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Class:	Register No:	Name:
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CRESCENT GIRLS' SCHOOL
SECONDARY FOUR
PRELIMINARY EXAMINATION 2015

GEOGRAPHY

2236/01

Paper 1

19 Aug 2015

1 hour 40 minutes

Additional Materials: Writing Paper
Insert 1

READ THESE INSTRUCTIONS FIRST

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

Write in dark blue or black pen.

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

Do not use staples, paper clips, highlighters, glue or correction fluids.

Section A:

Answer Question 1

Section B:

Answer one question

Candidates are encouraged to support their answers with the use of relevant examples.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

Begin each question on a fresh sheet of paper.

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.

Section A
This question is compulsory.

- 1a)** A group of students visited the beaches at Montego Bay, Jamaica. They wanted to find out about the effectiveness of the coastal management and its effect on sediment accumulation along the beach. They identified two locations, A and B (refer to Insert) to conduct their fieldwork. Site A experienced protection by coral reefs while Site B experienced protection by means of breakwaters.
- (i)** State a suitable hypothesis that the students would use for their geographical investigation. [2]
- (ii)** State the precautions the students should take note of before proceeding with their fieldwork at the respective coasts. [2]
- (b)** The students decided that they would measure the type of waves along both coasts as well as carry out a beach profile to see if the beach with greater sediment accumulation also had a gentler beach gradient. The beach profile along the transect at each of the two locations is shown in Table 1.

Site	No of waves per minute					Average number of waves per minute.
	1st	2nd	3rd	4th	5th	
A	15	18	18	20	19	18
B	5	6	11	9	7	7.6

Table 1

Beach gradient (Distance from low tide)	Transect at A (Doctors Cave)	Transect at B (Walter Fletcher Beach)
2	4	3
4	8	4
6	11	3
8	14	4
10	13	5
Average angle of slope in degrees (°)	10	3.8

Table 2

- (i)** Explain how the students would be able to measure the information in Table 1 and 2. [5]
- (ii)** Discuss how the students would have ensured the reliability of their data and one possible improvement to this investigation. [3]

- (c) The students also devised a questionnaire to evaluate the effectiveness of the coastal management strategies at Site A and B. They asked visitors at both locations to select a score in the range for each statement. They received 50 completed questionnaires at each location. Results are tabulated below in Tables 3 and 4.

Site A

Positive statements	+3	+2	+1	0	-1	-2	-3	Negative statements
The defences look attractive.	2	23	10	7	8	0	0	The defences look ugly.
The defences pose no safety risk to visitors.	10	23	16	0	1	0	0	The defences pose a safety risk to visitors.
The defences are not harmful to the environment.	21	17	7	5	0	0	0	The defences are harmful to the environment.
The defences are long-lasting.	10	8	15	12	2	3	0	The defences can last a short time.
The defences are easy to maintain.	20	12	5	6	4	3	0	The defences are costly to maintain.

Table 3

Site B

Positive statements	+3	+2	+1	0	-1	-2	-3	Negative statements
The defences look attractive.	1	21	11	9	5	3	0	The defences look ugly.
The defences pose no safety risk to visitors.	3	17	8	7	8	1	1	The defences pose a safety risk to visitors.
The defences are not harmful to the environment.	0	3	8	18	10	10	0	The defences are harmful to the environment.
The defences are long-lasting.	0	3	5	32	7	3	0	The defences can last a short time.
The defences are easy to maintain.	1	5	7	30	5	2	0	The defences are costly to maintain.

Table 4

- (i) Discuss if the visitors would have had difficulty using this survey. [4]
- (ii) Suggest how the information in Table 3 and Table 4 may be presented in order to compare which coastal defence at Site A or B is more effective. [3]
- (iii) Based on the data provided in Table 1 – Table 4, what conclusion can the students make about their hypothesis? [1]
- (d) Another group of students wanted to investigate the origin of tourists who visit Montego Bay, Jamaica.
- (i) While looking at the map (Insert Fig. 2) a student thought that interviewing tourists at the Information Centre near Montego Beach was appropriate while another suggested Sam Sharpe Square (South of Canterbury) was better. The group eventually decided to interview tourists at the airport. Account for their final decision. [3]
- (ii) What sampling method should the students use for their investigation? Why? [2]

Section B
Answer one question from this section.

- 2a)** Study Fig. 3 which shows a coastline in United Kingdom.



Fig. 3

- (i) With the help of well-labelled diagrams, account for the formation of the landform seen in Fig. 3. [5]
- (ii) Explain why an inundated coastline is likely to straighten over time. [4]

(b) Fig. 4 below shows the tourist arrivals in Jamaica.

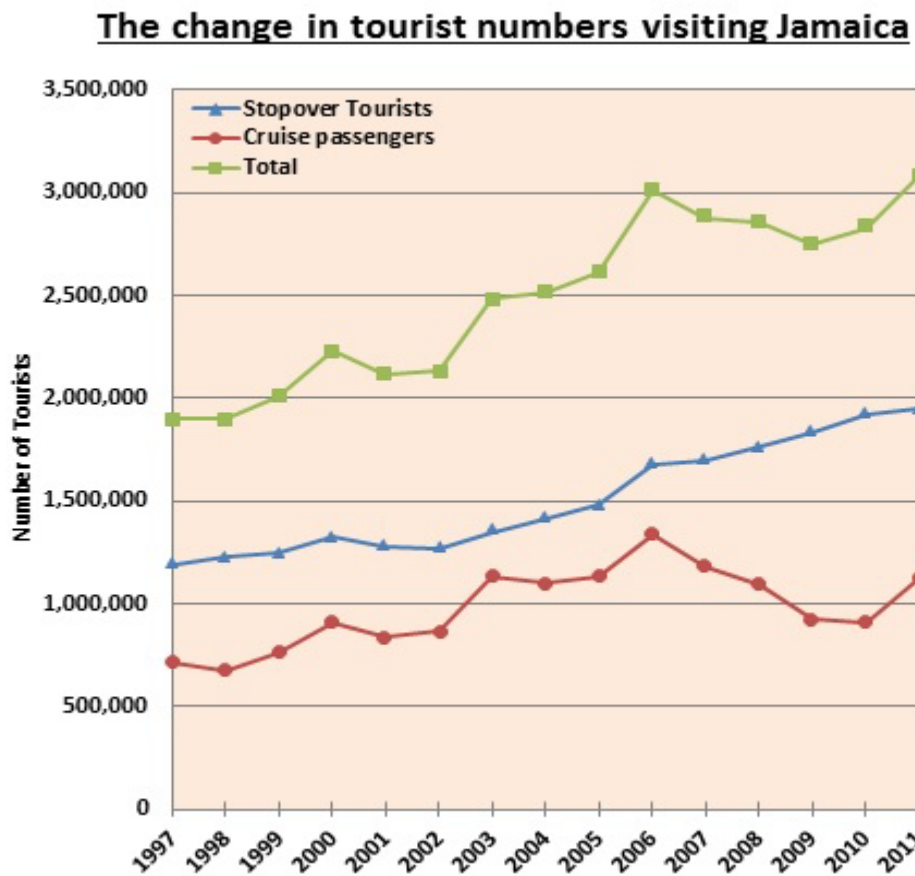


Fig. 4

With reference to Fig. 2 (Insert) and Fig. 4,

(i) Describe the trends of visitor arrivals to Jamaica [3]

(ii) Account for why Montego Bay, Jamaica may be an attractive holiday destination. [5]

(c) “Sustainable tourism means working together to create a better future for all.”

With reference to examples, discuss the responsibilities of different groups in conserving and protecting tourist areas. [8]

3a) Study Fig. 5 which is a map of a coastal area.

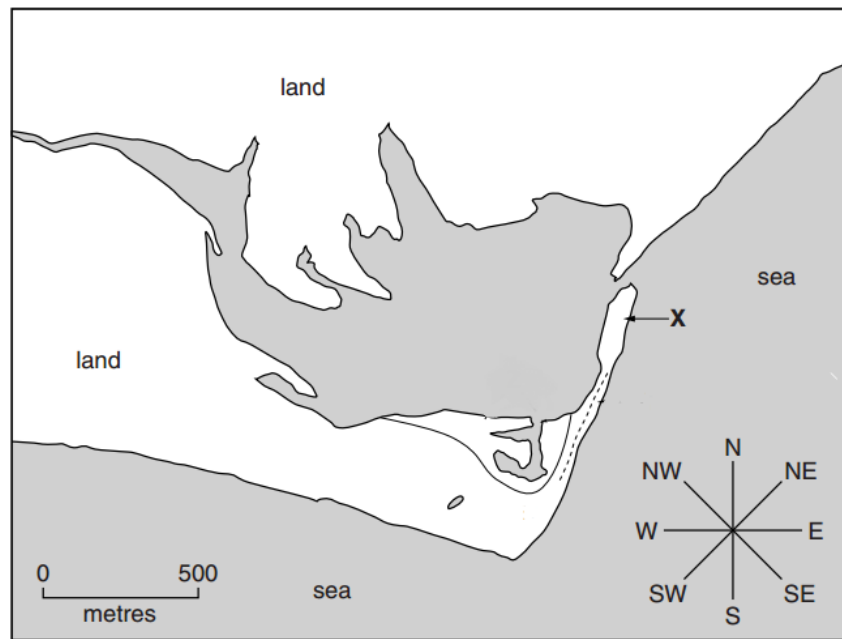


Fig. 5

- (i) Identify the feature labelled **X**, and use an annotated diagram to account for the formation of the landform **X**. [6]
- (ii) Describe what may eventually happen to **X** over time. [2]

- (b) Study Fig. 6 which charts the value of coral reefs.

Value of coral reef

Year-on-year value by region (\$m)

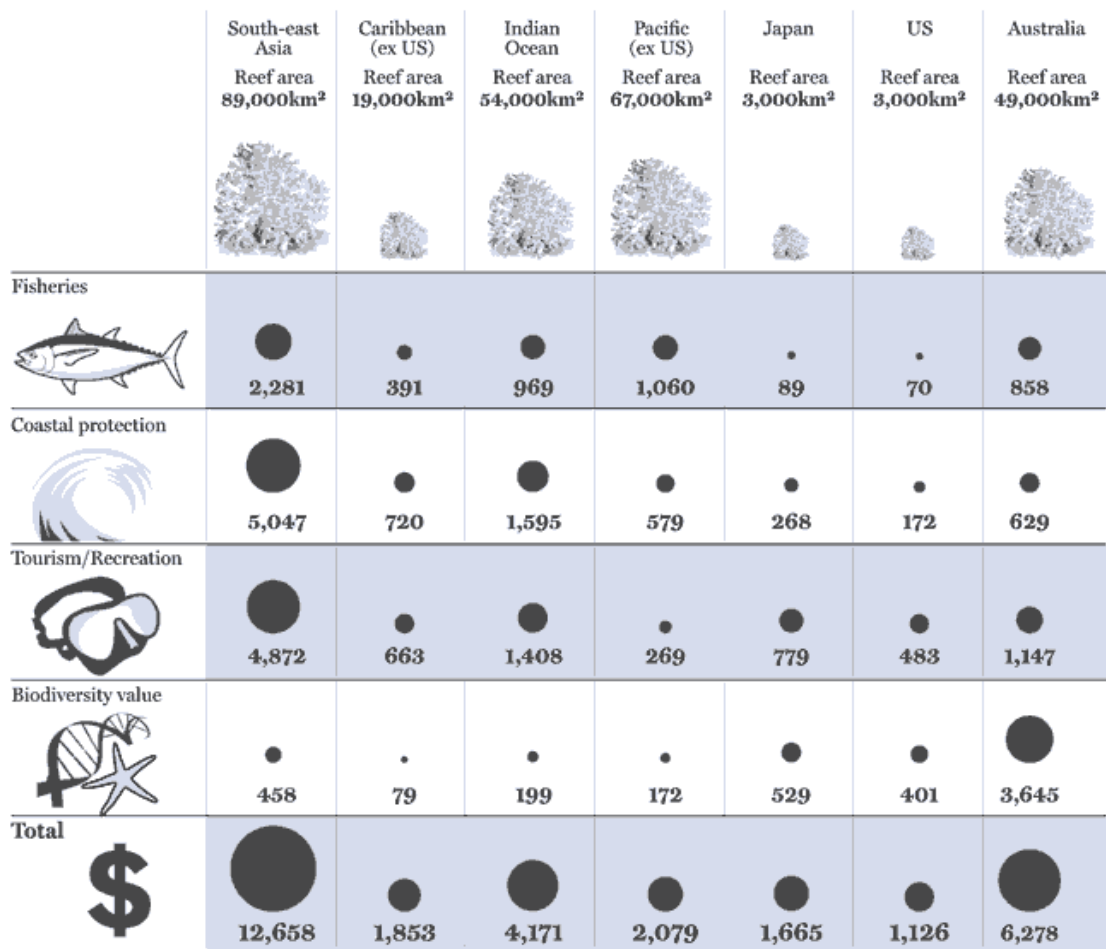


Fig. 6

- (i) With reference to Fig. 6, describe the value of coral reefs. [4]

- (ii) With reference to studies you have made, discuss the challenges faced by coral reefs around the world. [5]

- (c) "The greatest threat to our coasts is ourselves."

To what extent do you agree with this statement? Give reasons to support your answer. [8]

END OF PAPER

Copyright Acknowledgments:

Question 2	Fig. 3	http://www.pembrokeshirecoast.org.uk/apps/discover/places/green_bridge.jpg
	Fig. 4	http://www.jtbonline.org/statistics
Question 3	Fig. 5	http://www.cie.org.uk/
	Fig. 6	http://www.ft.com/intl/cms/s/2/e2cc2f46-8a33-11df-bd30-00144feab49a.html

Class:	Register No:	Name:
 GEOGRAPHY Paper 1 INSERT 1 CRESCENT GIRLS' SCHOOL SECONDARY FOUR PRELIMINARY EXAM 2236/01 1 hour 40 minutes 19 Aug 2015		

READ THESE INSTRUCTIONS FIRST

The insert contains Figs. 1 and 2 for Question 1 and 2.

Fig. 1 for Question 1

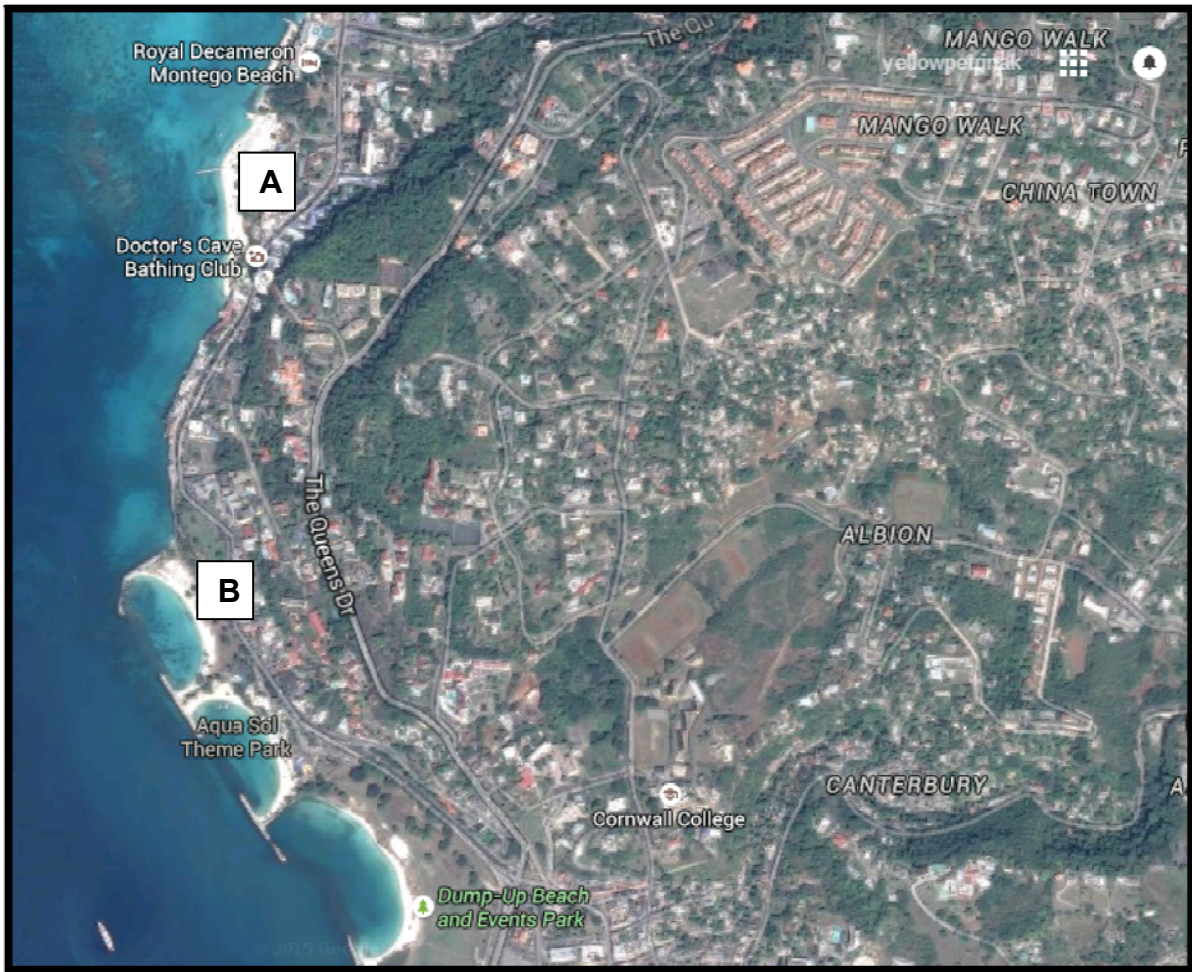
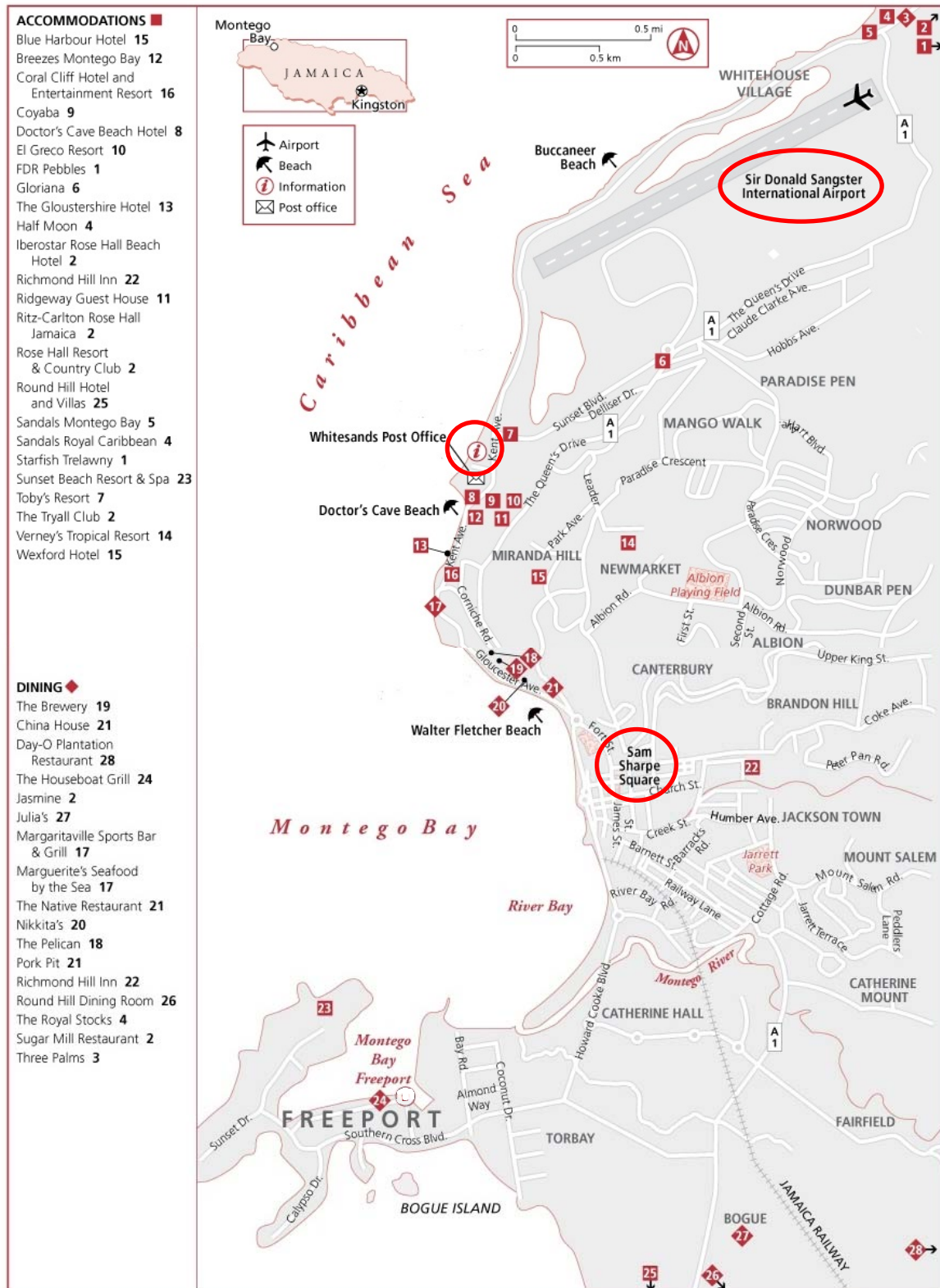


Fig. 2 for Question 1 and 2



Copyright Acknowledgments:

Question 1 Fig. 1
Fig. 2

<http://www.google.com.sg>
<http://www.frommers.com>

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Section A
This question is compulsory.

- 1a)** A group of students visited the beaches at Montego Bay, Jamaica. They wanted to find out about the effectiveness of the coastal management and its effect on sediment accumulation along the beach. They identified two locations, A and B (refer to Insert) to conduct their fieldwork. Site A experienced protection by coral reefs while Site B experienced protection by means of breakwaters.
- (i)** State a suitable hypothesis that the students would use for their geographical investigation. [2]

Independent variable: coastal protection strategy
Dependent variable: sediment accumulation

Soft Engineering coastal protects (like Corals) will accumulate more sediment along the beach.

[Accept plausible answers as long as independent and dependent variables are correct, specific relationship is mentioned (i.e impact on sediment accumulation) No marks if comparison between 2 different coastal management strategies]

- (ii)** State the precautions the students should take note of before proceeding with their fieldwork at the respective coasts. [2]

Before GI:

- consult weather forecast to ascertain weather conditions (too hot/too cold/too wet for fieldwork)/avoid working in wet weather or stormy conditions
- carry out a reconnaissance/recce to determine if the sites selected on the base map are really suitable for carrying out survey fieldwork
- check tide times
- Consolidate emergency contact numbers before GI.

[Accept other plausible answers]

Award 1m for any 2 relevant points.

- (b) The students decided that they would measure the type of waves along both coasts as well as carry out a beach profile to see if the beach with greater sediment accumulation also had a gentler beach gradient. The beach profile along the transect at each of the two locations are shown in Table 1.

Site	No of waves per minute					Average number of waves per minute.
	1st	2nd	3rd	4th	5th	
A	15	18	18	20	19	18
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Table 1

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4	8	4
6	11	3
8	14	4
10	13	5
Average angle of slope in degrees (°)	10	3.8

Table 2

- (i) Explain how the students would be able to measure the information in Table 1 and 2. [5]

Wave frequency

- Student to stand along the coast and observe how many waves break at a point along the coast
- Within a minute
- A low wave frequency (e.g. 6-8 waves per minute) usually indicates constructive waves, whereas a higher wave frequency (e.g. 12-14 waves per minute) usually indicates destructive waves.

Beach Profile

- Students identify a line of transect and use a use a tape measure to mark out points of equal intervals of 2 metres along the line of transect.
- Next, they placed a ranging pole at two ends of the 2m markers and ensured that the ranging poles are held straight and did not sink into the ground.
- They also established eye level height on each ranging pole and marked it with a piece of visible tape.
- Position and hold the clinometer steady at arm's length on the ranging pole and sight the visible marker.
- Note the angle of deviation from the horizontal/where the string crosses the scale on the curved edge of the protractor clinometer. This is the angle of elevation between your eye and the object you are sighting.
- Ensure that the angle is taken from a point on the ranging pole that coincides with the eye level of the person using the clinometer.
- Read the angle and record it on the recording sheet.

*Answers should focus on the conduct of the investigation and not so much the calculation of the results

- (ii) Discuss how the students would have ensured the reliability of their data and one possible improvement to this investigation. [3]

- Use of instruments e.g. not letting the pole sink into the sand, read clinometer accurately without parallax error
- Methodology e.g. ensuring correct marking on ranging poles are used
- Timing of data collection e.g. taking measurements at both shores at the same time (may be accepted as an improvement since it was not stated previously).
- Frequency: repeat experiment over a longer period of time (* more times a day because of tide times)

2m for information on reliability, 1m for improvement.

- (c) The students also devised a questionnaire to evaluate the effectiveness of the coastal management strategies at Site A and B. They asked visitors at both locations to select a score in the range for each statement. They received 50 completed questionnaires at each location. Results are tabulated below in Table 3 and 4.

Site A

Positive statements	+3	+2	+1	0	-1	-2	-3	Negative statements
The defences look attractive.	2	23	10	7	8	0	0	The defences look ugly.
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The defences are long-lasting.	10	8	15	12	2	3	0	The defences can last a short time.
The defences are easy to maintain.	20	12	5	6	4	3	0	The defences are costly to maintain.

Table 3

Site B

Positive statements	+3	+2	+1	0	-1	-2	-3	Negative statements
The defences look attractive.	1	21	11	9	5	3	0	The defences look ugly.
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The defences are long-lasting.	0	3	5	32	7	3	0	The defences can last a short time.
The defences are easy to maintain.	1	5	7	30	5	2	0	The defences are costly to maintain.

Table 4

- (i) Discuss if the visitors would have had difficulty using this survey. [4]

No

Positive and negative statements
Range of answers provided

Yes

May not understand the statements because of lack of knowledge e.g. coastal

management strategies harmful, maintenance

Short term visitors will not know how long-lasting strategy has been or if it has been.

Confused by last statement (ie. Easy vs. costly)

Subjective statements (ugly vs. attractive)

[Accept other plausible answers]

- (ii) Suggest how the information in Table 3 and Table 4 may be presented in order to compare which coastal defence at Site A or B is more effective. [3]

Use of comparative bar graph with net value so as to compare data at 2 different sites.

The site with the greatest length of bars on the positive side would be more effective.

Do not accept line graphs since the information is discrete data.

Do not accept segmented bar graphs as there is no need to represent values separately.

- (iii) Based on the data provided in Table 1 – Table 4, what conclusion can the students make about their hypothesis? [1]

- Site A experiences more destructive waves than Site B
- Slope at Site A is steeper, suggesting more erosion than deposition
- BUT Coastal Management strategy at Site A seems more positive than at Site B
- Therefore hypothesis is not valid

- (d) Another group of students wanted to investigate the origin of tourists who visit Montego Bay, Jamaica.

- (i) While looking at the map (Insert Fig. 2) a student thought that interviewing tourists at the Information Centre near Montego Beach was appropriate yet another suggested Sam Sharpe Square (South of Canterbury) was better. The group eventually decided to interview tourists at the airport. Account for their final decision. [3]

Reasons for choosing airport

- Main Entry points for international tourists
- Higher probability of choosing respondents on holiday
- Large sample size available (*no double counting for number of people)

Reasons for not choosing other sites

- Not all tourists will need to visit information counter since they may have done their research prior to visiting Montego Bay.
- Tourists may not visit the square as it is not near the hotels or dining areas

- (ii) What sampling method should the students use for their investigation? Why? [2]

- Systematic sampling method
- A sampling method in which you determine randomly where you want to start selecting in the sampling frame and then follow a rule to select every x^{th} element the sampling frame list

- **Advantages:** Systematic random sampling is fairly easy and may also be more precise than simple random sampling. Reduces bias compared to random sampling

Section B
Answer one question from this section.

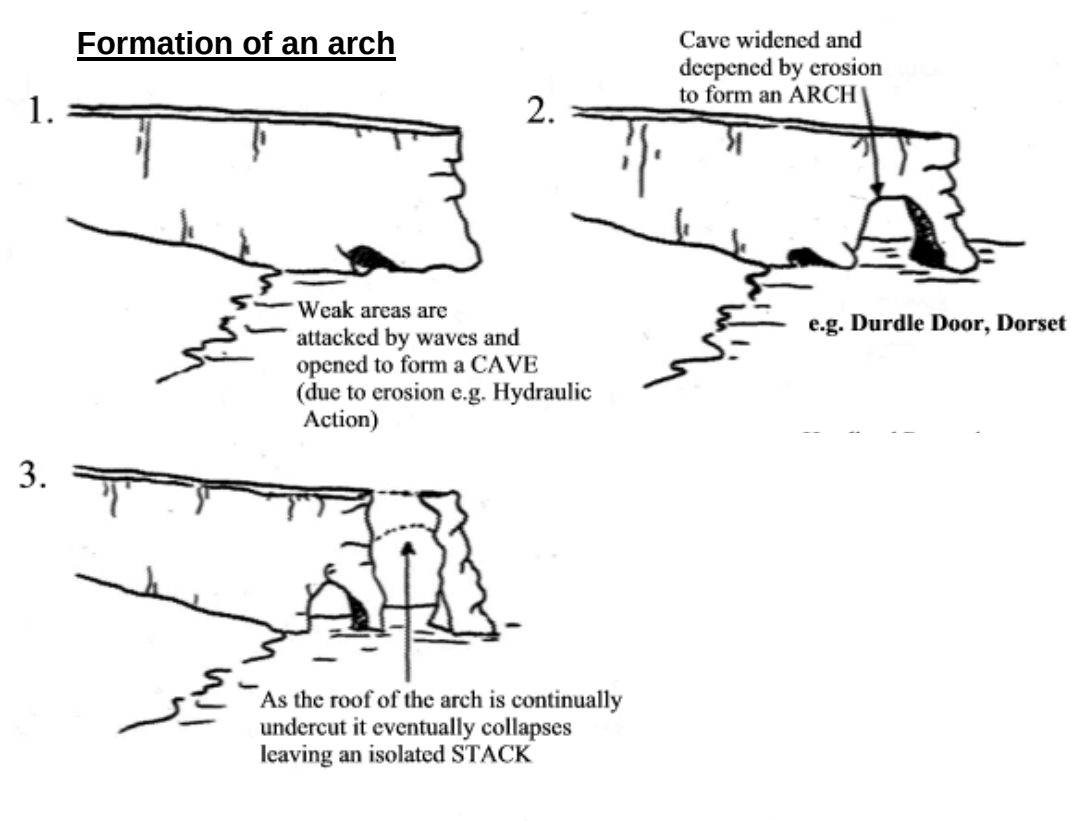
- 2a) Study Fig. 3 which shows a coastline in United Kingdom.



Fig. 3

- (i) With the help of well-labelled diagrams, account for the formation of the landform seen in Fig. 3.

[5]



Formation:

- There is **increased wave erosion at cliffed headlands** due to wave refraction. This results in **more rapid erosion of the less resistant rocks**, especially through hydraulic action, abrasion and solution.
- Waves attack **lines of weaknesses at the base of the headland** and undercut it. Continuous wave action **hollows out a sea cave**.
- The **cave may enlarge till it finally cuts through the headland** OR **caves may develop on each side of the headland and erosion eventually join caves together**. This forms a bridge of rock called an **arch above the opening** in the headland.
- **Over time**, roof of the arch may collapse due to active undercutting, **leaving behind a pillar of rock in the sea known as a stack**.

(ii) Explain why an inundated coastline is likely to straighten over time. [4]

- Waves approach an **indented (uneven/discordant) coast** with headlands and bays in a parallel manner but
- **Wave refraction** occurs and affects the rate of erosion along the coast and the sea.
- Waves **converge on headlands** and **diverge on bays**
- When waves **converge** → **increased** wave height and **greater** erosive energy → concentration of wave energy → headlands undergoes **more erosion → retreat of the headlands inland**
- When waves **diverge** → **decreased** wave height and **lower** erosive energy → diffusion of energy → **deposition at bay area, extending the bay**
- **Uneven impact on shoreline** → **uneven coastline becomes straightened**

(b) Fig. 4 below shows the tourist arrivals in Jamaica.

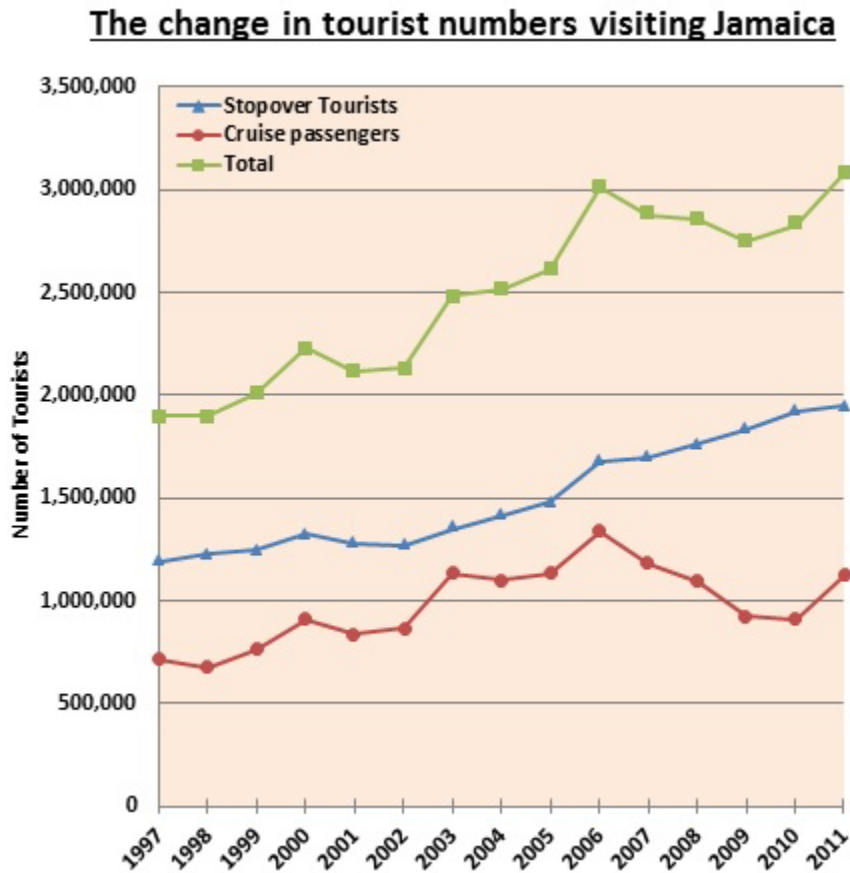


Fig. 4

(i) With reference to Fig. 2 (Insert) and Fig. 4, Describe the trends of visitor arrivals to Jamaica [3]

- Increase in total arrivals from 1.9m to 3.1m visitors between 1997 to 2011.
- More arrivals by stop over tourists than cruise passengers between 1997 to 2011.
- Greatest increase between 2005 and 2006
- Total tourists mostly follow the trend of cruise arrivals

(ii) Account for why Montego Bay, Jamaica may be an attractive holiday destination. [5]

- Convenience – stop over holidays before visiting other Caribbean Islands.
- Services – stop over for cruise ship to refuel and restock but for tourists to visit as well.
- Attractions – Natural attractions e.g. many beaches; Cultural attractions e.g many dining options near the beach
- Accommodation – variety of accommodation available for the different budgets of tourists.
- Accessibility – International airport allows for visitors to visit the island easily from various parts of the world

- (c) “Sustainable tourism means working together to create a better future for all.”

With reference to examples, discuss the responsibilities of different groups in conserving and protecting tourist areas.

[8]

Candidates may include;

Local communities

- play a key role in conserving and protecting tourist areas
- Community based tourism may be carried out in partnership with the government → locals have a say in decision-making and tourism project management
- Eg. Villagers in Candirejo, Central Java, Indonesia set up a cooperative in 2003 to manage and implement the community's tourism-related programmes, such as homestay accommodations, organic farms and training of villagers to work in the tourism industry. This has led to job creation and increase in average income.

Planning authorities

- Determine how many visitors a site can cope with and allocate space for infrastructure like hotels and roads
- Enforce rules, regulations, encourage values and promote guiding principles for sustainable tourism for the tourism industry and local community
- Foster collaboration with other stakeholders like locals, tour operators
- Eg. Singapore Tourism Board has implemented programme to conserve the ethnic districts of Chinatown, Kampung Glam and Little India. This has enabled both locals and visitors to better appreciate Singapore's rich heritage and *continue to make it attractive for tourists.*

- 3a) Study Fig. 5 which is a map of a coastal area.

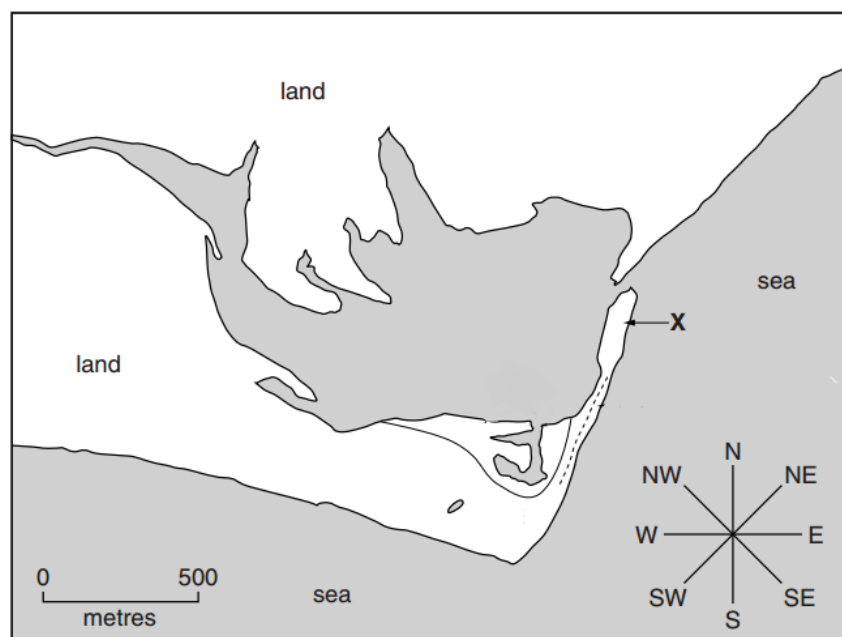
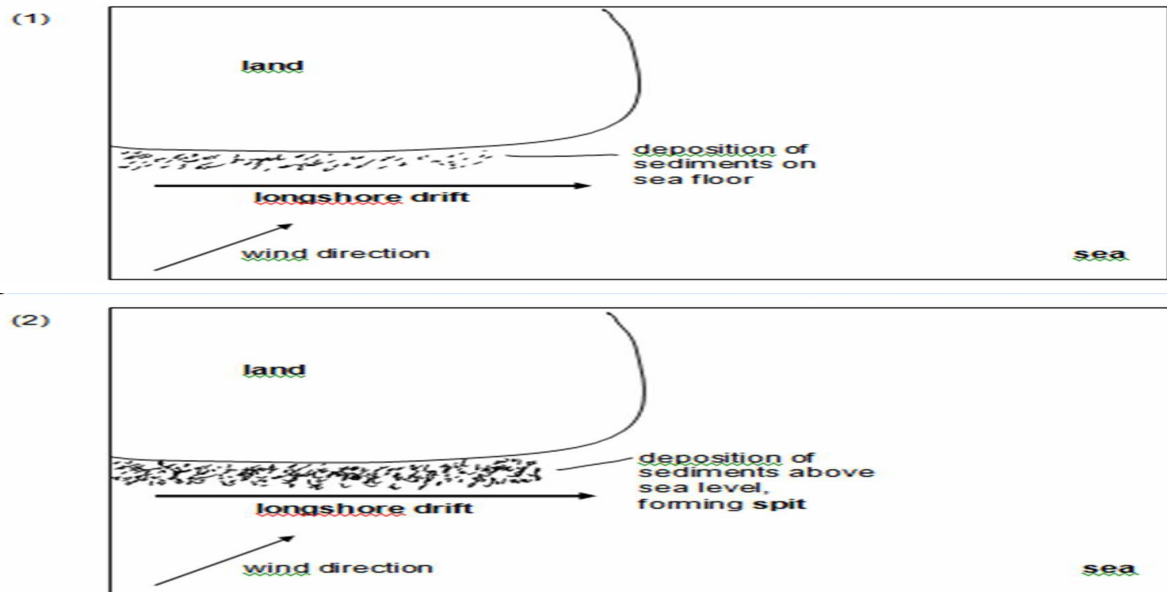


Fig. 5

- (i) Identify the feature labelled X, and use an annotated diagram to account for the formation of the landform X. [6]

Spit – 1m, title & labels [max 2m]



- (ii) Describe what may eventually happen to X over time. [2]

X will form a Tombolo

- The **longshore drift** will **continue to transport materials in the original direction for some distance**. the **extension of coastal land called a spit** will extend seaward, connecting to the nearby offshore island to the mainland. This forms a tombolo

- (b) Study Fig. 6 which charts the value of coral reefs.

Value of coral reef

Year-on-year value by region (\$m)

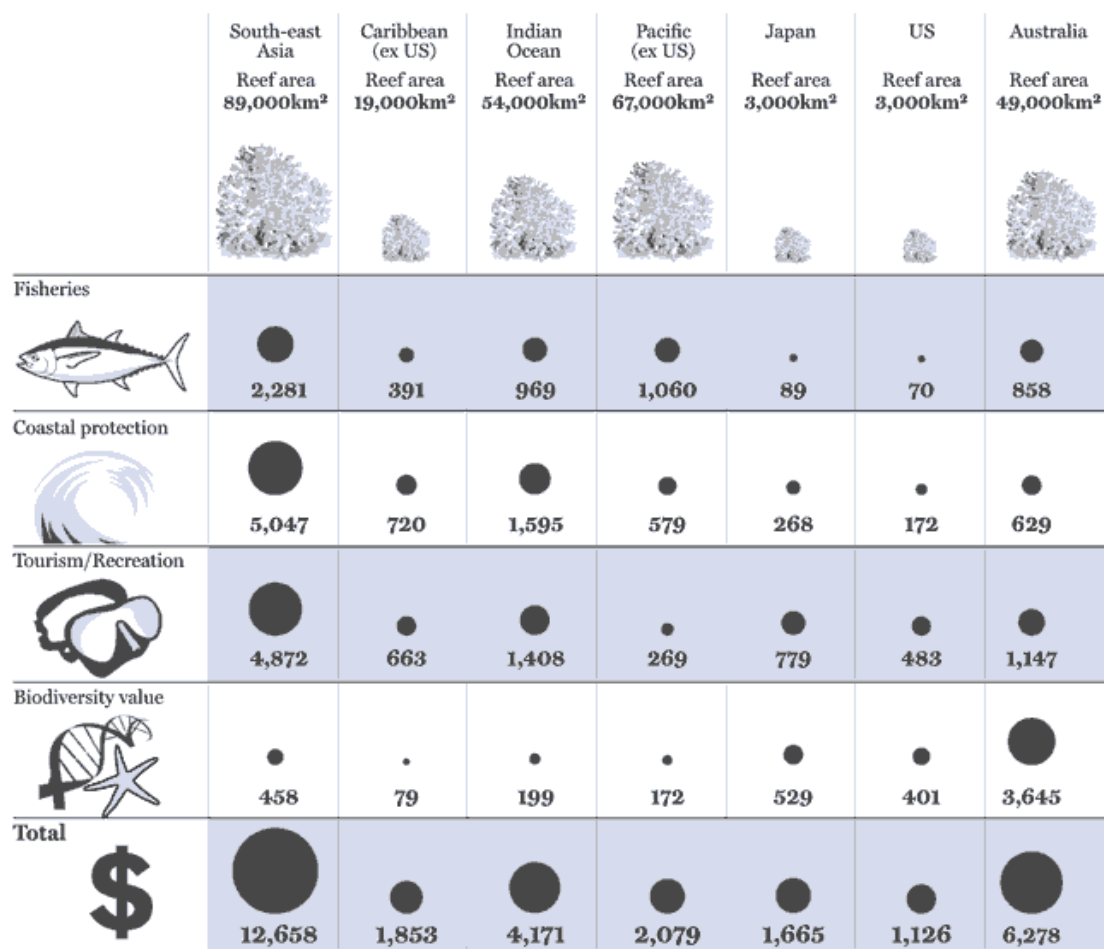


Fig. 6

(i) With reference to Fig. 6, describe the value of coral reefs. [4]

- SEA Reef area has the highest value of \$12,658m
- Whereas US Reef area is the smallest value of \$1126m.
- SEA reef's main value is found in its coastal protection followed by tourism and fisheries.
- Australia's reef has its greatest value in its biodiversity \$3645m
- Reefs have the greatest Tourism/ Recreation value of \$9621m compared to Biodiversity value of \$5483m.

(ii) With reference to studies you have made, discuss the challenges faced by coral reefs around the world. [5]

Threat	Explanation
Overexploitation	Overfishing in reefs and surrounding waters Spearfishing
Coastal Development	Reclamation & extension of land areas by dumping rock and sand into reefs More coastal resorts, urban housing may have more waste deposited into the sea

Inland pollution	Excess use of fertilisers, chemicals; oils and heavy metals from untreated industrial wastes, sewage from urban areas.
Marine-based pollution	Tourism activities like building of facilities, anchoring of boats

(c) “The greatest threat to our coasts is ourselves.”

To what extent do you agree with this statement? Give reasons to support your answer.

[8]

Candidates may include:

Natural threats to the coasts

Climate change

- ➔ Rising sea levels which could submerge low-lying coasts, sandy beaches and deltas and river estuaries
- ➔ Coastal ecosystems may not be able to adapt to the change
- ➔ But warmer temperatures may encourage mangrove survival and growth in new areas although reduced rainfall and rising salinity levels of the sea could also mitigate the positive effects

Eroding shore lines

- ➔ Increased, more severe storms because of climate change could rapidly erode beaches and alter shorelines.
- ➔ Higher temperatures will warm oceans and devastate coral reefs (acidification) which protect the coasts

Man made threats

Increasing population & rising demand for coastal resources

- ➔ With more than 3 billion of the earth's population living within 100 km of the coasts, puts greater pressure on land and water resources
- ➔ More demand for new ports, housing which will exploit coastal resources for food and building materials

Coastal Development

- ➔ Habitat loss will result from expansion of human activities along the coast
- ➔ E.g. mangroves and coral reef ecosystems may be threatened by the wide spread and rapid conversion into aquaculture activities

Pollution

- ➔ Waste disposal into the sea can destroy the coast and endanger marine life.
- ➔ E.g. Great Pacific Garbage Patch is a mass of mostly plastic garbage accumulating in the Pacific Ocean. As plastic does not breakdown, it stays in the sea for a long time.

Class:	Register No:	Name:
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CRESCENT GIRLS' SCHOOL
SECONDARY FOUR
PRELIMINARY EXAMINATION 2015

GEOGRAPHY

2236/02

Paper 2

27 August 2015

1 hour 30 minutes

Additional Materials: Writing Paper

READ THESE INSTRUCTIONS FIRST

Write your name, index number and class in the spaces provided at the top of this page and on all separate sheets of paper used.

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

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

Do not use staples, paper clips, highlighters, glue or correction fluid.

Section A

Answer **one** question.

Section B

Answer **one** question.

Write all answers on the writing paper.

Start each question on a fresh sheet of paper.

Candidates should support their 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 **9** printed pages, including this cover page, and **1** blank page.

[Turn over]

Section A

Answer ONE question.

- 1a)** Study Fig. 1 which shows the movement of the Indian subcontinent through time.

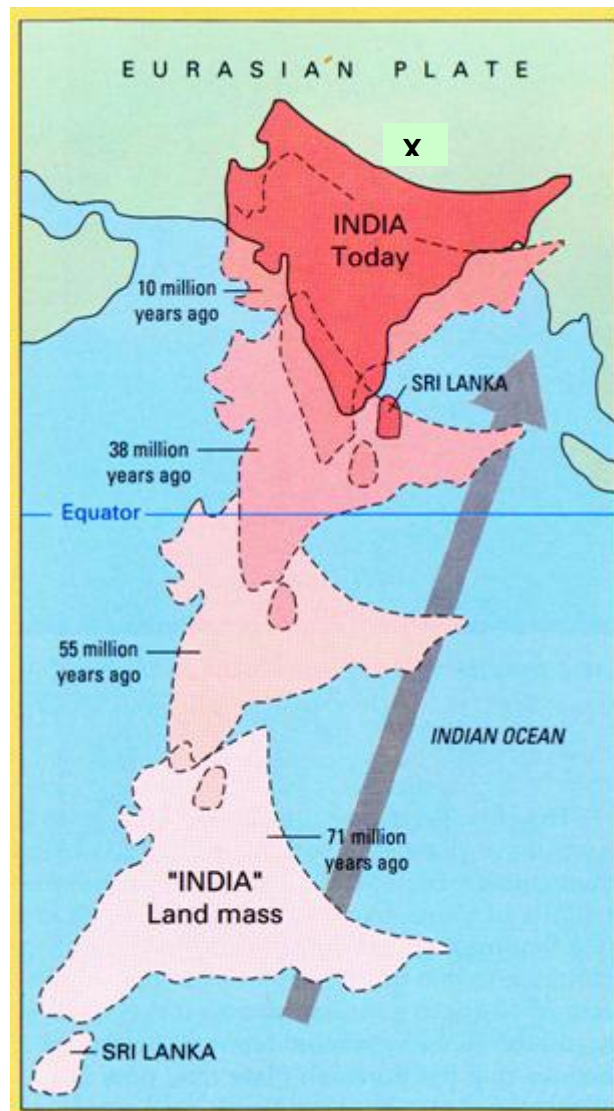


Fig. 1

- (i) Account for the movement of the Indian subcontinent. [3]
- (ii) With the help of well-labelled diagrams, identify and account for the formation of the likely tectonic landform found at X. [5]

- 1b)** Study Fig. 2 which shows the impact of the 2010 earthquakes in Haiti and Chile,

both less developed countries.

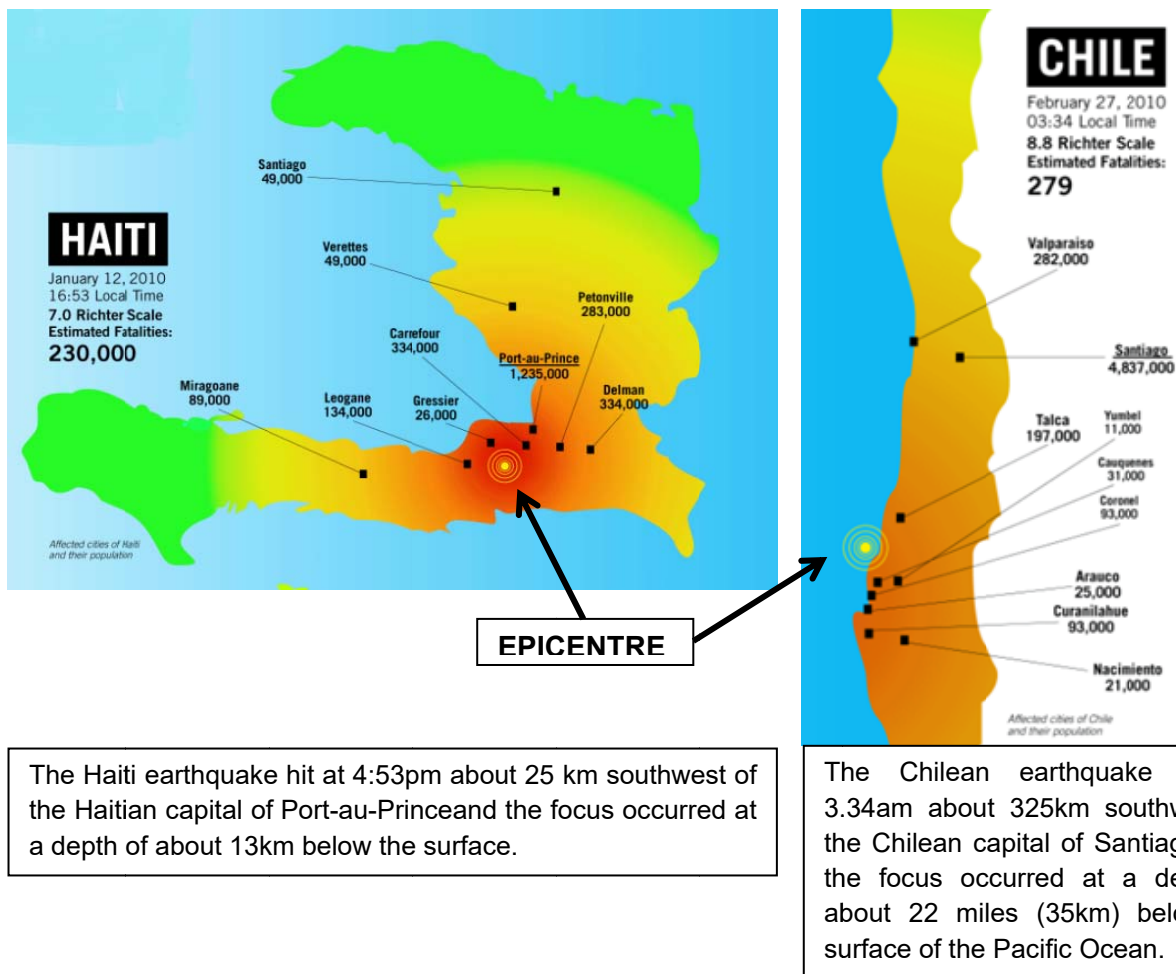
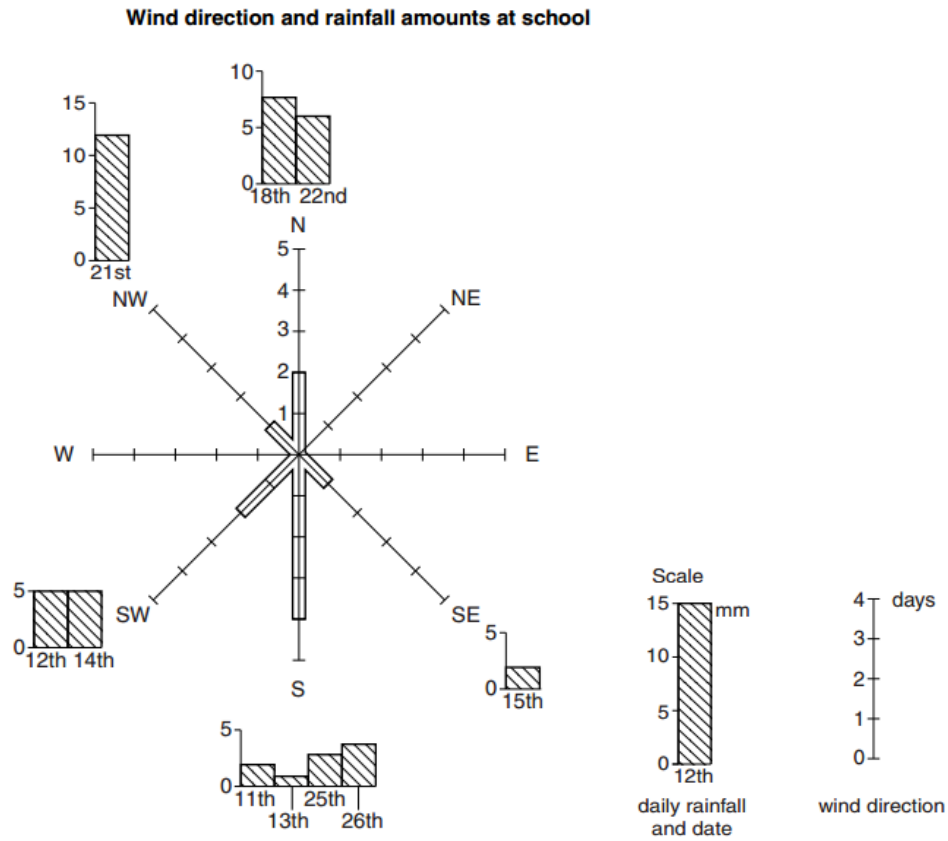


Fig. 2

- (i) Chile experienced an 8.8 on the Richter scale while Haiti registered 7 on the Richter scale, yet the loss of life and damage in Haiti was far more severe. With reference to Fig. 2 and your studies, discuss the possible reasons for this difference. [5]
- (ii) Discuss long-term challenges that the government of Haiti will need to consider when re-building the country. [4]
- (c) “Earthquakes do not kill people. Collapsed buildings do.”
 - Ms Jo da Silva, head of Arup International Development, a not-for-profit design and engineering body that works in partnership with UNOPS.

With reference to your studies, to what extent do you agree with this statement? [8]

2a) Study Fig. 3 which shows some weather information collected at a school.



(i) Calculate the total amount of rainfall collected at the school and explain how the students would have collected the rainfall. [5]

(ii) The students noted that they collected most of the rainfall in the afternoons. With the help of a well-labelled diagram only, explain why this might be so. [4]

- b) Study Fig. 4 which shows the frequency of extreme weather events.

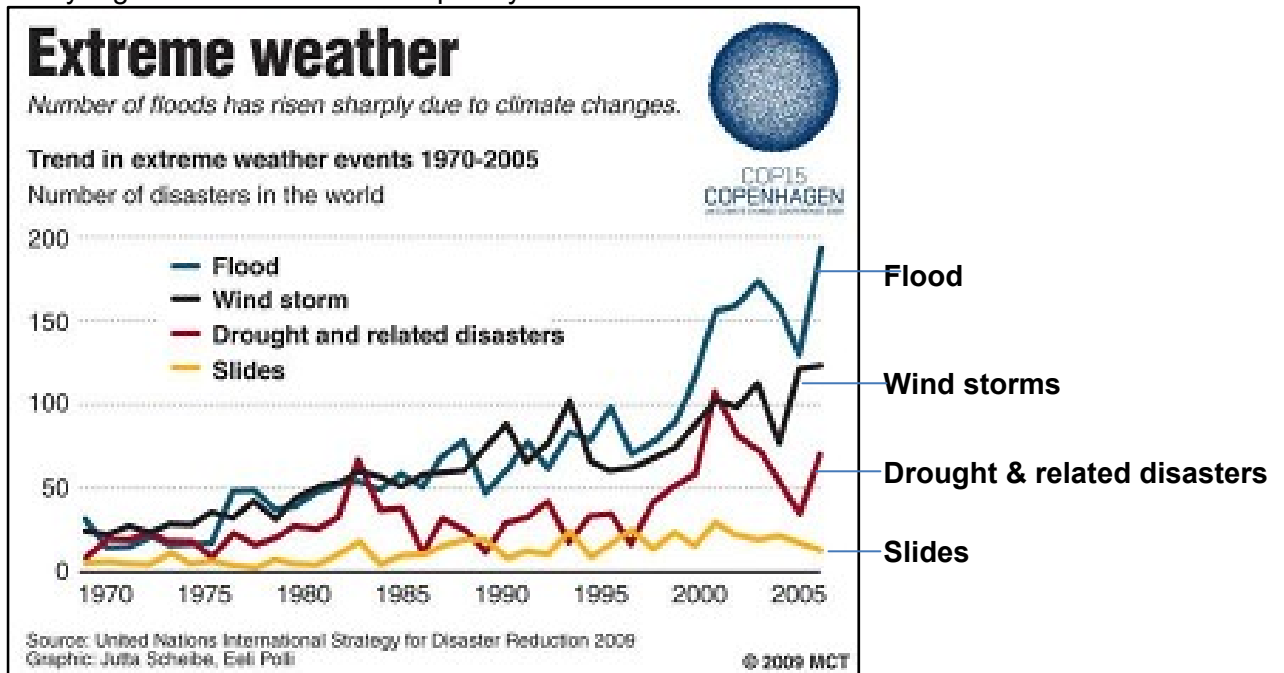


Fig. 4

- (i) With reference to Fig. 4 and your studies, discuss the impact of climate change. [4]
- (ii) Explain how International Agreements, like the Copenhagen Accord, are expected to address climate change. [4]
- (c) “The Government is key in reducing the impact of any potential climatic hazard.”
 With reference to your studies, to what extent do you agree with this statement? [8]

Section B

Answer ONE question.

3a) Study Fig. 5 which shows information about malnutrition around the world.

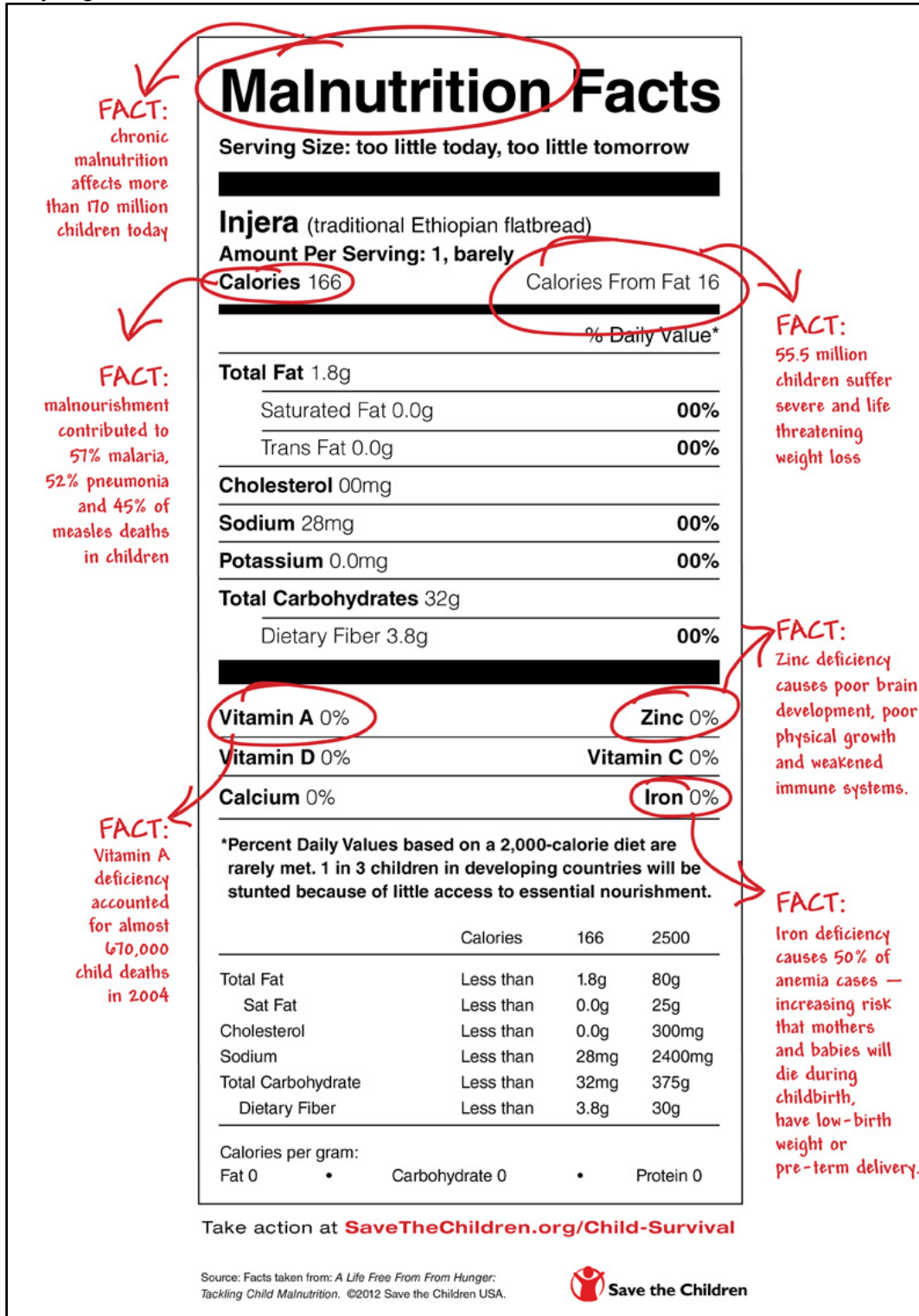


Fig. 5

With reference to Fig. 5 and your studies,

(i) Discuss the effects of malnutrition. [5]

(ii) Account for the problem of malnutrition [4]

(b) Study Fig. 6 which gives information about Malaria.

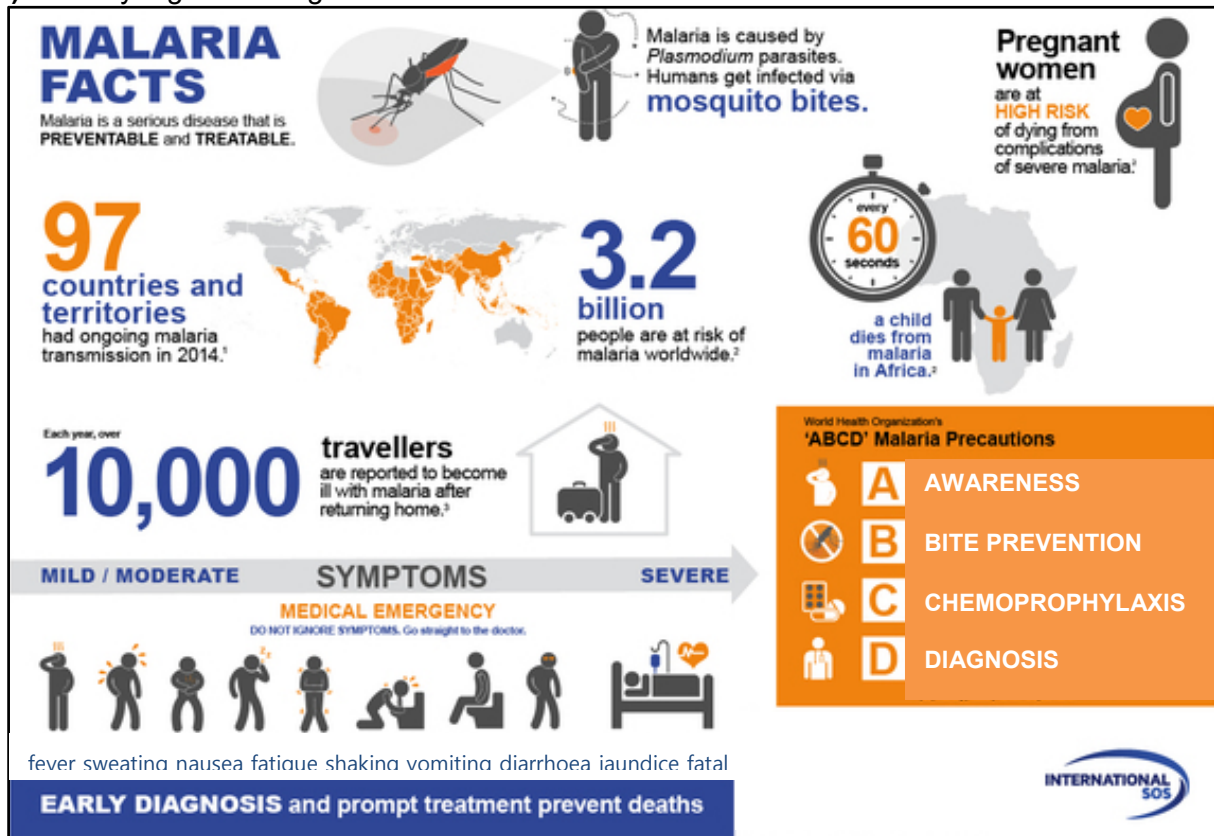


Fig. 6

With reference to Fig. 6 and your studies,

(i) Explain how the spread of malaria can be managed by individuals and the communities. [4]

(ii) Discuss socio-demographic impact on a country with malaria. [4]

(c) "The government plays the key role in reducing the spread of HIV/AIDS in a country."

To what extent do you agree with this statement? Give reasons to support your answer. [8]

4a) Study Fig. 7 which gives information about the undernourished in the world.

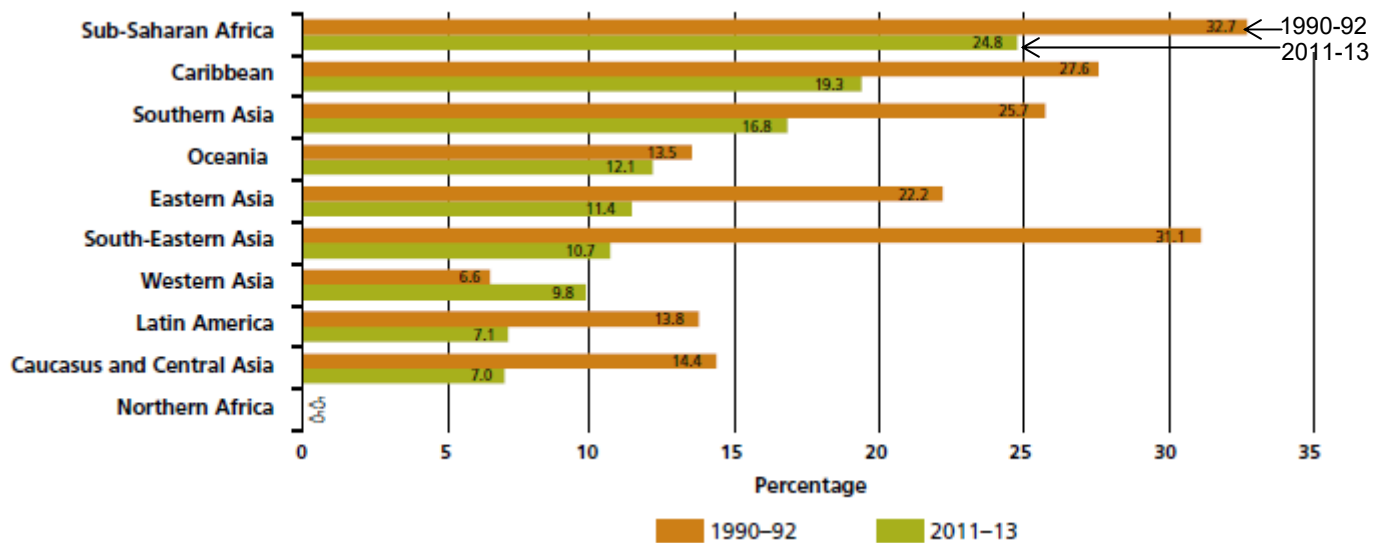


Fig. 7

With reference to Fig. 7 and your studies,

- (i) Describe the changes in the percentage of undernourished in the world. [3]
 - (ii) Explain why there are still undernourished people in the world. [5]
- (b) Study Fig. 8 which shows information about Agriculture in Kenya.

Agriculture is vital to the economy of Kenya. Farming is mostly carried out on small farms where no more than 2 hectares is cultivated. These small farms account for 75% of total production and much of this is subsistence production. The main cash crops are tea, vegetables and coffee. Production of tea and vegetables is increasing and these crops are important exports. Export of high-value vegetables, flowers and house plants often takes place by air to European markets. Coffee has declined in importance. Crop outputs vary unpredictably, partly due to weather conditions. As some arable land is used for export crops, Kenya needs to import food to feed the population. For example, large quantities of wheat and maize are often imported. Environmental issues facing the country include deforestation, soil erosion, desertification and pollution from increased use of fertilisers and pesticides.

Fig. 8

- (i) With reference to Fig. 8, explain why Kenya continues to face low food productivity in the country. [5]
- (ii) Discuss recommendations for Kenya to adopt in order to increase food production. [4]
- (c) "Technology is the necessary evil in increasing food production."

To what extent do you agree with this statement? Give reasons to support your answer.

[8]

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Copyright Acknowledgements

Question 1	Fig. 1	http://web.ics.purdue.edu/
	Fig. 2	http://magazine.good.is/infographics/transparency-the-difference-between-the-chile-and-haiti-earthquakes
Question 2	Fig. 3	http://www.cie.org.uk/images/157064-november-2012-question-paper-43.pdf
	Fig. 4	United Nations International Strategy for Disaster Reduction 2009
Question 3	Fig. 5	http://www.savethechildren.org/
	Fig. 6	http://www.huffingtonpost.com/
Question 4	Fig. 7	http://www.fao.org
	Fig. 8	http://www.cie.org.uk/

Section A

1a) Study Fig. 1 which shows the movement of the Indian subcontinent through time.

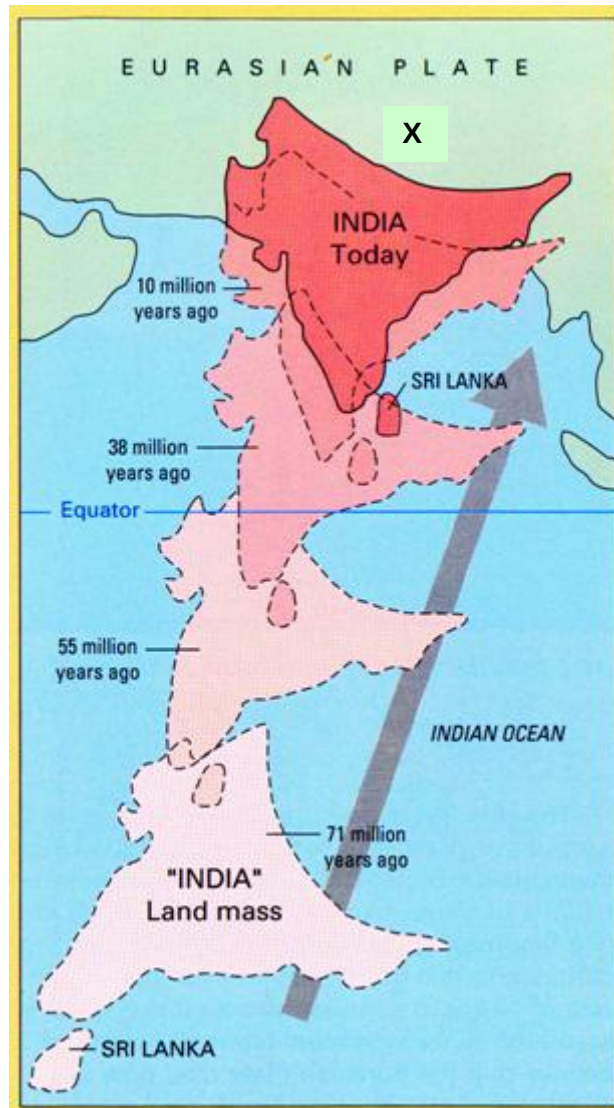


Fig. 1

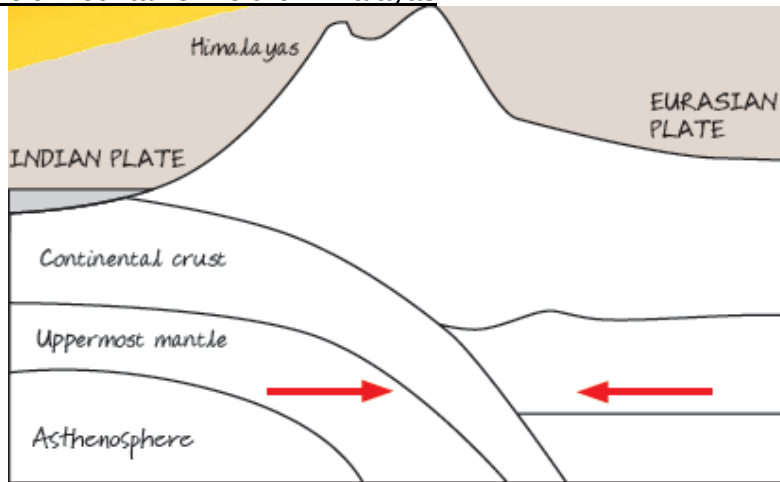
- (i) Account for the movement of the Indian subcontinent. [3]
- Due to Convection currents are movements of heat within the Earth's mantle.
 - Material in the mantle is heated by the core. Mantle expands, rises and spreads out beneath the plates (which float on underlying semi-molten mantle i.e. asthenosphere)
 - This causes plates to be dragged along and hence plates move towards each other.

*NO SUBDUCTION between 2 continental plates

- (ii) With the help of well-labelled diagrams, identify and account for the formation of the likely tectonic landform found at X. [5]

Fold Mountain– 1m, title and labels (Indian/ Eurasian Plate, Compressional Force) max 2m, Annotated explanation which includes:

- When two tectonic plates collide, the rock strata along the plate boundary are compressed and pushed together,
- causing massive bending and folding of the Earth's crust.
- Over a long period of time, the rock strata is pushed up and uplifted to form highlands known as fold mountains like the Himalayas



Formation of the Himalayas

- 1b) Study Fig. 2 which shows the impact of the 2010 earthquakes in Haiti and Chile, both less developed countries.

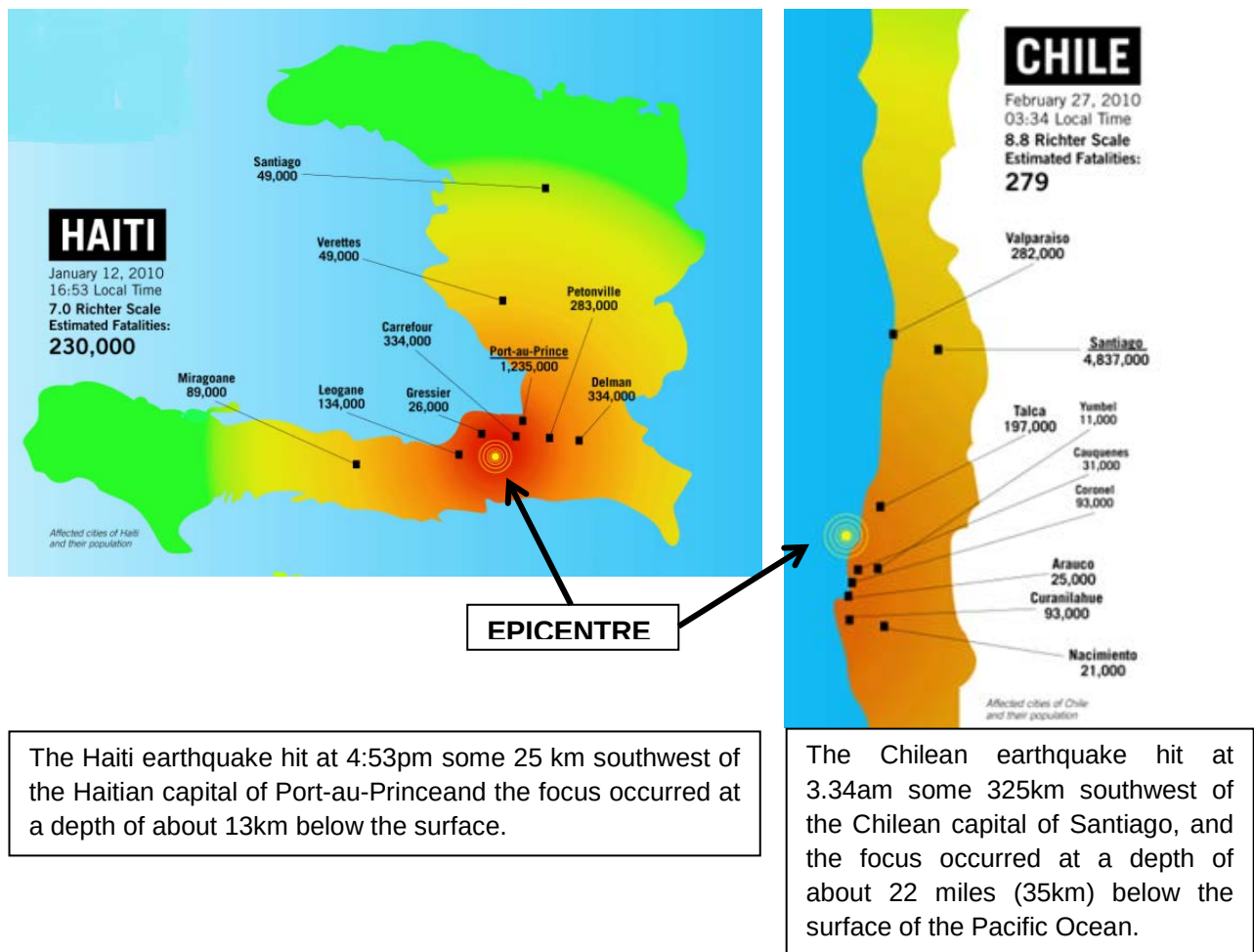


Fig. 2

- (i) Chile experienced an 8.8 on the Richter scale while Haiti registered 7 on the Richter scale, yet the loss of life and damage in Haiti was far more severe. With reference to Fig. 2 and your studies, discuss the possible reasons for this difference.

[5]

(A) Depth of focus

- ❑ Shallow-focus earthquake (upper 70km of earth's crust) → greater impact on land → enables seismic waves to reach the earth's surface more quickly → wider extent of damage
- ❑ Deep-focus earthquake (between 70km and 700km of earth's crust) → smaller impact on land → seismic waves take a longer time to reach the surface and would have lost their energy by then → lower extent of damage

(B) Distance from epicentre

- ❑ Places near epicentre tend to suffer more damage → nearer the epicenter experiences full vibration energy of the earthquake

(C) Time of occurrence

- ❑ The time of day of earthquake occurrence determines the location and activities of people.
- ❑ If earthquake occurs during the time when people are sleeping, there

is a higher chance that more people will be trapped in their houses and more deaths will occur → more damage

(D) Density of population and built-up area

- ☐ The higher the population density in an area, the more damage is expected in terms of casualties.
- ☐ The more densely-built up an area, the more damage is expected in terms of cost of damage to property and services.
- ☐ E.g. Capital Cities likely to have more people

(E) Infrastructure type and design

- ☐ Old buildings and infrastructure (eg. bridges, roads) made of flimsy construction materials tend to suffer more damage during earthquakes compared to newer buildings and infrastructure which are reinforced with the latest technology to withstand earthquakes.

(F) Level of preparedness

- ☐ The amount of preparation (eg. evacuation plans, trained rescue workers, range of action plans, earthquake monitoring) taken by the government and citizens makes a significant difference to earthquake impact
- ☐ Low level of preparedness for an earthquake occurrence would tend to result in more earthquake damage.

(G) Type of soil / Geology of epicentre

- ☐ Places sitting on rocks, soil or sediments that are loose and unconsolidated tend to suffer more damage
- ☐ Reason: Soft soil amplify seismic waves

- (ii) Discuss long-term challenges that the government of Haiti will need to consider when re-building the country.

Response	For example	Limitation/Challenge
Improve infrastructure	Stricter building codes ensures higher safety levels	Not fully protected from all kinds of hazard
Compensation	To allow victims to cope with losses and restore their livelihoods	Insufficient funds
Recovery of economy	To stimulate economy and to restore the normal functions of the society	Recovery may take a long time
Improving health options	To help injured victims or psychologically disturbed victims restore their livelihoods	May be challenging

(c) “Earthquakes do not kill people. Collapsed buildings do.”

- Ms Jo da Silva, head of Arup International Development, a not-for-profit design and engineering body that works in partnership UNOPS.

With reference to your studies, to what extent do you agree with this statement?

[8]

Candidates may include:

*

Natural Impacts of Earthquakes

(A) Threat of tsunamis

- ☐ **Tsunami:** unusually large seismic sea waves generated by an earthquake near or in the sea.
 - o Tsunamis can travel long distances and cause widespread destruction at coastal areas when it sweeps inland.
 - o Eg. In 2004, a 9.2 magnitude triggered a tsunami with waves (4 to 39 metres high) spreading throughout the Indian Ocean → widespread damage to coastal communities in 12 countries with the worse-hit in low-lying coastal areas in western Sumatra (where waves swept inland as much as 10km).

(B) Fire

- ☐ Earthquakes may rupture gas pipes and this can provide fuel to start fires.
- ☐ Eg. The 1995 earthquake in Kobe, Japan caused extensive fires.

(C) Landslides

- ☐ Landslides are rapid downslope movements of soil, rock and vegetation.
- ☐ Lahars or mudflows may also occur when there is heavy rainfall.

Man-made impacts of Earthquakes**(D) Destruction of property**

- ☐ Earthquakes can cause destruction to many homes.
- ☐ People may be without homes after the disaster.

(E) Destruction to infrastructure

- ☐ Earthquakes may cause cracks to form in infrastructure such as roads and bridges.
- ☐ Transportation can be disrupted as it is unsafe to use the damaged roads

*explanations should show the link to whether the actual earthquake caused the damage or man-made structure is the cause

2a) Study Fig. 3 which shows some weather information collected at a school.

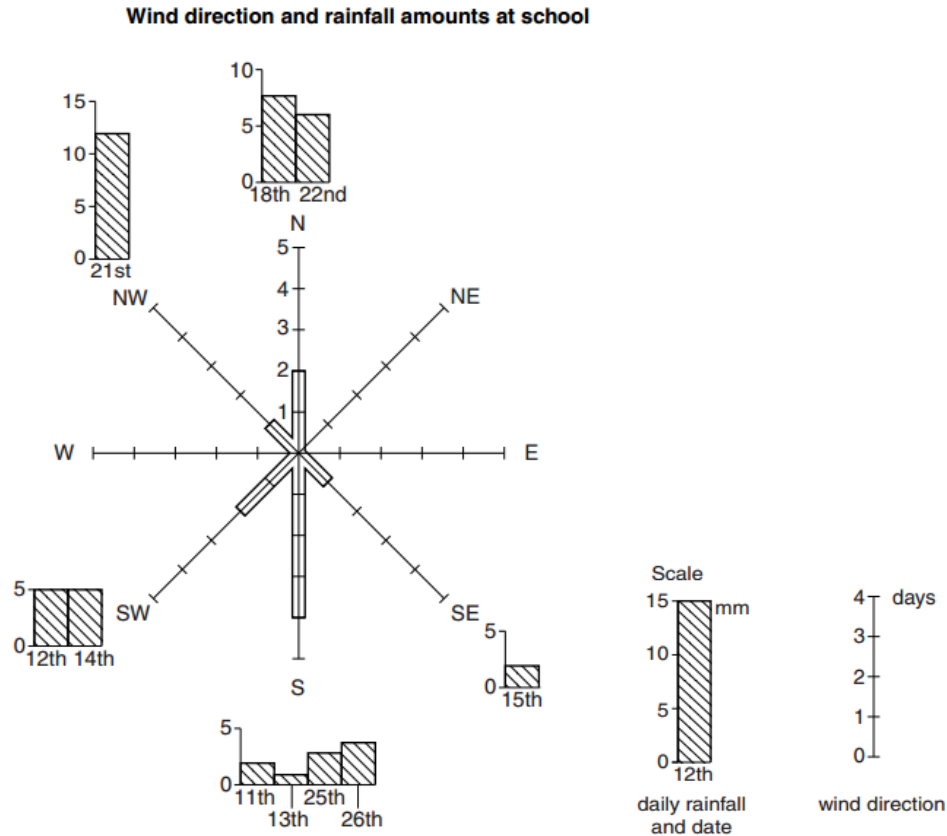
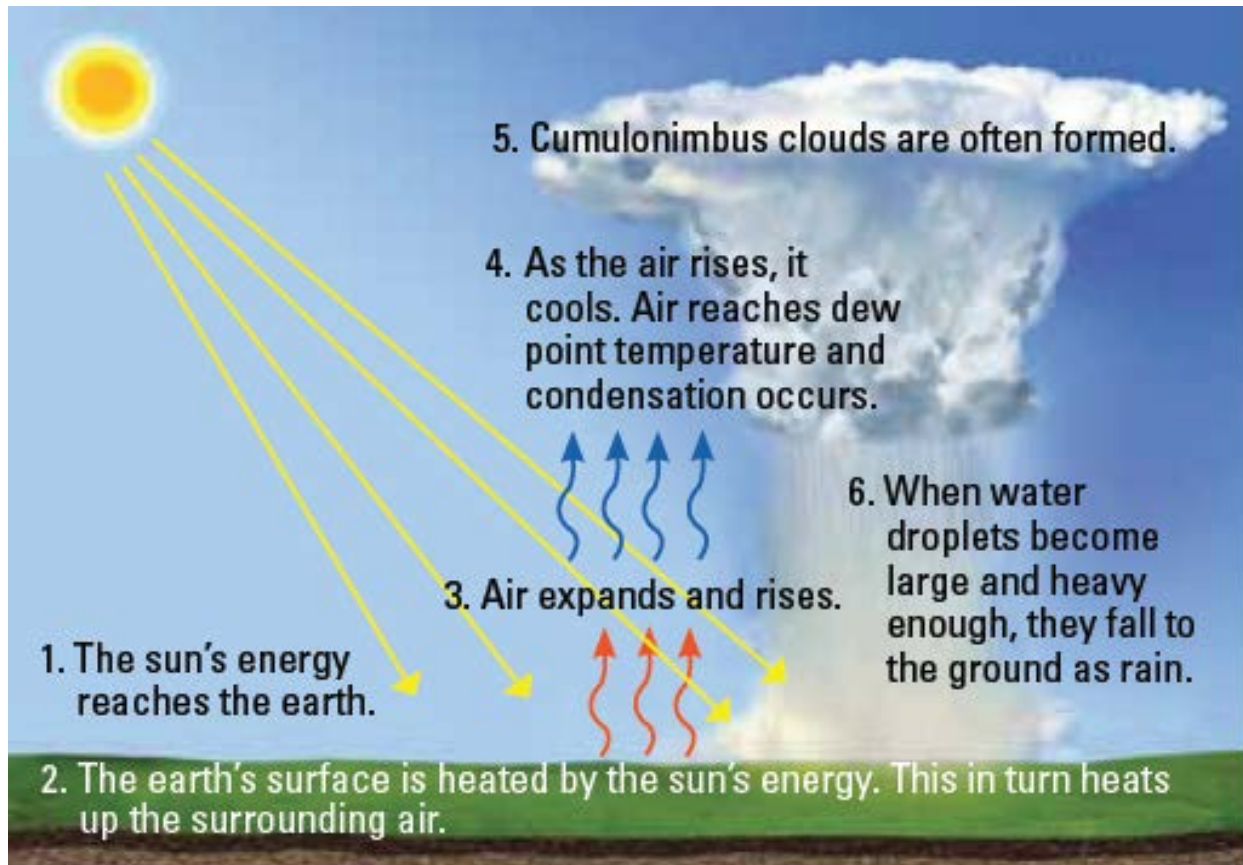


Fig. 3

(i) Calculate the total amount of rainfall collected at the school and explain how the students would have collected the rainfall. [5]

- 49mm of rainfall was collected
- Positioned in an open area, not close to buildings or trees so that rainfall is not blocked or intercepted
- Positioned that is protected from the wind so that wind may not blow past the rain gauge
- Sink into the ground, with about 30cm above the ground to prevent rain splash
- Collect rainfall every day at the same time over a number of assigned days by the teachers.
- Pour rain collected into a measuring cylinder & record the water level.

(ii) The students noted that they collected most of the rainfall in the afternoons. With the help of a well-labelled diagram only, explain why this might be so. [4]



Formation of convectional rainfall

b) Study Fig. 4 which shows the frequency of extreme weather events.

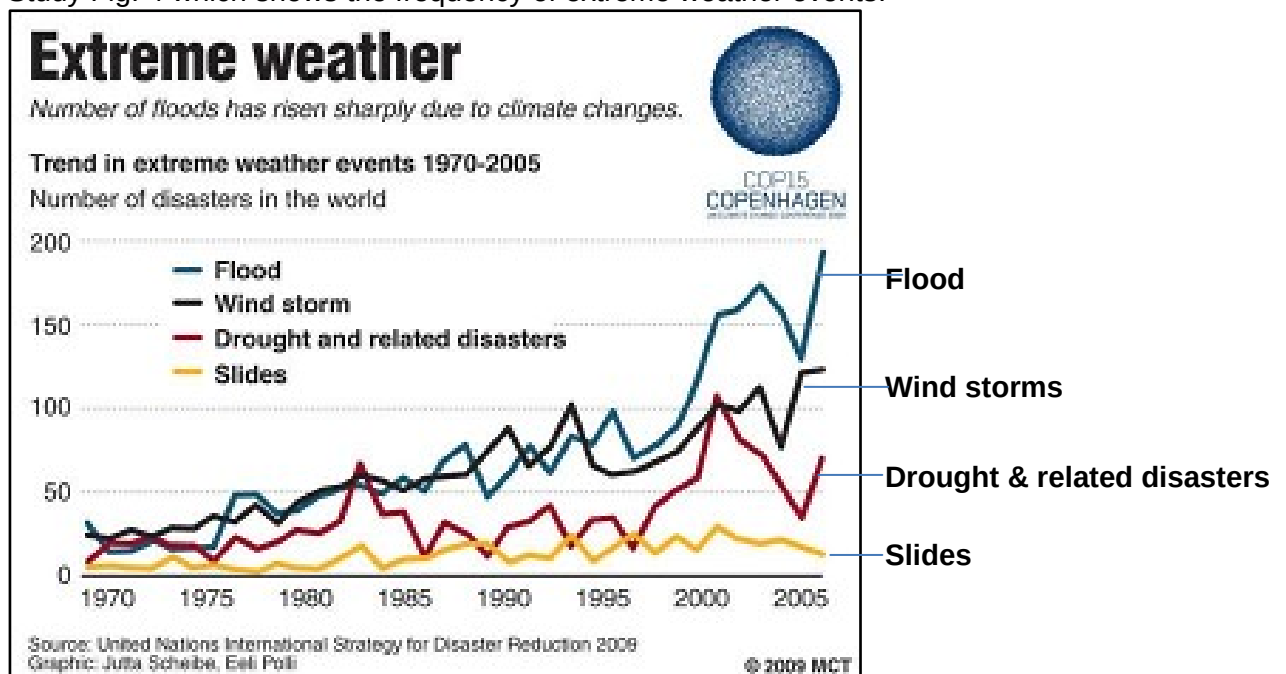


Fig. 4

(i) With reference to Fig. 4 and your studies, discuss the impact of climate change.

[4]

- Sea level rise - Increase in the mean height of the sea's surface between high and low tide relative to land.
 - Higher temperatures causes water to expand
 - Higher temperatures causes glaciers to melt, adding melt water to the sea
 - Threaten low-lying areas
 - e.g. >600m people live less than 10m above sea level; 2/3 of world's largest cities located in coastal areas; 33% of coastal wetland habitats predicted to be lost
 - Different areas affected differently e.g. Majuro Atoll in Pacific, to lose 80% of land if sea levels rise by 50cm.
 - Extreme weather events - severe and rare weather phenomenon that results in significant economic losses and the loss of lives
- e.g. Floods, Droughts, Tropical cyclones
- Occurrence of extreme weather events has increased over the last few decades
 - Related to higher land and sea surface temps
 - Spread of infectious insect-borne diseases.- Link between insect-borne diseases and climate change:
 - Increased rainfall and temperatures is favourable for mosquitoes to breed (allows spread of malaria and dengue fever)
 - As temperate countries get warmer, mosquitoes are able to breed further up north of the Equator
 - Lengthening of growing seasons in some countries
 - Higher temperatures have led to longer growing seasons for some regions.
 - Advantage (Cold regions are now warmer, more conducive for crop growing)
 - Increase in types of crops that can be grown in UK.
 - Increase in fruit, soybeans, potatoes and wheat in Canada.
 - Disadvantage (Cool regions are now getting hotter, less conducive for crop growing)
 - Apples and cherries production in Yunnan is reduced as they need cool conditions.
 - But Wheat yield has decreased in Canada

(ii) Explain how International Agreements like the Copenhagen Accord is expected to address climate change.

[4]

- Allow countries to discuss measures to deal with climate change effectively, including improvements to CDM.
 - Agree on targets e.g. International agreement (Copenhagen Accord) to keep increase in global temperature to below 2°C.
 - Report progress for accountability and monitoring
 - Discuss environmental solutions e.g. provide technology, expertise
- E.g. Pledges were made and developed countries pledged to:
- Reduce greenhouse gas emissions by 2020.
 - Provide US\$30 billion for developing countries to fight climate change.

(c) "The Government is key in reducing the impact of any potential climatic hazard."

With reference to your studies, to what extent do you agree with this statement?

[8]

Candidates may include the following information

People

- Immediate action in response to a situation that poses an immediate risk to health, life, property or environment.
 - o Evacuation of people: Community cyclone shelters are built near homes of people to protect them from tropical cyclones and provide them a place to live temporarily.
- People to listen to the warning and evacuate in time.
- People to follow land regulation restrictions
- Building wind and water resistant buildings
 - o Galvanised steel hurricane ties
 - Nailed to roof to secure it prevent it from being blown off during typhoons.
 - o Secondary water resistant layer
 - Added to roof to prevent leaking should roofs be blown off
 - o Effectiveness seen in when houses with these improvements in Florida, USA, survived Hurricane Wilma with little damage in 2005.

Govt

- **Provision of emergency aid by the government, neighbouring countries and non-governmental organisations (NGOs)**
 - o Send relief teams to the affected countries
 - o Repair damage to infrastructure
 - o provide victims with basic necessities such as food, water, clothing, shelter and healthcare.
 - o **Prediction:**
 - o Analyse long-term climate records
 - Establish pattern and severity of past cyclones to predict future cyclones.
 - o Analyse path of current cyclone through computer modelling
 - Establish the likely path the cyclone will take based on weather information
 - However these methods are limited
- **Warning**
 - o Allows people to evacuate in time
 - Japan and America has advanced prediction and warning systems, which allows people to evacuate way before tropical cyclones arrive
- **Regulates the use of land by placing restrictions on how the land can be used**
 - o Developers pay higher taxes for use of land
 - o Land which is vulnerable to tropical cyclones only used for recreation
 - o Land converted into protected areas.
- **Limitations to land use control**
 - o Authorities need to be able to enforce the rules which requires time and manpower
 - o Residents along coastlines often reluctant to move out; government needs to buy back the land to turn the land into recreational areas, which is costly
- **Floodplain management:** masterplan to reduce the flood damage

potential

Mapping risk levels of areas allows planners to:

- o Ensure new developments on floodplains are not prone to flooding
- o Reduce flood damage potential in already developed floodplains
- o Ensure people are able to evacuated quickly during floods.
- **Infrastructure withstands the impacts of tropical cyclones**
 - o Wind and water resistant buildings
 - o Inspect river embankments and coastal dikes for wear and tear
 - o Locate utility lines underground
- **Protective barriers:** river embankments and coastal dykes.
 - o Prevent water from overflowing river banks and also prevent surging waves from moving inland
 - o However, regular inspection and expensive maintenance are needed for these measures to be effective

Section B

Answer ONE question.

- 3a)** Study Fig. 5 which shows information about malnutrition around the world.

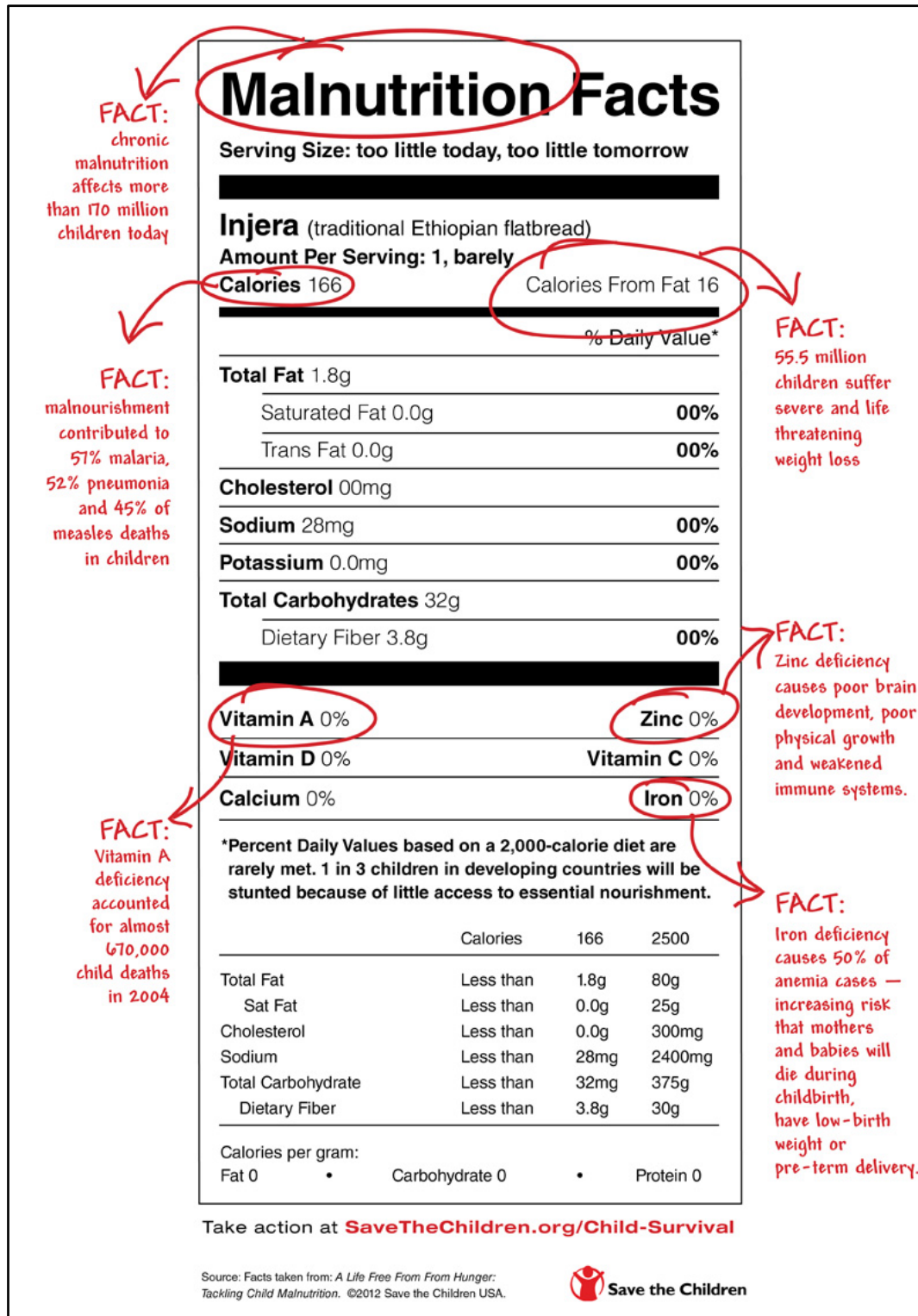


Fig. 5

With reference to Fig. 5 and your studies,

(i) Discuss the effects of malnutrition.

[5]

- Malnutrition occurs when a body does not get sufficient / balanced amount of

- nutrients needed for healthy tissue and organ functions.
- Ill health occurs when essential vitamins and minerals are not taken into the body, resulting in health problems
- Starvation occurs when food intake is insufficient to maintain life
- Economic impact - Lower productivity
 - Inadequate food leads to people falling sick more often
 - Workers who are sick cannot contribute to goods or service production
 - Children are not able to go to school
 - Income levels are reduced – vicious cycle is created
- Higher public health expenditure
- people falling sick more often require more healthcare
- Government resources are diverted away from other essential services such as education, transport or agriculture
- Long term debt
- Government borrow from international banks or countries to import food
- Such countries trying to pay their debts will have less revenue to provide other government services
- Political Impact - Social unrest
- Hungry population may riot / overthrow the government in an attempt to get more food for themselves

NB: Max 3m if there is no reference to Fig. 5

- (ii) Account for the problem of malnutrition [4]
- Economic - Disposable income is income left over for an individual after taxes have been paid. LDCs generally have less income to purchase food for the family
 - OR Due to political instability and climate change, global food prices have increased but people in LDCs with smaller disposable income are not able to purchase as much food as those in DCs with larger disposable income
 - Therefore people in LDCs tend to suffer a drop in food consumption when food pricing increases.
 - Social –
 - Religious beliefs
 - Food preference (Fast food, Organic food)
 - Migration
 - Population growth
 - Changing diet
 - Political - Food supplies can be affected by civil war and natural disasters
Governments can increase food supplies in response by
 - Changing agricultural policies and practices
 - Importing food
 - LDCs have lesser economic means for food import and poorer agri-technology, so they may suffer fluctuations in food consumption

- (b) Study Fig. 6 which gives information about Malaria.

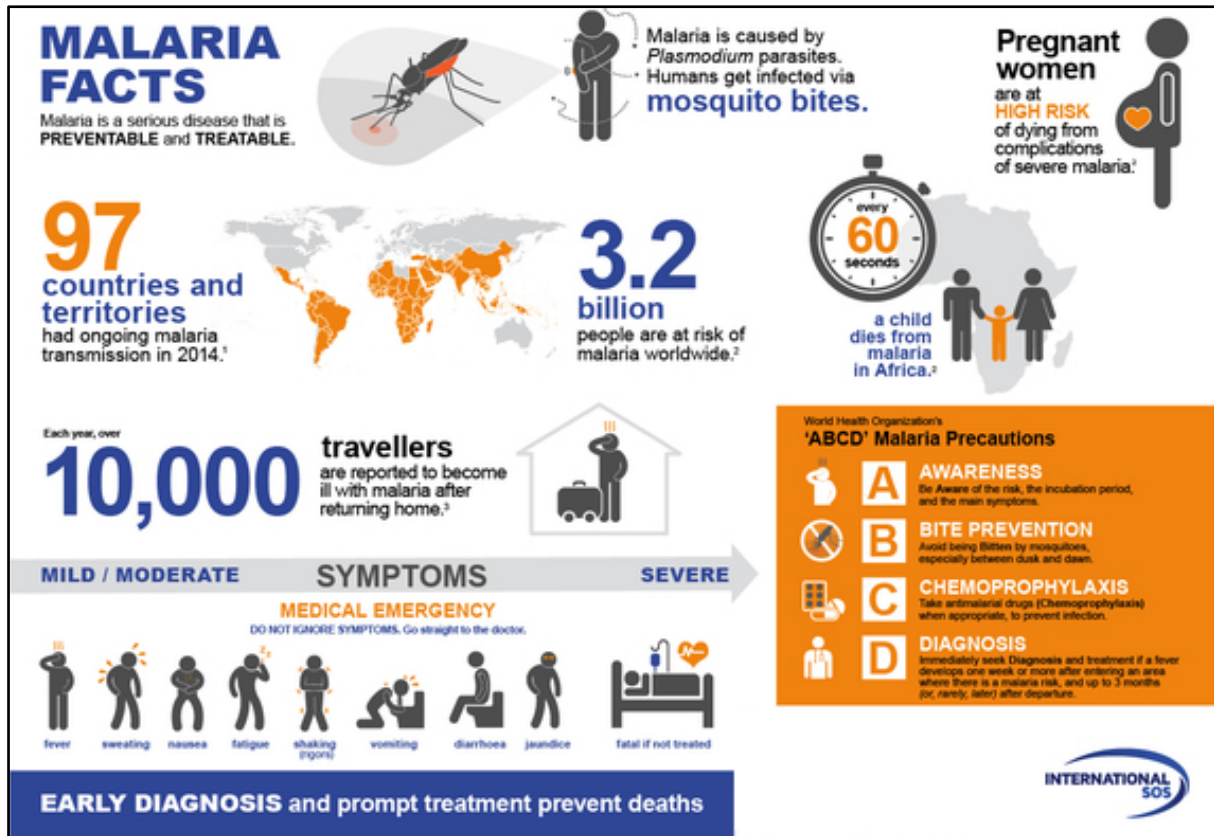


Fig. 6

With reference to Fig. 6 and your studies,

- (i) Explain how the spread of malaria can be managed by individuals and the communities. [4]

Individuals

- Ø By being aware of what the diseases are and the conditions which favour their spread, they could help to manage the spread
- Ø Exercise social responsibility e.g use of treated mosquito nets
- Ø Get treated immediately if suspect risk of contracting Malaria
- Ø Obtain timely vaccinations
- Ø Follow travel advisories

Communities

- Ø Introducing possible disease control strategies for specific community or area
- Ø Deciding when and where strategies will be implemented and by whom
- Ø Engaging health workers to train and monitor members

- (ii) Discuss socio-demographic impact on a country with malaria. [4]

- Increased Infant Mortality Rate – low weight, pre term delivery
- Increased maternal mortality – mothers die giving birth to their children.
- Increased child mortality – children dying
- Lower Life Expectancy – as a result of deaths of mother, child
- Lower Birth rates because for fear of losing child to disease like Malaria

- (c) “The government plays the key role in reducing the spread of HIV/AIDS in a country.”

To what extent do you agree with this statement? Give reasons to support your answer.

[8]

Candidates may include this

Governments

- Ø Eg. In Uganda, Acknowledgement of emergence of the disease
- Ø Establishment of an AIDS control programme (known as ABC programme)
 - Ø Abstain from sex until marriage
 - Ø Be faithful to one's partner
 - Ø Use Condoms
- Ø Establishment of AIDS commission (in 1992 to oversee, plan and co-ordinate HIV/AIDS prevention and control activities)
 - Ø Resulted in strong relationships between govt, community and religious leaders to promote its message of ABC
- Ø Development of a national AIDS policy
 - Ø Addresses prevention, care, treatment and social support

Community

Community groups have mobilised individuals of the local communities to take action themselves

- Ø e.g. The AIDS Support Organisation (TASO), a service organisation providing HIV/AIDS health care services as well as emotional and medical support to HIV-positive Ugandans.
- Ø Run by 16 volunteers who have been personally affected by HIV/AIDS

International Organisations

- Ø Operate across organisations
 - Ø e.g. WHO, World Bank, UNAIDS
 - Ø e.g. in Uganda: International HIV/AIDS Alliance; United Nations Population Fund (UNFPA); Supply Chain Management System (SCMS)

NGOs

- Ø May be organised on a local, national or international level
- Ø e.g. International HIV/AIDS Alliance, American Red Cross

Marks	Descriptors
1-3m	• Generalised answers or with minimal detail on relevant groups of people involved in managing HIV/AIDS. • A basic answer with little development • Reasoning rather weak and expression may be unclear. • No attempt to address the accuracy of the statement. • No named example is given.
4-6m	▪ Answers contain some appropriate detail. Simple details of the role of different groups. ▪ BUT content lack balance and some relevant detail, i.e. simple description ▪ Support is patchy so argument is not fully substantiated. ▪ At least 1 named example is given.
7-8m	▪ Answers are comprehensive and supported by sound

	knowledge. - Specific details and elaboration of at least three groups - At least 1 named example is given (with details provided about the example that helps to illustrate the answer). - Assessment of who could be more responsible for managing the spread of HIV/AIDS in terms of extent or understanding the local issues [or any other plausible criterion]E.g. <i>The Govt is most responsible as they are able to not only able to coordinate the work of various agencies, but also cascade information from International Organisations like WHO and formulate plans specifically to cater to their country.</i>
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4a) Study Fig. 7 which gives information about the undernourished in the world.

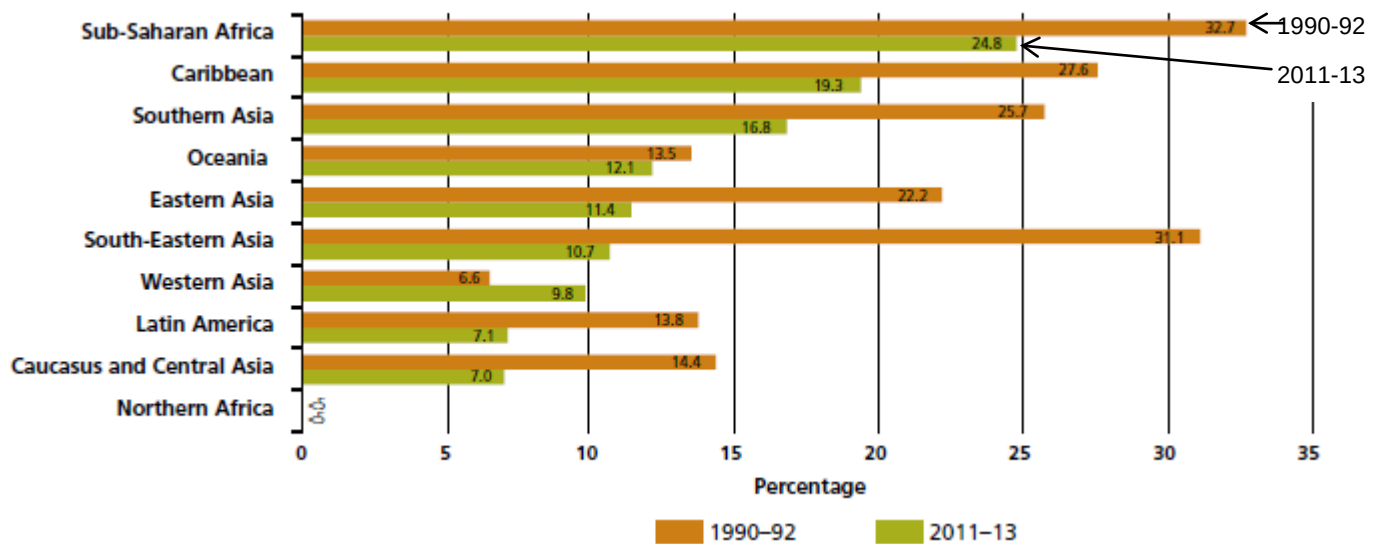


Fig. 7

With reference to Fig. 7 and your studies,

(i) Describe the changes in the percentage of undernourished in the world. [3]

- Decrease in percentage of undernourished in the world between 1990-92 and 2011-13 in all regions except Western Asia.
- Greatest decrease seen in South-Eastern Asia from 31.1 % to 10.7% (20.4%)
- Least decrease in Oceania with a small decrease of 13.5% to 12.1% (1.4%)
- Sub-Saharan Africa still has the highest percentage of undernourished in 2011-13 despite decreasing from 32.7% to 24.8% (7.9%)

(ii) Explain why there are still undernourished people in the world. [5]

Physical factors

Climate change

- Change in the locations and size of existing farmlands due to temperature changes and water availability

Extreme weather

- Droughts, cyclones, heat waves, cold snaps can all lead to crop destruction

Pests

- Pest outbreaks can lead to crop destruction

Political factors**Civil conflict**

- Destruction of crops from bombing
- Forced movement of farmers from areas of conflict

Poor governance

- Poor management of country's agricultural policy can lead to crop failures
- Prioritisation of other economic areas for development over agricultural

Food policy

- Stockpiling can lead to more economically powerful countries buying up global food stocks for security

Food policy

- Government food subsidies help poorer income families afford food
- However, any cut or reduction in food subsidies can lead to food shortages for the poorer income group

Economic factors**Increasing price of fertilisers and transport**

- Higher cost of agricultural input leads to higher food prices
- Poorer LDCs which cannot afford such prices will face food shortages

Conversion of farmland from food crop to industrial crop

- Growing need for industrial crop: e.g. oil palm and corn for fuel
- Farmers find it more profitable to switch crops
- Less yield of food crops available for consumption

Social factors**Lack of accessibility**

- Areas with less roads or less food outlets will tend to have a lower supply of food

Inadequate food distribution

- Food distribution may sometimes be inadequate in areas with poor network caused by disasters or war

Rapid population growth

- Population figures can exceed a country's food supply, especially when food supplies are abruptly reduced due to disasters and wars.

(b) Study Fig. 8 which shows information about Agriculture in Kenya.

Agriculture is vital to the economy of Kenya. Farming is mostly carried out on small farms where no more than 2 hectares is cultivated. These small farms account for 75% of total production and much of this is subsistence production. The main cash crops are tea, vegetables and coffee. Production of tea and vegetables is increasing and these crops are important exports. Export of high-value vegetables, flowers and house plants often takes place by air to European markets. Coffee has declined in importance. Crop outputs vary unpredictably, partly due to weather conditions. As some arable land is used for export crops, Kenya needs to import food to feed the population. For example, large quantities of wheat and maize are often imported. Environmental issues facing the country include deforestation, soil erosion, desertification and pollution from increased use of fertilisers and pesticides.

Fig. 8

(i) With reference to Fig. 8, explain why Kenya continues to face low food productivity in the country.

- Small farms (less than 2ha)– lower productivity
- Crops being grown for export instead of internal consumption
- Lack of demand for coffee
- Unpredictable weather that will affect quality of crops
- Poor quality of soil (desertification, pollution, soil erosion)

(ii) Discuss recommendations for Kenya to adopt in order to increase food production. [4]

Technological

- More effective food storage
- Improve farm productivity
- Better crop characteristics (biotechnology)

Agricultural

- Multiple cropping
- Water and soil conservation
- Leasing farmland

Social

- Socially responsible consumers
- Support local farmers
- Population control

Political/ Economic

- National agricultural policies
- National land reform
- International food programmes
- International fair trade programmes

(c) “Technology is the necessary evil in increasing food production.”

To what extent do you agree with this statement? Give reasons to support your answer. [8]

***Use of technology is necessary to increase food production**

Agree: Tech is fastest way to increase food production, there are ways to overcome potential problems

Candidates may include these:

Use of Technology

Green Revolution

- Increase in agricultural productivity characterised by:
 - High-yield variety of crops
 - Fertilisers and pesticides (usually chemical)
 - Improved irrigation
 - Mechanisation

Genetically Modified food

- Food derived from crops that have their genes modified

Cause of other problems

e.g. Salinisation, pollution, eutrophication

➔ May cause other problems, but is able to overcome climate and physical constraints

Social Factor

. Land tenure (vs. Land ownership)

- System in which agricultural land is allocated and occupied
- In LDCs, farmers usually rent their land
- Due to the insecurity over the retention of the same land for the next year, farmers do not have the incentive to improve the land

Land fragmentation (vs. Land consolidation)

- System of land division over successive generations of farmers
- Common inheritance practice (primogeniture)
- Over time, resulting land areas become too small, resulting in:
 - Lower crop yield
 - Less incentive to use machinery due to non-profitability

Economic Factor

Demand

- Demand by consumers for a particular crop increases its intensity of production
- E.g. demand for coffee increases the intensity of coffee production