage from burst sewage pipes to flow into and contaminate existing water supplies. Consumption of the contaminated water leads to spread of water-borne diseases such as cholera and typhoid fever. In 2009, when Cyclone Aila hit West Bengal India, contaminated drinking water caused a cholera outbreak, resulting in about 1000 infected people and 14 deaths.

Flooding caused by a tropical cyclone may also result in the spread of diseases transmitted by insects. E.g cases of dengue fever and malaria increased in Guatemala and Nicaragua after Hurricane Mitch struck in 1998. In most of these cases, the large-scale flooding and the fast rate at which diseases spread make it difficult to provide adequate medical care.

People may be displaced from their homes and have to live in temporary shelters. E.g After Hurricane Katrina struck New Orleans, USA in 2005, Hundreds of thousands of people lost their homes and have to live in temporary shelters.

It may be difficult to overcome the social impacts of tropical cyclones such as the trauma of losing loved ones and being displaced from homes. It may be hard for victims of cyclones to remain resilient when their basic necessities such as food, clean water and sewage facilities are not met.

Economic impacts of tropical cyclones may be more difficult to overcome than the social impacts as without financial resources, countries which are affected will have difficulties in coping with the high cost involved in restoring damaged buildings and infrastructures. When these damages are not restored, the social impacts such as homelessness, lack of basic services such as water supply and sanitation, will be difficult to manage.

Level 1 (0 – 3)

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Level 2 (4 – 6)

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Level 3 (7 – 8)

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Section B

Answer this question

3. Fig. 5 shows information about food production in selected countries.

(a) (i) Describe the areas where annual population growth is greater than the increase in food production. [4]

- The areas where annual population growth is greater than the increase of food production is **mainly found within the Tropics**. [must have this point]
- Largest area where annual population growth is greater than the increase in food production is found in Africa. In northern Africa such as Mauritania, Algeria and Egypt
- In Sub-Saharan region, in countries such as Ghana, Senegal, Nigeria, Chad, Sudan, Eritrea, Ethiopia, South Sudan, Somalia, Cameroon, Congo, Democratic Republic of Congo, Angola, Zambia, Mozambique, Madagascar, Zimbabwe, Kenya
- Another area is found in Middle East region in countries such as Yemen and Iraq
- Another area is found in Central America, in countries like Nicaragua and Honduras, Haiti and Dominican Republic.
- It is also found in South America, in countries such as Peru, Ecuador, Venezuela
- Also found in South and South East Asia, in countries such as Bangladesh, Nepal, Thailand, Cambodia, Philippines and Papua New Guinea.

[Any 3 regions identified, with at least 2 countries included in each region]

(ii) Using examples, explain the health and social problems faced by people living in areas where the population growth is greater than the increase in food production. [4]

- People may be **malnourished** as their body do not get the sufficient or balanced nutrients it needs to maintain healthy tissues and organ functions. There may be greater child deaths as malnutrition is the underlying cause of diarrhoea, pneumonia, malaria and measles.
- Eg of malnutrition includes **visual impairment caused by lack of Vitamin A**, osteoporosis caused by lack of calcium and Vitamin D.

- People may suffer from **starvation**, which is the state of extreme hunger from a severe lack of food. Their body becomes skeletally thin and the organs become permanently damaged and may eventually lead to death.
- When desperate to find food, people may resort to **scavenging** in landfills or garbage dumps for food. Scavenging carries health risks because scavenged food may contain high levels of bacteria or chemicals such as heavy metals of mercury and lead. Scavenging for food also place people in dangerous or illegal situations in search of food, such as trespassing private property. Scavengers are also perceived as a nuisance to the public.
- An example of scavenging in landfills is in **Smokey Mountains, Manila, the Philippines**, where people scavenge for a living

[At least 2 examples to get max of 4m, otherwise max of 3 marks. Examples could be in the form of specific sickness suffered by people]

(b) Fig. 6 shows meat consumption of China and Europe from 1961 to 2009

Describe and account for the variation in changing consumption of meat between China and Europe from 1961 to 2009. [4]

- Europe has **higher meat consumption** than China until the late 1990s.
- China's meat consumption has been increasing from about 2 to 80 million tonnes, an **increase of about 78 million tonnes**, whereas Europe's meat consumption shows a declining trend from around 1991, when meat consumption decreases from about 61 to 50 million tonnes, a **decrease of about 9 tonnes** before increasing slightly to about 55 million tonnes in 2009.
- China's increasing meat consumption could be because of higher disposable income as a result of **rapid economic growth**. With higher income, people in China could afford to eat more meat, which is more expensive.
- Europe's declining trend of meat consumption could be due to greater awareness of **health problems** such as obesity and heart disease, which is associated with consuming red meat.

(c) Explain the social and economic factors which result in food shortage in LDCs. [5]

- In LDCs, there may be lack of transport facilities such as road and rail links to transport food to people. There may be few food outlets and people may not have easy access to food and food outlets due to lack of accessibility.
- In LDCs, there may be inadequate logistics of food distribution and storage facilities which affects food distribution. This is made worse when local production in these areas is insufficient and imports are necessary to maintain food supplies. Physical barriers such as mountains and lack of storage facilities may make it difficult for food to be distributed to some remote areas in LDCs, hence leading to food shortage in these areas.

- Rapid population growth in LDCs results in food supply being unable to meet the growing demand for food.
- Some LDCs such as Brazil, Russia, India and China have developing economies that grow at rates that allow them to contribute significantly to the global economy. The rise of their disposable income allows them to increase their demand for food such as meat and dairy products. This sustained growth in demand for food in these countries is believed to be depleting global food inventories, resulting in food shortages in poorer LDCs.
- The cost of fertilisers and transport has been rising, hence leading to increasing cost of producing food which results in food prices to increase too. Oil is needed to fuel farm machinery and transport farm produce and increase in oil prices will lead to increase cost of food production and hence food prices. This aggravates the problem of food shortage in LDCs as many may not afford the increase in food prices.
- Many companies and industries have converted their farmland to grow crops for biofuels, such as palm oil, as it is more profitable than growing food crops and there is a rising demand for such fuels. This leads to less farmland used to grow food crops and hence leading to lower food production and food shortages in LDCs.

(d) 'The use of biotechnology has been effective in overcoming food shortage.' How far do you agree? Give evidence to support your answer. [8]

I agree to the statement.

Biotechnology refers to the science of modifying living organisms such as plants and animals. It is generally known as genetic modification (GM) and GM food crops had their genetic make-up modified.

GM crops have a higher yield than non-GM crops. This helps farmers to earn a higher income and helps countries to be more self-sufficient in food production and therefore less dependent on food imports.

The use of biotechnology has enabled food to be produced in areas previously considered unsuitable for agriculture. It has also helped to stabilise crop yield as GM crops are more resistant to extreme weather conditions. An example of such plants is the drought-resistant corn which is tolerant of low rainfall conditions. It can be grown on the **Western Great Plains of the USA**, where the maximum rainfall received in the area is about 600 mm.

Hence, the use of biotechnology has been effective in overcoming food shortage, as food production has been increased.

However, I disagree to the statement as GM crops may be ineffective in overcoming food shortages as the use of biotechnology poses some difficulties.

GM crops are mostly grown in large-scale commercial farms in DCs due to the high capital investment involved to purchase inputs such as seeds. For many small farmers in LDCs, these GM seeds are unaffordable. Food production may remain low in these countries and food shortage still occurs.

Many consumers are wary of consuming GM food due to the potential health risks associated with them. As a result, the production of GM food is small as the demand for them is low.

Biotechnology is mainly used to increase the yield of the world's three leading cereal crops, namely corn, soya bean and canola. Its use is limited in other crops, including many that are important in Sub-Saharan Africa, such as cassava, sorghum and banana. This region faces problem of food shortage and hence biotechnology has been unable to resolve the problem of insufficient food.

Level 1 (0 – 3)

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Level 2 (4 – 6)

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Level 3 (7 – 8)

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