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Candidate Name _____

Class Index
Number



ST ANDREW'S SECONDARY SCHOOL
MID YEAR EXAMINATION 2016
SECONDARY 4 EXPRESS/ 5 NORMAL ACADEMIC

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GEOGRAPHY

2236/01

Paper 1

Friday

06 May 2016

1 hour 40 min

Time: 10.40 a.m. – 12.20 p.m.

Additional Materials: Answer Paper
 1 Insert

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on all the work you hand in.

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

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

Section A

Answer Question 1.

Section B

Answer **one** question.

INFORMATION FOR CANDIDATES

Write all your answers on the Answer Paper provided.

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.

The Insert contains Figs. 1, 2 and 4 and Photographs A for Questions 1, Figs. 6A, 6B and 7 for Question 2 and Photograph B for Question 3.

At the end of your 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 question paper consists of **7** printed pages **1** Insert and **1** blank page.

Section A

This question is compulsory

- 1 (a) A group of students carried out field work on some of the cultural attractions of Bagan in Myanmar. Fig 1 (Insert) shows the position of Bagan in Myanmar and Photograph A (Insert) shows a view from the air of some of the attractions of Bagan.

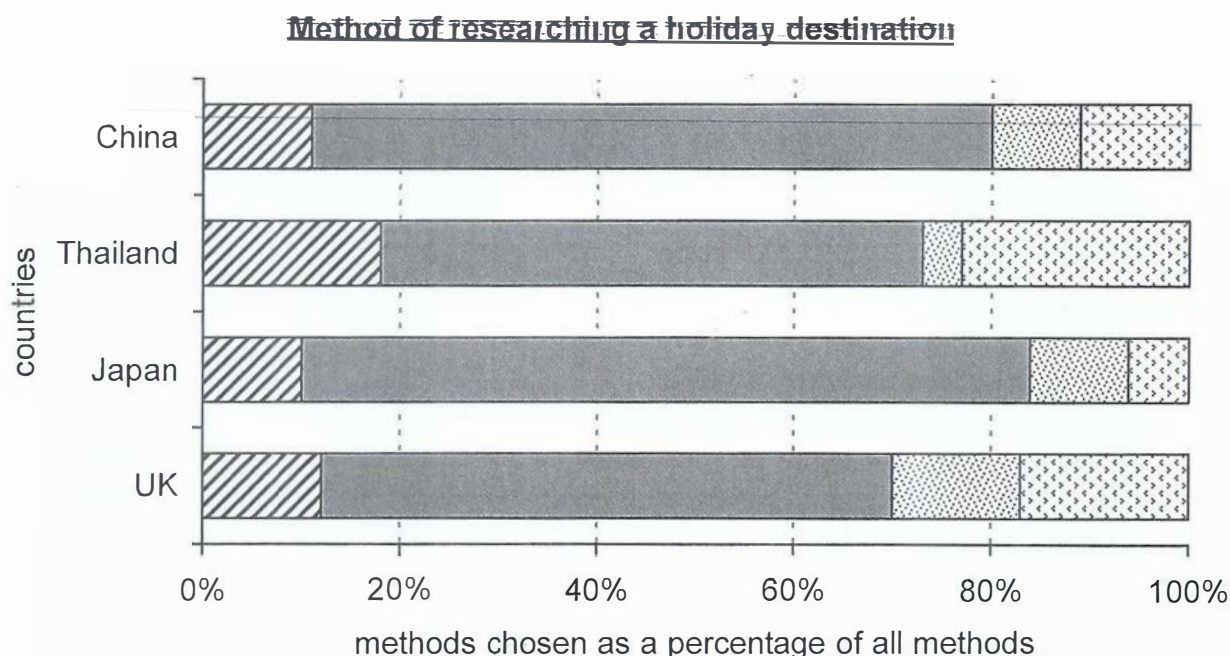
The students decided to consider the guiding question 'How does use of the internet for researching and booking a holiday vary according to the country of origin of tourists?'

They devised a questionnaire, Fig. 2 (Insert), to look at the use of the internet with some personal and destination factors.

In order to complete the questionnaire they organized themselves into five pairs with each pair to interview twenty foreign visitors.

- (i) What are the advantages of using a systematic sampling method, with students working in pairs, to complete a questionnaire? [3]
- (ii) The results from Section B of the questionnaire, Fig. 2, were presented and analysed.

The figures from four countries from which tourists originated were used for this purpose. The results for the four countries are shown in Fig. 3.



Key: ▨ traditional media ▩ internet sites ▤ travel agents ▦ word of mouth

Fig. 3

Using the information in fig. 3 to calculate which country has the lowest use of internet when considering researching a holiday

[1]

- (iii) The results from Section C of the questionnaire for the same four countries are shown in Table 1.

Table 1

Methods of booking holiday

country of origin	through travel agent	through internet	others
China	65	35	0
Thailand	39	42	19
Japan	30	66	4
UK	51	49	0

Figures are given as percentage of total from each country

Using information in Table 1, draw a pie chart to show the methods of booking a holiday in Japan.

[3]

- (iv) What conclusions can be drawn from the information shown on Fig. 3 and Table 1 in response to the guiding question 'How does use of the internet for researching and booking a holiday vary according to the country of origin of tourists?' [5]

[Turn over

- (b) The students examined whether the number of visitors from a country was influenced by the distance of the country from Bagan.

There are two methods used to show the percentage of visitors from each country. Fig. 4 (Insert) is a map with flow lines showing the percentage of visitors from each country. Fig. 5 is another method of showing the percentage of visitors from each country.

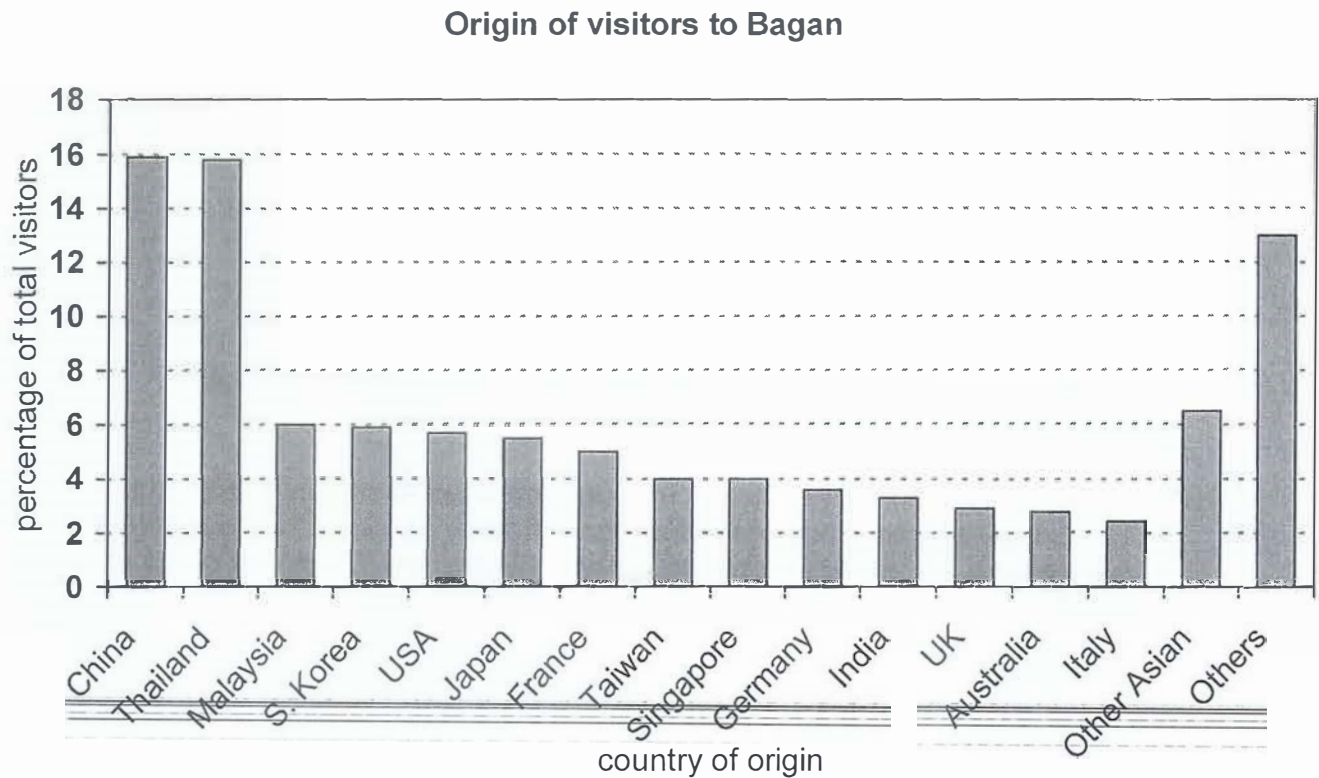


Fig. 5

- (i) Which method used to show origin of visitors is preferable? Give reasons for your answer. [2]
- (ii) How far does the information in Figs. 4 and 5 agree with the hypothesis that 'The longer the travelling distance, the fewer the number of tourists from that country visit Bagan.'? [4]
- (c) Some of the personal information in Section A of the questionnaire has not yet been used by the students in their fieldwork investigation.
- Suggest a guiding question for an investigation you could carry out linking personal information to the different attractions in Section D of the questionnaire. [1]
- (d) Suggest methods the students might use to test the hypothesis that 'Visitors to Bagan have had a negative impact on the environment.' [6]

Section B

Answer **one** question from this section.

- 2 (a) Study Figs. 6A and 6B (Insert), which show the Sundarbans, an area of mangroves. Fig. 6B is an enlargement of the area shown as in the box in Fig. 6A.

Use Figs. 6A and 6B to describe the location and extent of the Sundarbans. [4]

- (b) How and why do mangroves show patterns of horizontal zonation? [5]

- (c) Study Fig. 7 (Insert), which shows a mangrove environment.

Use Fig. 7 to explain the value of a mangrove environment as a provider of food. [3]

- (d) Study Table 2, which shows the effect of a tsunami on part of the southeast coast of India. Part of the affected area is shown in Fig 8.

Table 2

Village number on map	Height above sea level	Type of vegetation	Number of deaths	Loss of wealth in \$US, eg huts, boats
1	2.0 m	Muddy shore with dense mangroves	0	18
2	0.8 m	Low lying sandy shore	55	956
3	1.0 m	Mud and sandy shore with woody mangroves	5	222
4	4.0 m	Steep sandy shore with dunes	4	289

[Turn over]

Villages affected by a tsunami on part of the southeast coast of India

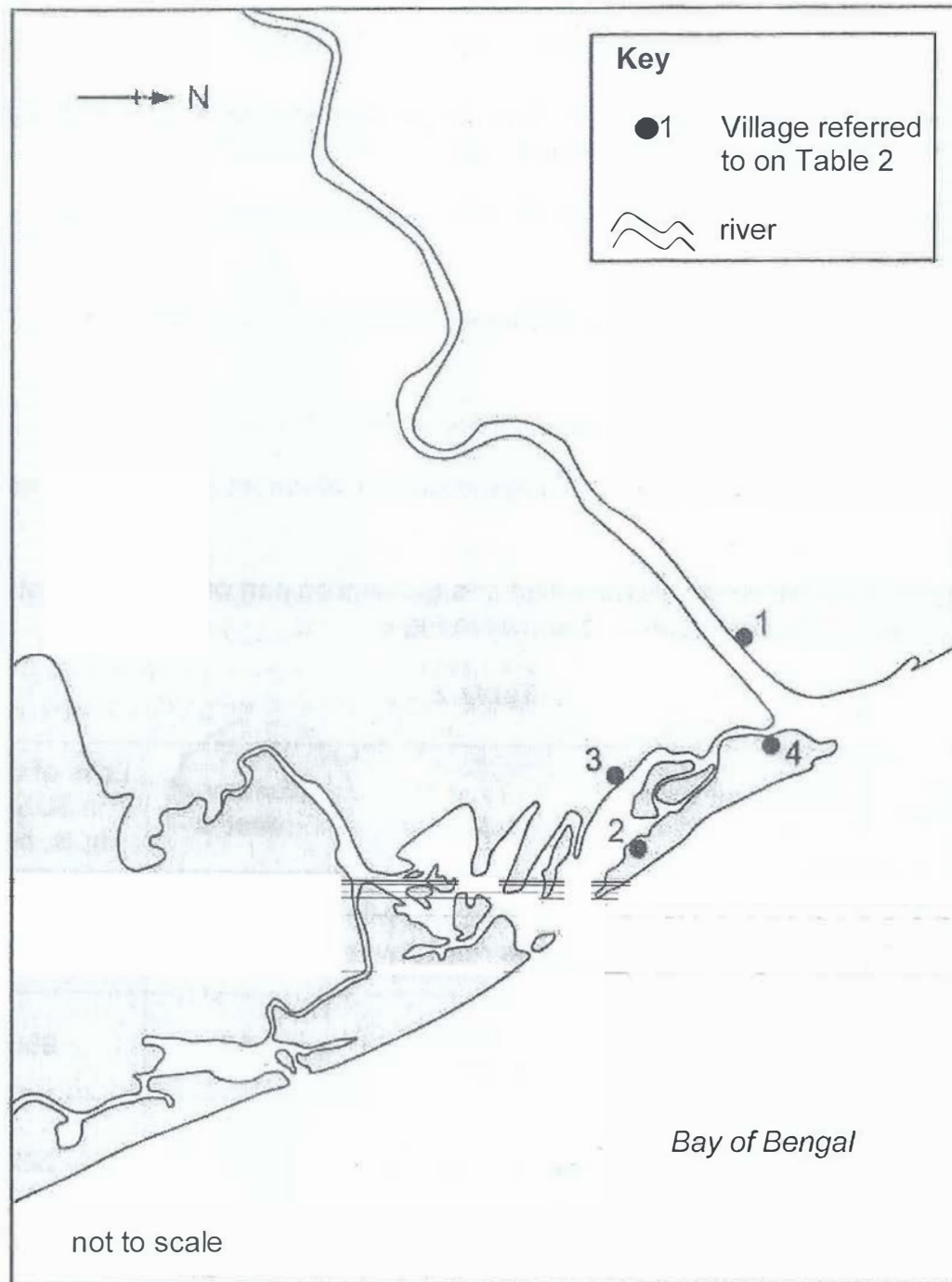


Fig. 8

Use the information provided to assess the effect of height above sea level, distance from the sea and type of vegetation on reducing the impact of the tsunami.

[5]

- (e) 'Human activities, which could be avoided, are having a harmful effect on the mangrove ecosystem.'

How far do you agree? Use examples to support your answer.

[8]

3 (a) Study Photography B (Insert), which shows a coastal feature.

(i) Describe the shape of the feature shown in Photograph B. [3]

(ii) Use the Photograph B to help you suggest how different coastal processes may account for the formation of the feature shown. [5]

(b) Study Fig. 9, which shows aspects of medical tourism.

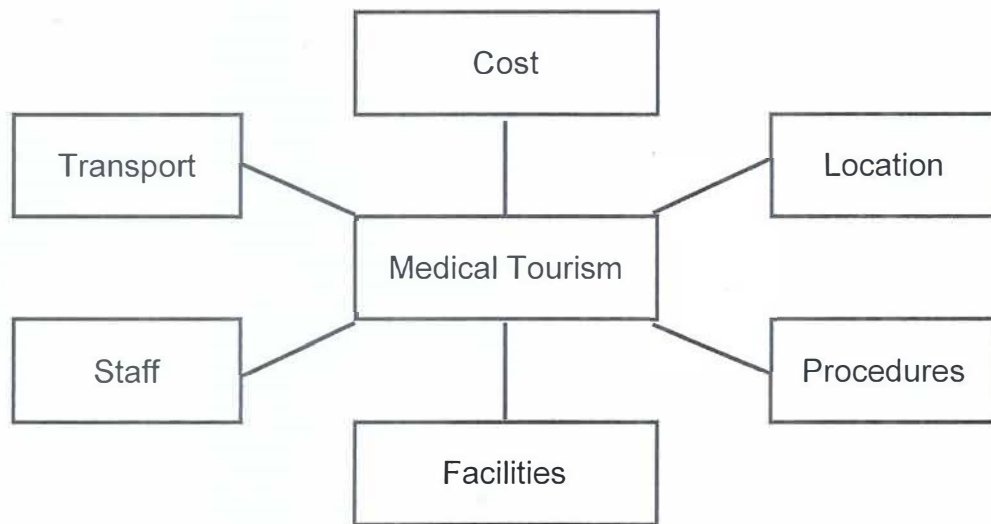


Fig. 9

With the help of Fig. 9. Explain why countries such as Thailand and Singapore are popular destinations for medical tourists. [4]

(c) Use examples to help you explain the characteristics of dark tourism. [5]

(d) 'Tourism brings only advantages to the economy of countries.'

How far do you agree? Use examples to support your answer. [8]

- End of Paper -

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ST ANDREW'S SECONDARY SCHOOL
MID YEAR EXAMINATION 2016
SECONDARY 4 EXPRESS/ 5 NORMAL ACADEMIC

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GEOGRAPHY **2236/01**
Paper 1

Friday **06 May 2016** 1 hour 40 min

Time: 10.40 a.m. – 12.20 p.m.

INSERT

READ THESE INSTRUCTIONS FIRST
The Insert contains Figs. 1, 2 and 4 and Photographs A for Questions 1, Figs. 6A, 6B and 7
for ~~Question 2 and Photograph B for Question 3~~

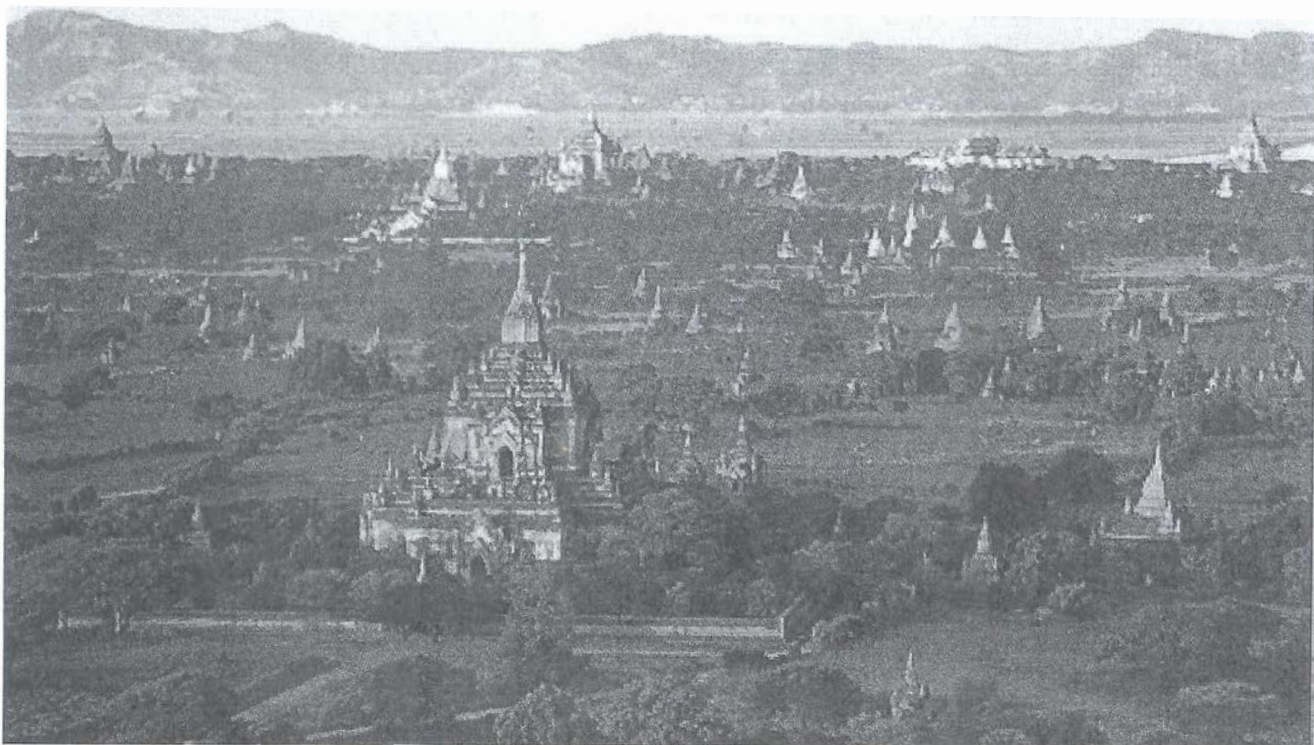
Fig. 1 for Question 1

Position of Bagan in Myanmar



Source: <https://nordonart.files.wordpress.com/2013/09/02myanmar-map-articleinline.png>

Photograph A for Question 1



Source: <http://tourism-myanmar.com/images/bagan6.jpg>

Fig. 2 for Question 1

Questionnaire

Section A Personal information

- 1 Which country do you come from?
- 2 What method of travel did you use to enter Myanmar?
- 3 How old are you? (please circle) 0 – 20 21 – 40 41 – 60 over 60

Section B Method of researching holiday destination

Tick the main method use to find out about your holiday destination.

- 1 Traditional media (eg newspaper / TV / magazines)
- 2 Internet sites
- 3 Travel agents
- 4 Word if mouth (eg friends, family, colleagues)

Section C Method of booking holiday

Tick the method use to book your holiday.

- 1 Through travel agent
- 2 Through internet
- 3 Others

Section D Attractions of holiday destination

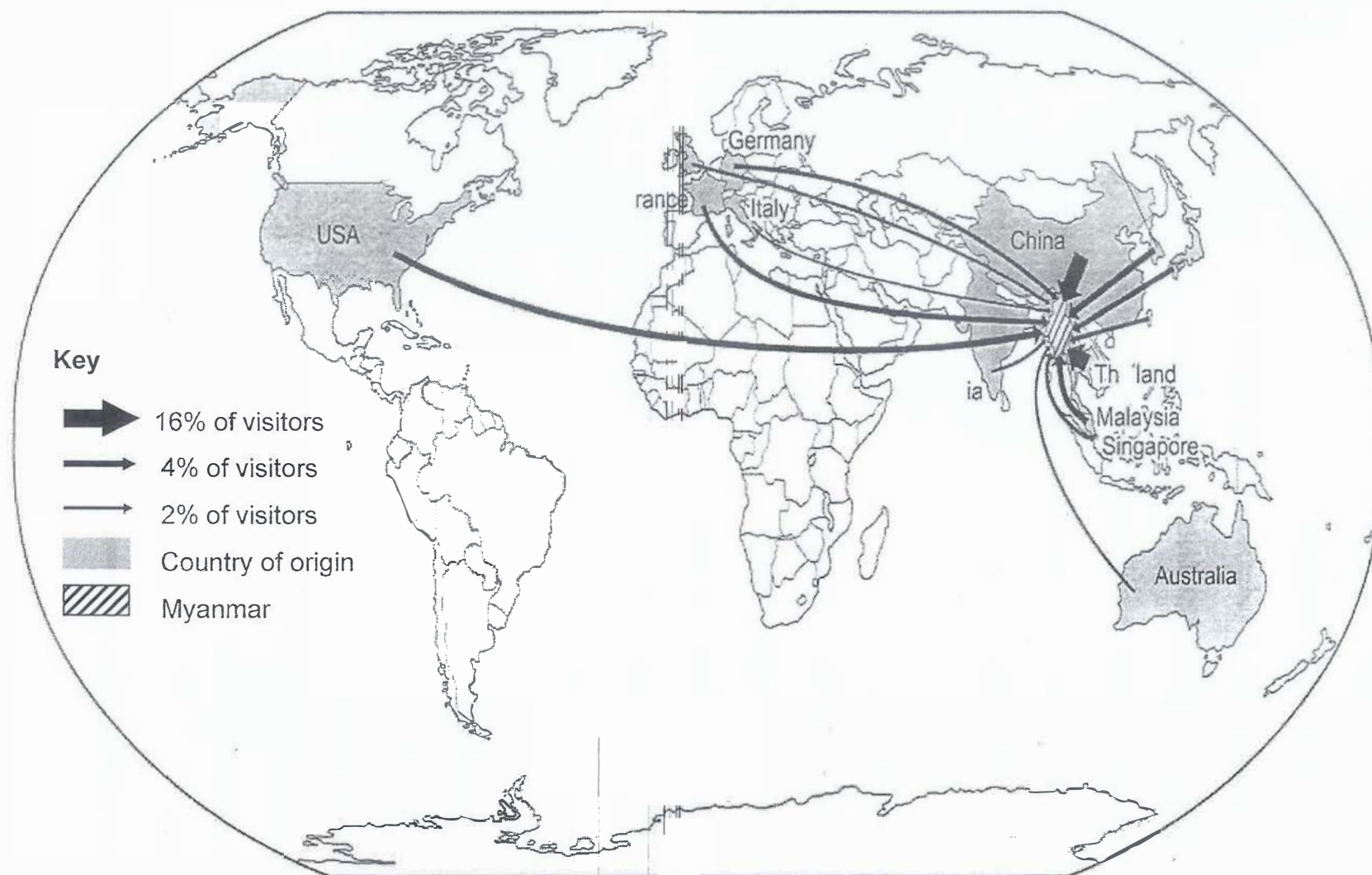
Tick the one below which most attracted you to visit Bagan

- 1 Cultural or heritage sites
- 2 Lifestyle / friendliness of the people
- 3 Ease of travel within the country
- 4 Weather

[Turn over

Fig. 4 for Question 1

Movement of visitors to Bagan, Myanmar, from country of origin



Figs. 6A and 6B for Question 2

Location and extent of the Sundarbans

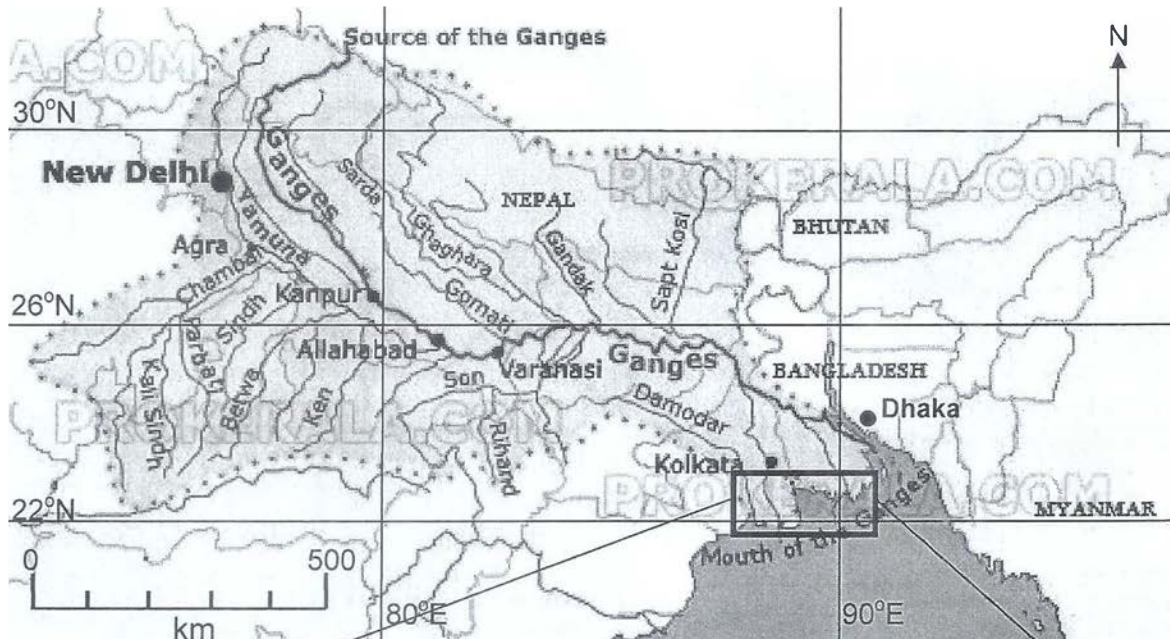
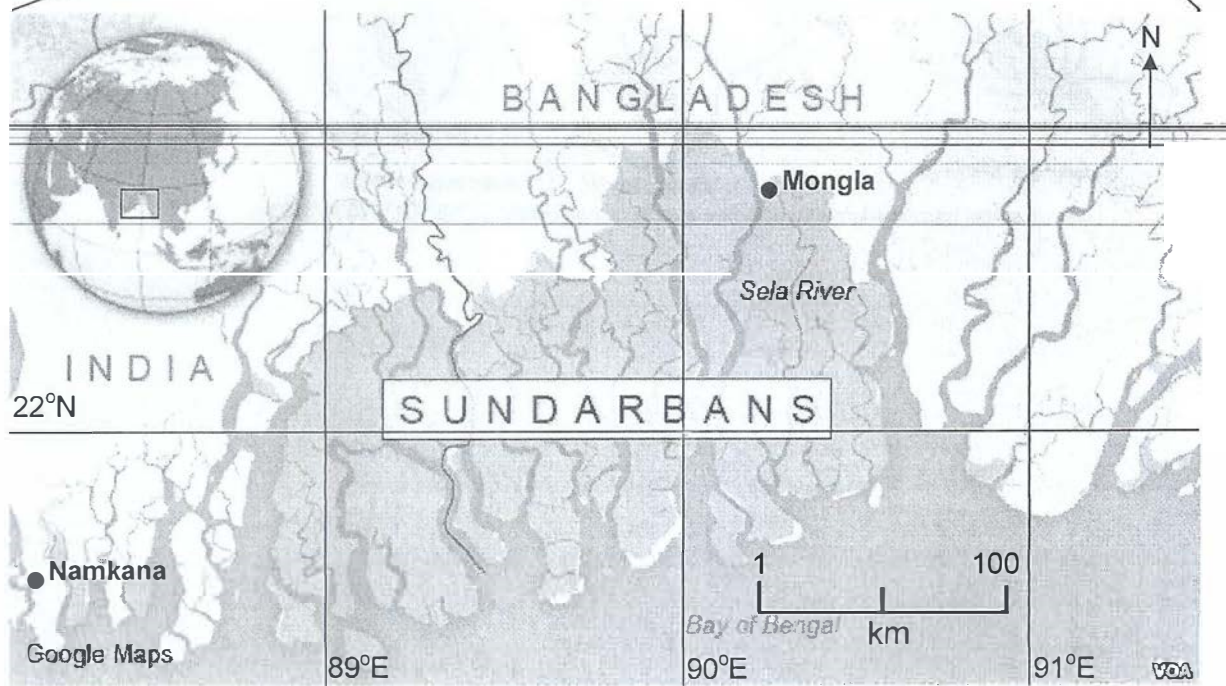


Fig. 6A



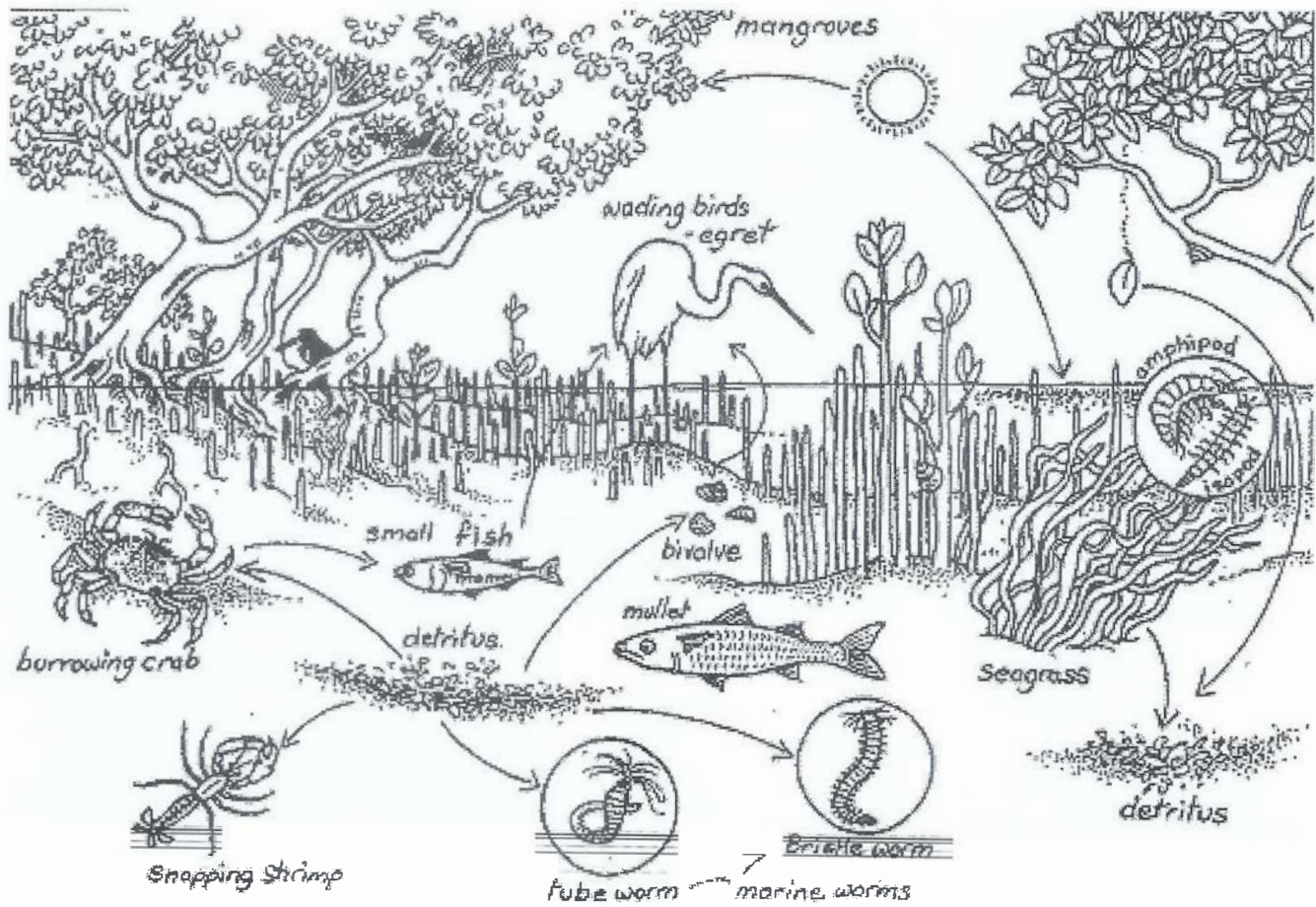
Key • Towns

Fig. 6B

[Turn over

Fig. 7 for Question 2

A mangrove environment



Source: http://mangroveforestndahl.weebly.com/uploads/1/6/4/3/16436236/4508545_orig.gif

Photograph B for Question 3



Source: <http://www.southampton.ac.uk/~imw/Dawlish-Warren.htm>

End of paper.

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ST ANDREW'S SECONDARY SCHOOL
MID YEAR EXAMINATION 2016
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GEOGRAPHY

2236/02

Paper 2

Wednesday

11 May 2016

1 hour 30 min

Time: 8.00 a.m. – 9.30 a.m.

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on all the work you hand in.

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

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

Section A

Answer **one** question.

Section B

Answer **one** question.

INFORMATION FOR CANDIDATES

Write all your answers on the Answer Paper provided.

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.

At the end of your 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 question paper consists of **9** printed pages.

Section A

Answer **one** question from this section.

- 1 a** Study Fig. 1, which shows the climatic data for a weather station in an Asian city.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Temperature (°C)	26	28	29	30	29	29	28	28	28	28	26	25
Rainfall (mm)	8	20	36	58	198	160	160	175	305	206	66	5

Fig. 1

Refer to Fig. 1, describe the climatic characteristics of the Asian city. [5]

- b** Describe the relationship between temperature and relative humidity. [4]

- c** Study Fig. 2, which shows the temperatures over the land and sea in a coastal area at midday.



Fig. 2

Explain why a sea breeze may blow in the area shown on Fig. 2. [4]

- d** Describe how the international community has attempted to respond to climate change. [4]

- e** 'Sea level rise is the main challenge posed by climate change.' How far do you agree with this statement? Give reasons for your answer. [8]

- 2 a Study Fig. 3, which shows the San Andreas Fault.

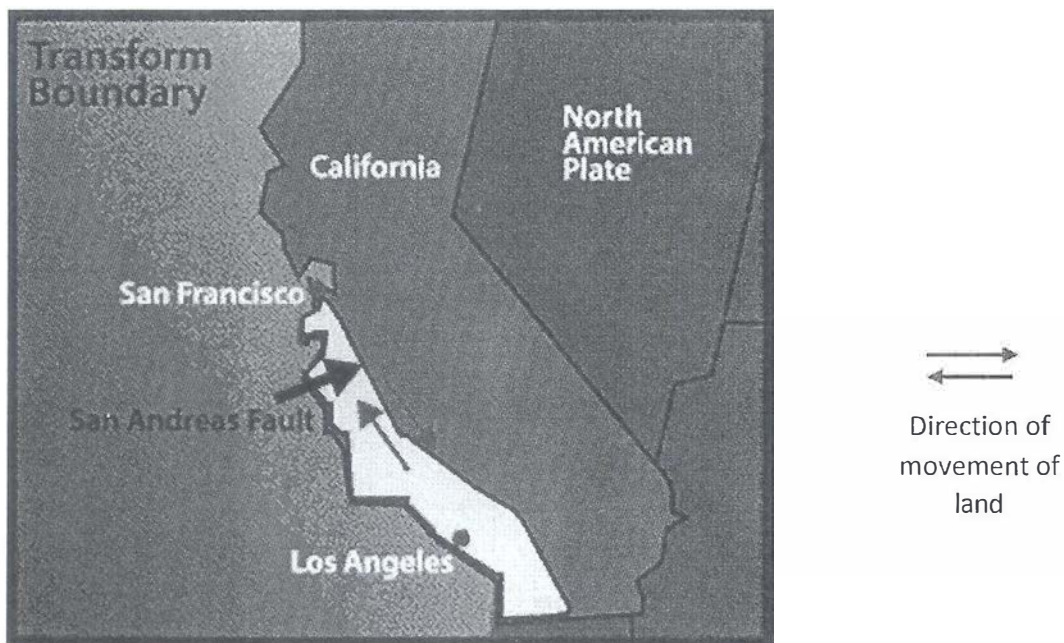


Fig. 3

Explain why an earthquake might occur along the San Andreas Fault.

[4]

- b Describe how the movements taking place at a plate boundary may result in the formation of fold mountains.

[4]

- c Study Fig. 4, which shows a type of wind that the Indian sub-continent experiences.

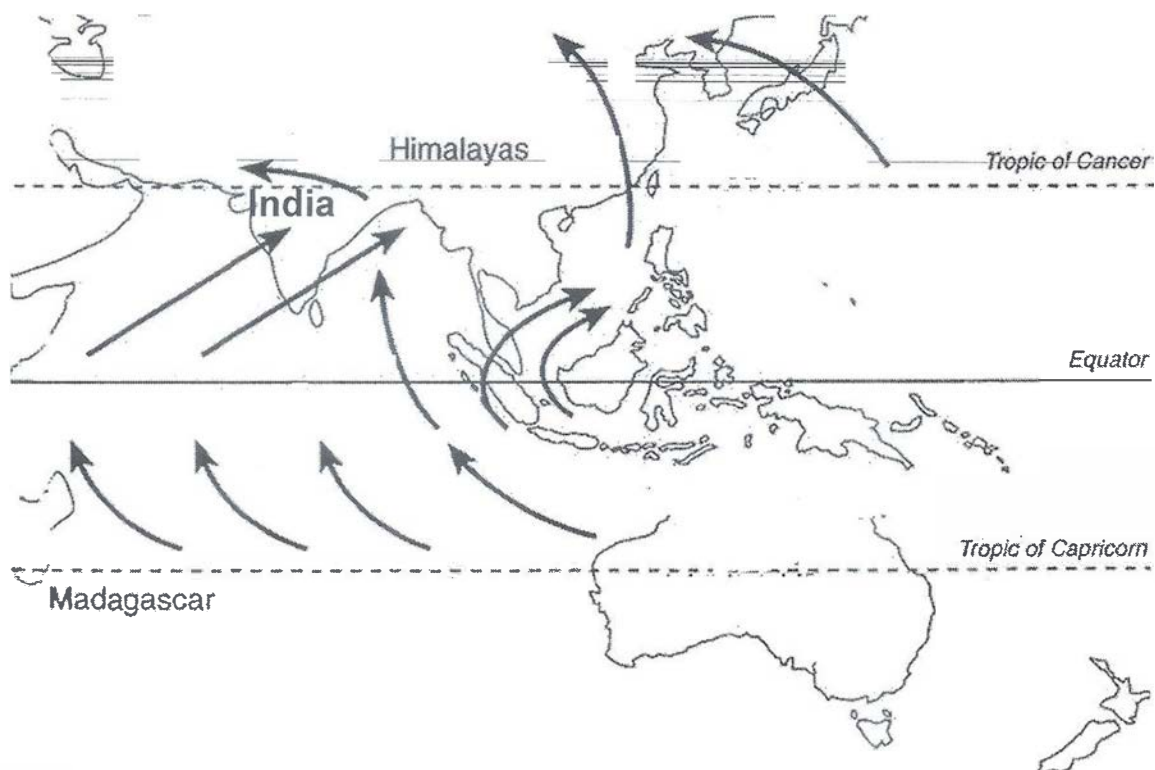


Fig. 4

With reference to Fig. 4, explain why the west coast of India experiences heavy rainfall from June to September.

[5]

[Turn over

- d Study Figs. 5A and 5B, which shows the images of Texas, North America, before and after Hurricane Ike struck in 2008.



Fig. 5A

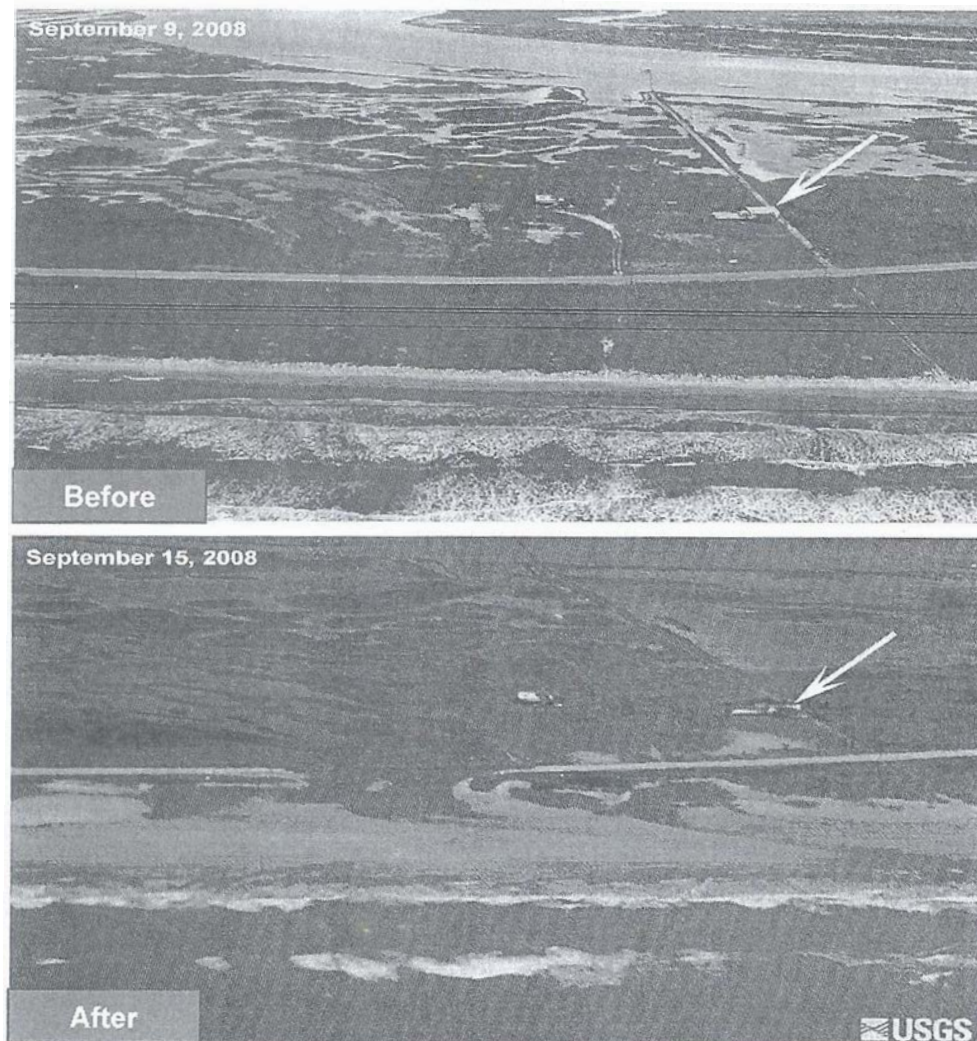


Fig. 5B

- (i) Describe the effects of Hurricane Ike as shown in Figs. 5A and 5B only.

[4]

- (ii) 'Strategies used to reduce the effect of typhoons have been largely unsuccessful.'

To what extent do you consider this statement to be true? Give reasons to support your answer.

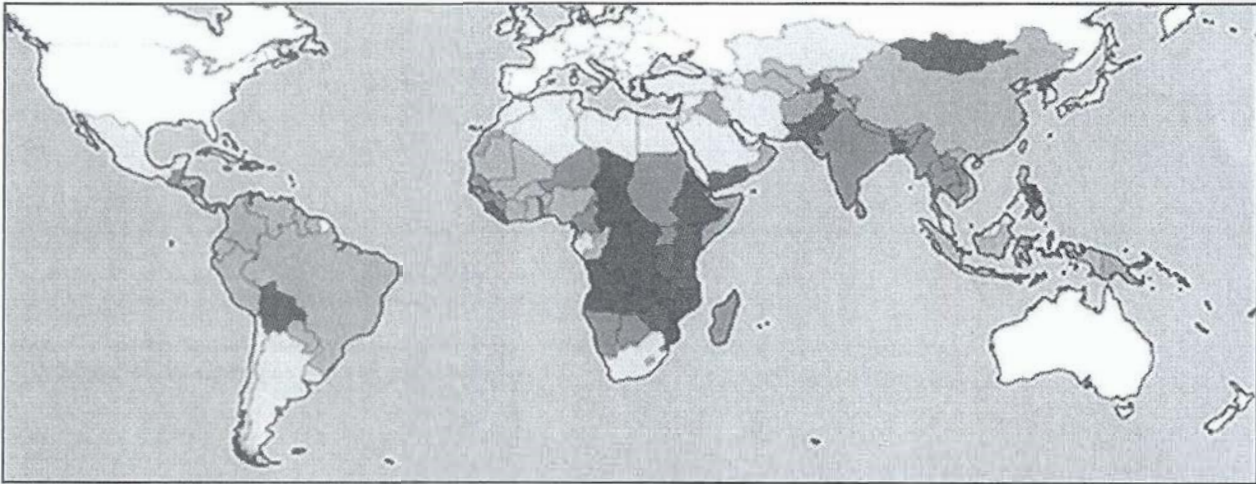
[8]

[Turn over

Section B

Answer **one** question from this section.

- 3 a Study Fig. 6, which shows the percentage of undernourishment in the world.



Prevalence of undernourishment in countries

-  Very high (undernourishment 35% and above)
-  High (undernourishment 25-34%)
-  Moderately high (undernourishment 15-24%)
-  Moderately low (undernourishment 5-14%)
-  Very low (undernourishment below 5%)
-  Missing or insufficient data

Fig. 6

Describe the distribution of undernourishment in the world as shown in Fig. 6 and explain how inadequate food consumption impacts individuals and the economy of a country.

[6]

- b Study Fig. 7, which shows the meat consumption in China and the United States (U.S.) from 1960 to 2012.

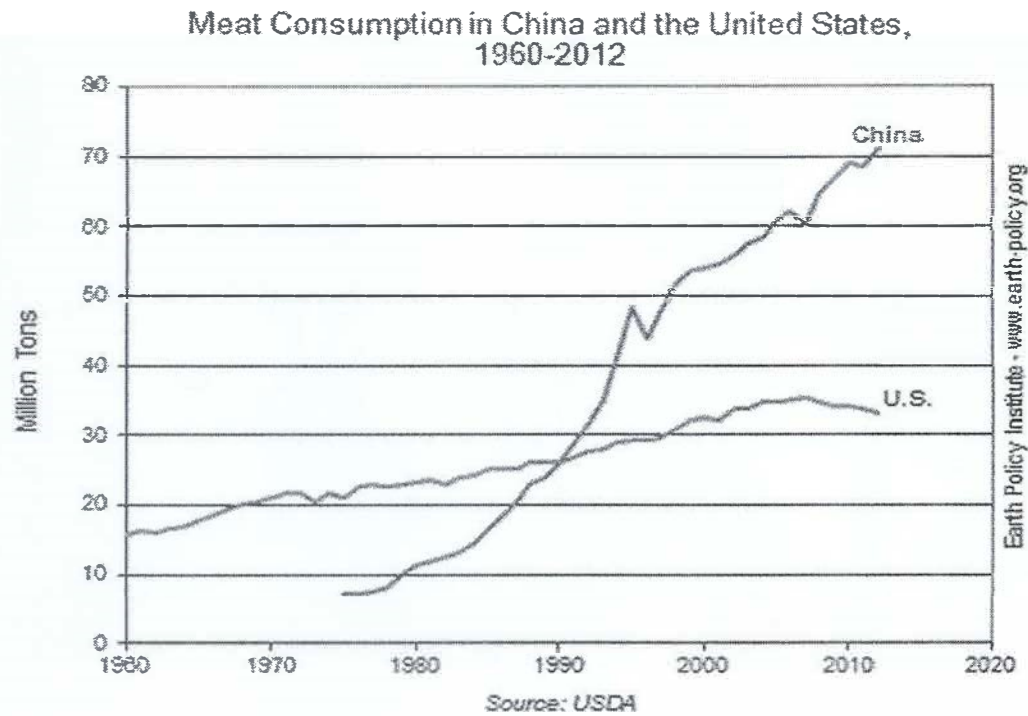


Fig. 7

Refer to Fig. 7, describe and account for the meat consumption in China and the U.S. from 1960 to 2012.

[6]

- c Suggest reasons why consumption of fast food has been rising in less developed countries.

[5]

- d The Green Revolution refers to the rapid increase in the productivity of agriculture through the use of science and technology.

With the use of specific examples, evaluate the use of irrigation and chemicals in producing a sustainable food supply.

[8]

[Turn over

- 4 a Study Fig. 8, which shows the distribution of malaria in the world.

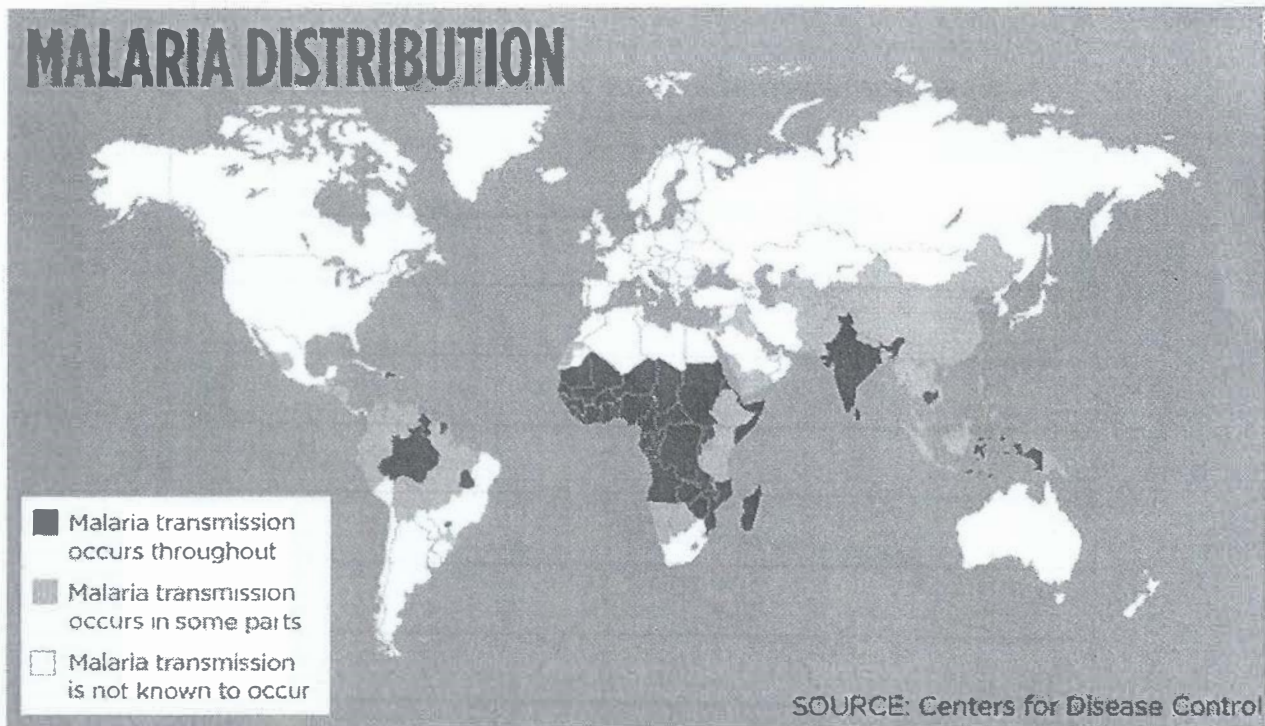


Fig. 8

Refer to Fig. 8, describe the distribution of malaria in the world and explain how climate may influence the spread of malaria.

[6]

- b Study Fig. 9, which shows the indicators used to measure health.

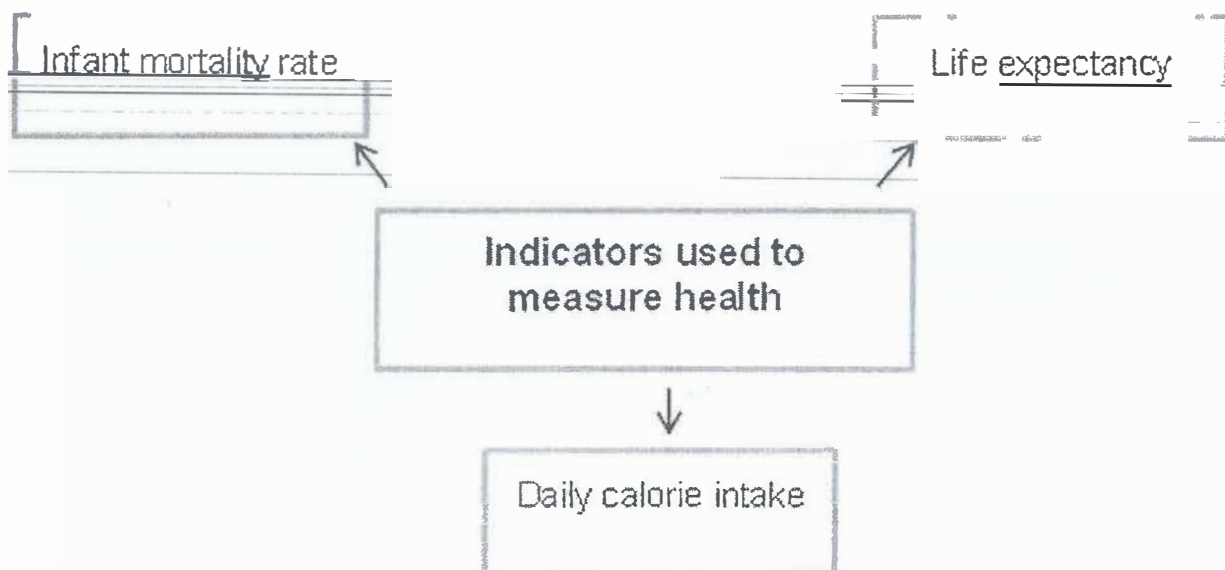


Fig. 9

Describe how the three indicators in Fig. 9 be used to measure the level of health in a country.

[6]

- c Explain how environmental factors may account for people in Less Developed Countries (LDCs) having poor health.

[5]

- d** 'Governments are the most important influence in attempting to control the spread of infectious diseases.'

To what extent do you consider this statement to be true? Give evidence to support your answer.

[8]

End of paper.



ST ANDREW'S SECONDARY SCHOOL
MID YEAR EXAMINATION 2016
SECONDARY 4 EXPRESS/ 5 NORMAL ACADEMIC

GEOGRAPHY 2236/01
06 May 2016

Section A
This question is compulsory

1(a) A group of students carried out field work on some of the cultural attractions of Bagan in Myanmar. Fig 1 (Insert) shows the position of Bagan in Myanmar and Photograph A (Insert) shows a view from the air of some of the attractions of Bagan.
The students decided to consider the guiding question 'How does use of the internet for researching and booking a holiday vary according to the country of origin of tourists?'
They devised a questionnaire, Fig. 2 (Insert), to look at the use of the internet with some personal and destination factors.
In order to complete the questionnaire they organized themselves into five pairs with each pair to interview twenty foreign visitors.

- (i) What are the advantages of using a systematic sampling method, with students working in pairs, to complete a questionnaire? [3]

Credit 1m for any of the following:

- Systematic sampling provides more complete coverage of an area.
- Systematic sampling is quick and there is no need to use random number tables.
- There is no age/gender bias.
- They are able to survey large group of people
- Students working in pairs allow for accountability and safety.

- (ii) The results from Section B of the questionnaire, Fig. 2, were presented and analysed.
The figures from four countries from which tourists originated were used for this purpose. The results for the four countries are shown in Fig. 3.

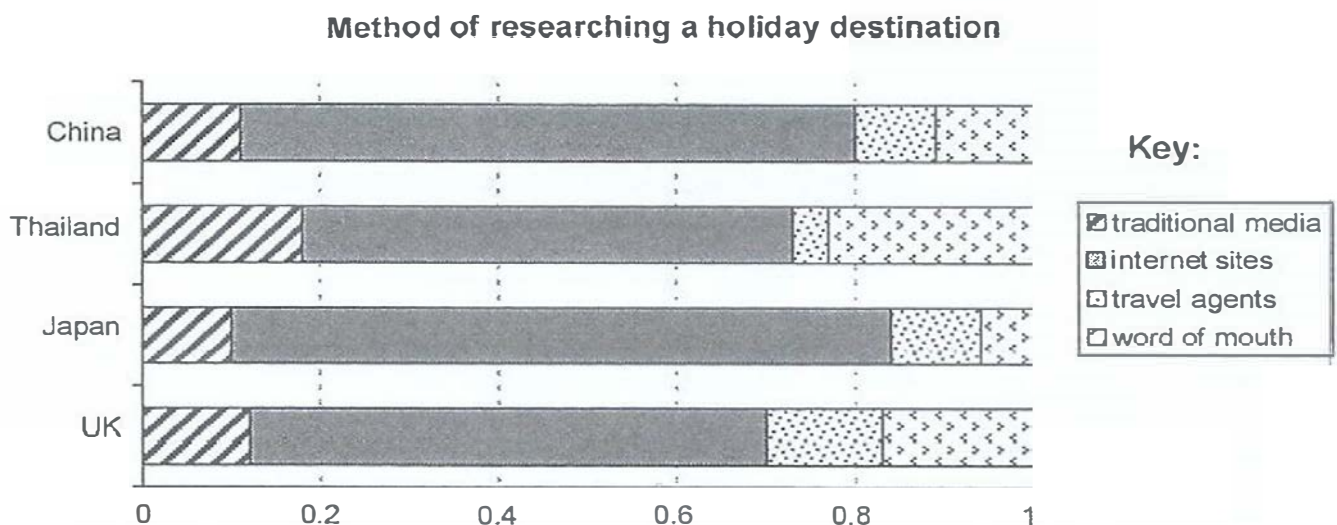


Fig. 3

Using the information in fig. 3 to calculate which country has the lowest use of internet when considering researching a holiday

- Thailand has the lowest use of Internet at approximately 58%.

- (iii) The results from Section C of the questionnaire for the same four countries are shown in Table 1.

Table 1
Methods of booking holiday

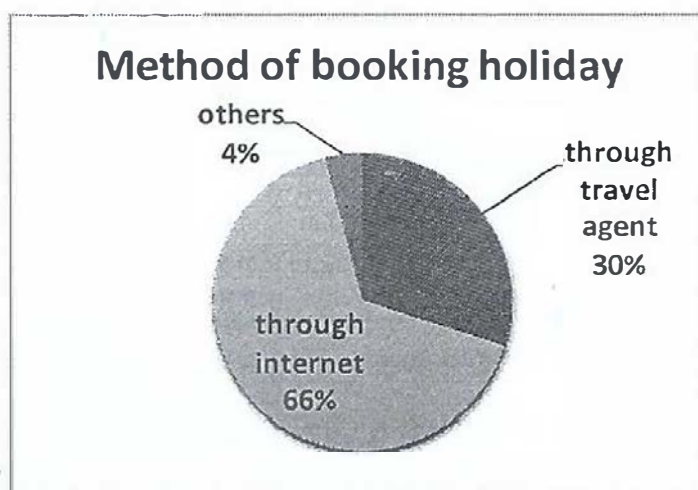
country of origin	through travel agent	through internet	others
China	65	35	0
Thailand	39	42	19
Japan	30	66	4
UK	51	49	0

Figures are given as percentage of total from each country

Using information in Table 1, draw a pie chart to show the methods of booking a holiday in Japan. [3]

Credit 1m:

- Through travel agent = 30% (108°)
- Through internet = 66% (237.6°)
- Others = 4% (14.4°)
- Correct title



- (iv) What conclusions can be drawn from the information shown on Fig. 3 and Table 1 in response to the guiding question 'How does use of the internet for researching and booking a holiday vary according to the country of origin of tourists?' [5]

Credit 1m for any of the following:

Based on Fig. 3 (Method of Researching a Holiday)

- In general the most popular method of researching a holiday is through internet sites. This is especially in Japan and China where about 70% use the internet for research.
- The use of internet for research is less popular in the UK at about 55% and Thailand is the lowest at 53%.
- Traditional media garnered a considerable percentage at a range 10-15% in all countries.
- Travel agents also garnered a considerable percentage in most countries between 10-15%.
- However, Thailand is an exception where people rely more on word of mouth (25%) as compared to travel agents (5%).

Based on Table 1 (Method of Booking a Holiday)

- In general the most popular method of booking a holiday varies in different countries.
- In developed countries such as Japan and UK, people generally prefer to book through internet as there is almost double the percentage of 66% booking through the internet in Japan compared to travel agent of 30%.
- Whereas in developing countries the trend is vice versa with people preferring to book through a travel agent. For example, in China the most popular method is through travel agent with double the amount choosing to book through a travel agent 65% as compared to those booking through internet (35%).
- Booking through a travel agent is the most popular in China compared to other countries at 65% whereas booking through the internet is most common in Japan at 66%.
- Booking through a travel agent is the least preferred method in Japan at 30% and booking through the internet is the least preferred method in China at 35%.

- (b) The students examined whether the number of visitors from a country was influenced by the distance of the country from Bagan.

There are two methods used to show the percentage of visitors from each country. Fig. 4 (Insert) is a map with flow lines showing the percentage of visitors from each country. Fig. 5 is another method of showing the percentage of visitors from each country.

Origin of visitors to Bagan

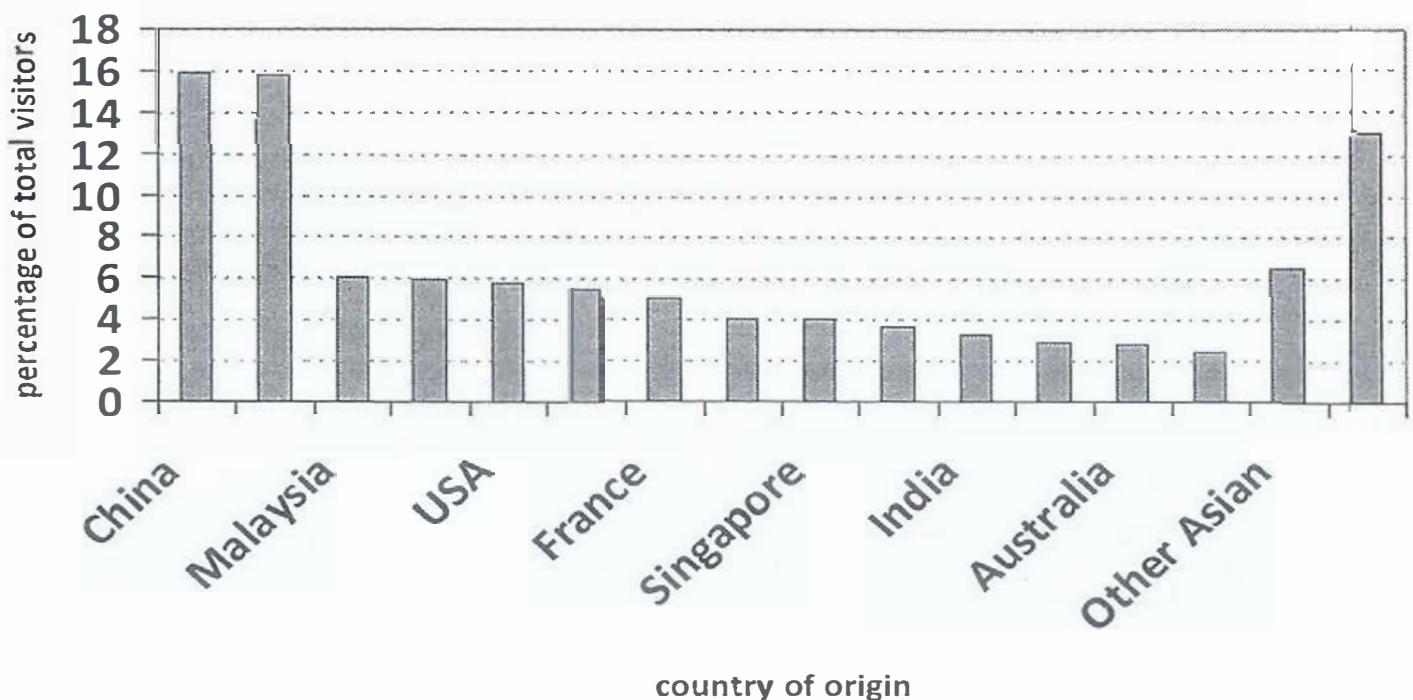


Fig. 5

- (i) Which method used to show origin of visitors is preferable? Give reasons for your answer. [2]

Credit 1m for any of the following:

- Fig. 4 is a preferable method of showing the origin of visitors.
- Fig. 4 is a flow-line map which shows the flow and direction of people from the origin.
- It utilizes the world map to easily illustrate the origins and destinations of visitor's movements.

- (ii) How far does the information in Figs. 4 and 5 agree with the hypothesis that 'The longer the travelling distance, the fewer the number of tourists from that country visit Bagan.'? [4]

Credit 1m for any of the following:

- Fig.4 and 5 show that the greatest percentage of visitors originate from China, Thailand and other Asian countries this agrees with the hypothesis since Bagan, Myanmar is located in Southeast Asia.
- The statement is proven for most countries in Europe which are located further away, hence fewer visitors. For example, UK and Germany record slightly more than 3% of visitors and France about 5%.
- The statement is also true in China and Thailand which are located nearest to Myanmar and have the highest percentage of visitors of over 15%.
- However, the statement is untrue for some countries which are located in Southeast Asia like Singapore and Malaysia and are near to Myanmar but have few visitors with Singapore at 4% and Malaysia at 6%.
- The statement is also untrue for the USA which is located the furthest away from Myanmar, yet it has a higher percentage of travellers at about 5% compared to European countries like UK and Germany which are slightly more than 3% although they are nearer to Myanmar.

- (c) Some of the personal information in Section A of the questionnaire has not yet been used by the students in their fieldwork investigation.

Suggest a guiding question for an investigation you could carry out linking personal information to the different attractions in Section D of the questionnaire. [1]

Credit 1m for any of the following:

- Does the age group of the visitor's determine the reason for attraction to the holiday destination of Bagan?
- How does the country of origin influence a visitor's reason for attraction to the holiday destination of Bagan?
- Which country has the most visitors who visit Bagan for its cultural and heritage sites?

- (d) Suggest methods the students might use to test the hypothesis that 'Visitors to Bagan have had a negative impact on the environment.' [6]

Credit 1m each:

- Students can conduct an environmental perception survey which is a data collection method carried out to investigate the quality of the environment.
- To collect such data, students need to construct a bipolar survey which uses pairs of opposite words to talk about the environment around Bagan.
- By showing two extreme ends of each pair, (e.g. High versus low), the students can then choose the most suitable option.
- Some categories that students can include in their survey for example can be, (little litter versus much litter), (little vandalism versus much vandalism), (low human traffic versus high human traffic), and (pleasant surroundings versus unpleasant surroundings).
- Students can complete the environmental perception survey themselves by walking around and observing the grounds of Bagan.
- They can then administer it to visitors to Bagan by conducting selecting tourists to complete the survey through the random or systematic sampling method.
- Students can also conduct observation studies. They start by taking photographs of the tourist environment as a visual record of the area.
- Through the photographs, students can identify key tourist features of the area to help them observe the relationships between these features.
- For example, students can gather data on the amenities and services in Bagan like the litter bins and the signs that discourage littering in the area to see whether such measures are in place to prevent negative environmental impacts.

Section B

Answer **one** question from this section.

- 2(a)** Study Figs. 6A and 6B (Insert), which show the Sundarbans, an area of mangroves. Fig. 6B is an enlargement of the area shown as in the box in Fig. 6A. Use Figs. 6A and 6B to describe the location and extent of the Sundarbans. [4]

Credit 1 mark each:

- Fig. 6A shows that the Sundarbans is found at the Bengal region north of the Bay of Bengal, surrounded by India in the west, Bangladesh and Bhutan in the north and Myanmar in the east.
- It is found southeast of the Ganges River which flows south and east through India and Bangladesh and empties into the Bay of Bengal. The Sundarbans are found at the mouths of the Ganges River.
- Fig. 6B shows that the Sundarbans comprises both Eastern India and Southern Bangladesh where the majority of about 60% is located in Bangladesh and the remaining is in India. It spans a length of about 400 km long from about longitude 88° to 91° east.
- The Sundarbans also encompasses two towns. One of them is Mongla in Bangladesh which is found in the northeast of the Sundarbans, and the other is Namkhana in India which is found southwest of the Sundarbans

- (b)** How and why do mangroves show patterns of horizontal zonation? [5]

Credit 1 mark each:

- Mangroves show patterns of horizontal zonation where the structure and dominant species in each zone varies due to environmental conditions.
- The various mangrove species adapt to the environment by developing different root systems.
- The coastal zone which is the seaward front of mangroves is subject to regular strong effects of the tides and sediment changes. In order to maintain their stability and anchorage, the mangroves in this zone have pencil roots. *Sonneratia* and *Avicennia* are species with pencil roots.
- In the middle zone, the mangroves are denser and consist of a wider variety of species. Sedimentation is important for the mangroves to maintain greater heights. In this zone, species such as the *Rhizophora* have developed prop roots to support their height.
- Compared to the seaward front, the mangroves in the inland zone are submerged by tides for a fewer number of days. In the inland zone, species such as the *Bruguiera* trap soil between their roots. Soil is essential for plant growth as it provided nutrients for the mangroves and a habitat for the shellfish.

- (c)** Study fig. 7 (Insert), which shows a mangrove environment. Use Fig. 7 to explain the value of a mangrove environment as a provider of food. [3]

Credit 1m for any of the following:

- The mangrove environment is a breeding ground for a range of marine creatures. Barnacles, oysters and sponges anchor on hard surfaces of aerial roots.
- Shrimps, crabs and lobsters which are primary consumers forage for food in the muddy sediments between mangrove roots. Shrimps and crabs are eaten by herons swooping in the air which are secondary consumers as seen in Fig. 7.
- As the fish and prawn feed and grow, they may be eaten by bigger fish, such as barramundi and sharks which lurk in the canopy of the mangrove trees or out in open

water as shown in Fig. 7, they are known as predators.

- Lastly, humans are on top of the food chain as the fishermen shown in Fig. 7 fish for fishes, prawns, lobsters and crabs for personal consumption as food.

(d) Study Table 2, which shows the effect of a tsunami on part of the southeast coast of India. Part of the affected area is shown in Fig 8.

Table 2

Village number on map	Height above sea level	Type of vegetation	Number of deaths	Loss of wealth in \$US, eg huts, boats
1	2.0 m	Muddy shore with dense mangroves	0	18
2	0.8 m	Low lying sandy shore	55	956
3	1.0 m	Mud and sandy shore with woody mangroves	5	222
4	4.0 m	Steep sandy shore with dunes	4	289

Villages affected by a tsunami on part of the southeast coast of India

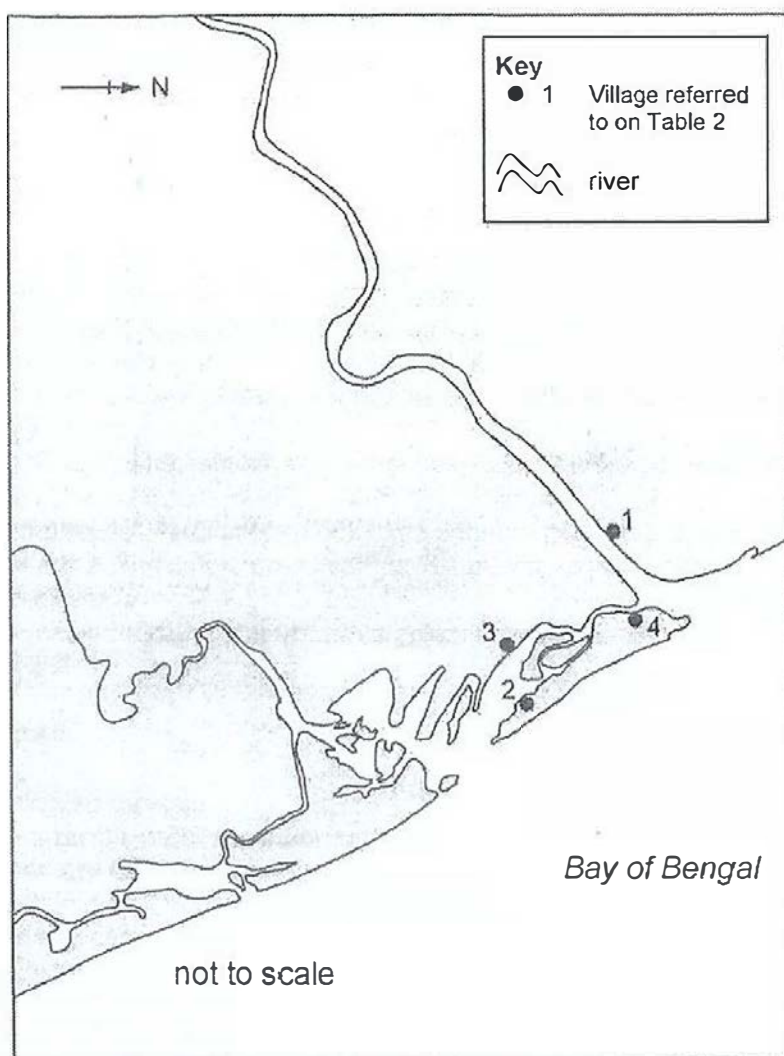


Fig. 8

Use the information provided to assess the effect of height above sea level, distance from the sea and type of vegetation on reducing the impact of the tsunami. [5]

Credit 1m for any of the following:

- In general, the higher the height above sea level, the lower the number of deaths. For example, Village 2 is the lowest at 0.8m above sea level which resulted in 55 deaths as compared to Village 4 which is the highest at 4.0m and had lesser deaths of 4 people.
- However, height above sea level is not the only factor to prevent deaths and destruction. In villages where there are mangroves grown, the number of deaths and loss of wealth is reduced significantly. For example, in Village 1 which is 2.0m above sea level has dense mangroves, this prevented any deaths and a small loss of \$US18 only. However, Village 4 without any mangroves had a higher amount of loss at \$US289.
- Planting vegetation such as mangroves can help stabilise coastlines. As mangroves absorb wave energy through their dense root system, thus slowing the flow of water.
- The further the distance from the sea, the lower the loss of wealth. For example, Village 1 was found along the river further inland from the coast and sustained a small loss of wealth of \$US18 compared to Village 2 and 4 which were found near the mouths of the Ganges River next to the coast and sustained larger losses of \$US956 and \$US289 respectively.
- Village 3 is an exception as it is found relatively near the sea but managed to sustain a low number of 5 deaths, however, there was a relatively high amount of wealth lost as perhaps it is a densely built-up area with more buildings and roads.

(e) 'Human activities, which could be avoided, are having a harmful effect on the mangrove ecosystem.'

How far do you agree? Use examples to support your answer. [8]

Answers may include the following points:

Human Activities

Demand for fuel wood and charcoal

- Mangroves are cleared for fuel wood and charcoal, particularly in regions with low technology and low income economies.
- This will impact on fish breeding grounds and cause them to be reduced. It also causes coasts to be more open to storm waves.
- For example, Indonesia's original endowment of 4.2 million hectares of mangroves has been reduced to less than 2.4 million hectares, with at least 60% of this loss due to conversion to aquaculture. More than one third of Indonesia's mangroves were lost from 1980 to 2000, faster than the rate of loss of inland tropical forests and coral reefs.

Need for More Farming Areas

- Thousands of hectares of the flat, well-watered mangroves are converted into paddy fields and shrimp farms.
Mangroves are cleared and coasts become more vulnerable
- For example in Ca Mau, Vietnam, in the 1980s, more than 60 000 hectares of coastal mangroves were cleared for building materials, firewood and converted into shrimp farms. Areas cleared for mangrove forest are favourable for shrimp productions as they are already waterlogged.
- The clearing of mangroves has left Vietnam's coastline more vulnerable to erosion from storms and pollution from pond waste.

Land Reclamation

- Land is reclaimed for housing, industry and recreational uses.
- Mangroves largely disappear from the environment. Moreover, coastal waters are polluted as a result of human activities.

- For example, Colombia's Caribbean Coast harbors 88250 hectares of mangroves strongly threatened by human activities. These mangroves have been converted to agricultural lands, shrimp aquaculture ponds, and urban development.

Water Pollution

- Urban and manufacturing activities result in untreated or partly treated urban and manufacturing wastes being dumped into coastal waters.
- The pollution of coastal waters can overwhelm the delicate balance of mangrove ecosystems.
- For example, the city of Piura is not far from the coast in Peru faces pressures to the ecosystem through water diversion and pollution as well as development and other activities such as tourism.

Physical Factors

Rising Sea Levels

- Rising sea levels together with extreme storm activity are likely to occur in future if climate change accelerates.
- Mangroves will have trouble colonising areas further inland despite sea level rise as they will be in competition with human activities such as farming and the construction of sea defences.
- The pollution of coastal waters can overwhelm the delicate balance of mangrove ecosystems.
- For example, mangrove forests with a high tidal range and/or high sediment supply such as Northern Australia, eastern Borneo, east Africa and the Bay of Bengal proved to be relatively resilient. Most of these forests will likely survive well into the second half of the century under low and moderate rates of sea-level rise.
- However, the prospect of mangrove survival to 2070 under the 63 cm and 1.4m scenarios was poor for the Gulf of Thailand, the southeast coast of Sumatra, the north coasts of Java and Papua New Guinea and the Solomon Islands.

A full answer does not need to include all the above points
At each level, students will show the following characteristics

Level 1 (0-2m)

Provides only one-side – human activities

Simple description

No examples given

E.g. Thousands of hectares of the flat, well-watered mangroves are converted into paddy fields and shrimp farms. Mangroves are cleared and coasts become more vulnerable.

Level 2 (3 – 4 marks)

Provides two-sides – at least two human activities

Some description, lacking depth

Some examples given, although lacking in details

E.g. Thousands of hectares of the flat, well-watered mangroves are converted into paddy fields and shrimp farms. Mangroves are cleared and coasts become more vulnerable. For example in Ca Mau, Vietnam, in the 1980s, more than 60 000 hectares of coastal mangroves were cleared for building materials, firewood and converted into shrimp farms.

Level 3 (5 – 6 marks)

Provides two-sides – at least two human activities and one physical factor

Describes all impacts in detail

Detailed examples given

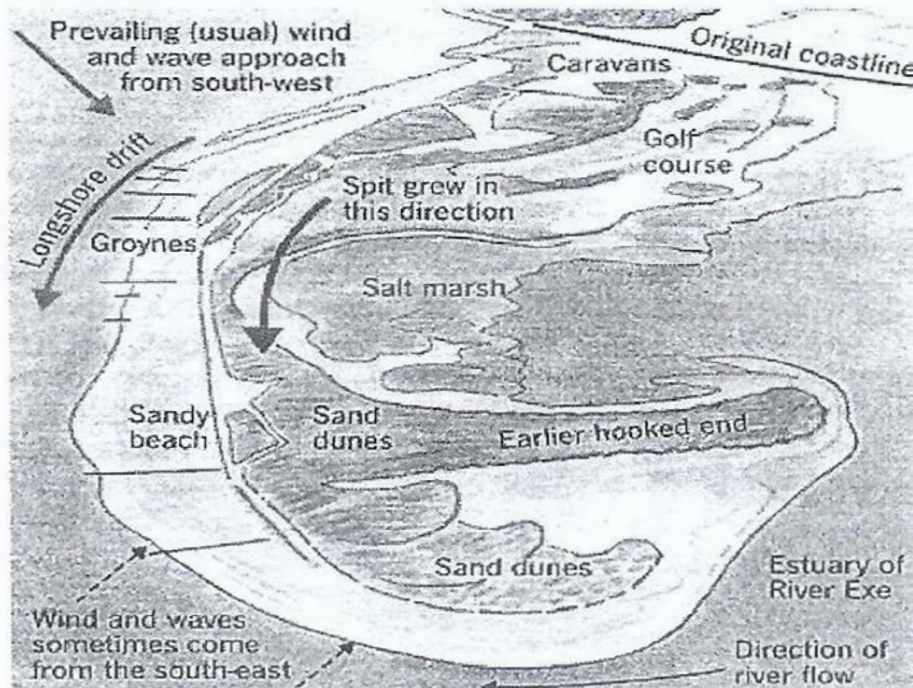
Makes a stand

- E.g. Thousands of hectares of the flat, well-watered mangroves are converted into paddy fields and shrimp farms. Mangroves are cleared and coasts become more vulnerable. For

example in Ca Mau, Vietnam, in the 1980s, more than 60 000 hectares of coastal mangroves were cleared for building materials, firewood and converted into shrimp farms. Areas cleared for mangrove forest are favourable for shrimp productions as they are already waterlogged. The clearing of mangroves has left Vietnam's coastline more vulnerable to erosion from storms and pollution from pond waste.

3(a) Study Photography B (Insert), which shows a coastal feature.

(i) Describe the shape of the feature shown in Photograph B. [3]



Main features

- Spit, Hook spit
- Sand dunes
- Sandy beach along the spit
- Groynes found along the beach
- Vegetation growing on the spit
- Houses and building are found on the main land

Processes

- Longshore drift in the southern direction

E.g.

The feature shown in Photograph B is a spit. It has a long, narrow ridge of sand or pebbles with one end attached to the land, and the other end projects out into the sea. A hook or curve is developed at the end of the spit.

(ii) Use the Photograph B to help you suggest how different coastal processes may account for the formation of the feature shown. [5]

- Longshore drift happens when waves approach shore at oblique angle due to wind direction from Southwest. [1]
- Materials are pushed up the beach at the same angle while the backwash drags the materials down perpendicular to the coastline due to gravitational forces. [1]
- As this process repeats, materials are dragged up and down the coast in a zig-zag manner. This process is known as beach drift. [1]
- Longshore current and longshore drift
- When there is a curve / bend in the coastline such as at mouth of river, the materials transported by longshore drift is deposited in the water where the land curves inland. [1]
- Through time, this accumulation of materials rises above the water level, creating an elongated landform with one end attached to the mainland called a spit [1].

(b) Study Fig. 9, which shows aspects of medical tourism.

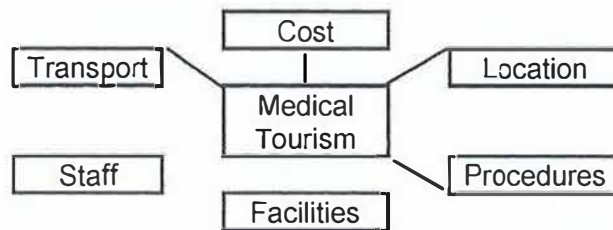


Fig. 9

With the help of Fig. 9. Explain why countries such as Thailand and Singapore are popular destinations for medical tourists. [4]

Credit 4 points at 1 mark each.

Accept possible reasons, complemented with sufficient explanation such as:

- Attraction: The reputation of Thailand and Singapore with their advanced medical services and expertise establishes itself as a safe and reputable destination for medical and health tourism.
- Investment in infrastructure and services: Infrastructure such as hospitals, establishments, clinics and even supporting infrastructure and services like airports can also contribute as a pull-factor for potential medical and health tourist.
- Access of information: Relative ease in which information pertaining to medical and health services for tourists in Korea can be obtained through avenues like the internet and media causes tourists to be more likely to visit a destination with excellent reputations for medical procedures.
- Media: The role of the media in promoting and marketing Thailand and Singapore as a preferred destination for medical and health tourism may have contributed to the attraction.
- Government: Government bodies/agencies may have devised strategies to promote medical tourism in the country, such as marketing campaigns and promotional events with particular focus on the medical and health services provided by Thailand and Singapore.
- Travel writers: Independent travel writers may have contributed/testified to a positive reputation that Thailand and Singapore has for its safe and experienced medical and health expertise.
- Exchange rate: One may also decide on a medical and health tourism destination based on how advantageous the exchange rate is to the tourist, particularly, when the economy of the country of origin is doing better, the rates of medical and health tourism might cause Thailand and Singapore to be an attractive country to visit.
- Other points: transport accessibility, lower cost, better quality medical procedures, trusted facilities and staff.

(c) Use examples to help you explain the characteristics of dark tourism. [5]

- Dark tourism is tourism that involves travelling to sites associated with death and tragedy.
- People who take part in dark tourism usually include survivors, relatives and friends of those affected, as well as people interested to know more about an event. Dark tourism sites include battlefields, fortifications, museums and memorials at locations that are important in modern history.
- There are several types of sites for dark tourism, such as military campaign sites, natural disaster sites, terrorist attack sites, genocide event sites and prison camp sites.

- E.g. of a military campaign site is Cu chi and Vinh Moc Tunnels in Vietnam, where tunnels are dug and used in the 1960s and 1970s by the Vietcong to hide from the American forces that supported South Vietnam. The Vietcong was a Communist guerrilla group in what was then known as South Vietnam.
- E.g. of natural disaster site is the Ruins of Pompeii, Italy, is a Roman town buried in ash by the eruption of Mount Vesuvius in 79 AD.
- E.g. of terrorist attack sites is Ground Zero, New York City, USA, which is the former location of the World Trade Center, which collapsed on 11 September 2001 after a terrorist attack. The twin towers collapsed after terrorists slammed two hijacked planes into the buildings, killing more than 3000 people.
- E.g. of dark tourism is genocide event sites such as Tuol Sleng Genocide Museum in Cambodia, where a security prison is used by the Pol Pot Government from 1975 to 1979 for interrogation and torture.
- E.g. prison camp sites are also a form of dark tourism, and an example is Auschwitz in Poland, one of the several concentration camp developed by the Nazis in World War 2 for Jews and prisoners of war.

(d) 'Tourism brings only advantages to the economy of countries.'
How far do you agree? Use examples to support your answer. [8]

Students' answers assessed on evidence of skills of:

- Evidence of balanced comparison between the impacts of tourism (i.e. similar numbers of positive and negative impacts for both socio-cultural and environmental impacts)
- Logic (evaluation should have logical and clear reasoning)
- Appropriate examples and references

Students may include the following information:

Positive Impact

Employment opportunities

- Employment is work performed for a wage or salary, in cash or in kind. Employment in the tourist industry forms part of the service sector of an economy.
- The growth of tourism has led to an increase in the number of tourist-related jobs.
- The tourism industry offers many employment opportunities. These include workers in hotels, transportation, souvenir shops and tour agencies.
- Some jobs are directly linked to the tourism industry like travel agents, tour guide and cater to the needs of the tourists.
- Jobs can also be indirectly linked to the tourist industry whenever tourists travel and consume goods like taxi drivers and shop owners.
- For example, in 2011, the UNWTO estimated that the tourism industry employed 235 million people worldwide; this is roughly 6-8% of all the jobs in the world.

Growth in income

- Growth in tourism can lead to growth in income for individuals and for a country.
- An example is In Pamilacan Island in the Philippines, local tour companies hire fishermen to take tourists on their boats to look for and swim with whale sharks and dolphins; the fishermen are paid between US\$80 and US\$100 per boat for their service.
- With a high demand for their service from tourists, the fishermen can expect additional income on top of their fishing livelihood.
- Similarly, tour companies will also experience an increase in revenue for the country through taxes collected from the fishermen and tour companies.
- Tourist receipts, which refer to the money received from tourist spending also generate large revenue for many countries
- For example, in 2011, worldwide tourism receipts exceeded US\$1 trillion.

Increase in foreign exchange

- Foreign exchange is money earned from other countries in exchange of goods and services.
- Foreign exchange is earned from the spending of international travelers plays a big role in the country's economy.
- For example, tourism is Fiji's largest foreign exchange earner; it makes up for between 20 and 25% of the country's economy.
- Many countries that host large numbers of tourists also receive considerable tourism business investments from other countries.
- For example, Singapore plays host to many international hotel chains such as the Marriott and Shangri-La, which invest in building and furnishing hotels and resorts, and training staff at tourist destinations.
- Because these hotels operate in Singapore, they exchange their own foreign currency to purchase Singapore dollars in order to make their investments.
- This increases the demand for Singapore dollars and contributes to Singapore's capital flow.

Development of Infrastructure

- Infrastructure development is the construction of transport and communication networks, electrical frameworks and systems for water and waste disposal.
- Without sufficient infrastructure and appropriate facilities such as airports, roads, electricity and hotels, tourism cannot develop and would not be able to operate on such a large scale.
- Roads that link airports, cities and tourist sites – increases accessibility to local attractions. They also allow local people better access to more markets, health care education and jobs. Therefore infrastructure built to enhance tourism also brings benefits to locals.
- Sports venues and other infrastructure are built for major sporting events, such as the Olympic Games and the World Cup. Such venues improve the sporting infrastructure of the host countries. They are also useful even after the key event.
- For example, in both the cities, Athens [Greece] and Beijing [China], underground rail systems were expanded to move large number of visitors during the Olympic Games in 2004 and 2008 respectively.
- Developing infrastructure also creates employment for local workers. This is because many workers are needed during the construction process. Local materials may be used in constructing infrastructure, hence boosting local industries.
- Local materials may be used in constructing infrastructure, hence boosting local industries. The increased spending in the local economy encourages economic growth.

Negative Impact

Leakages

- Revenue generated from tourism does not always remain in the country where tourists spend their money. This is because a large portion of the tourism receipts is lost as a leakage, especially in LDCs.
- In these countries, the leakage occurs where revenue earned from tourism is paid to other countries for the import of goods and services needed to meet the needs of the tourists.
- For example, tourists may fly to Phuket on a non-local airline, as a result, profits made are sent to another country.

Seasonal Unemployment

- Certain tourist activities depend on climatic conditions.
- These countries may experience a rise in tourist numbers for several months followed by a drop in tourist numbers for the next few months.
- As a result, people in tourism related jobs may have to find other sources of income when employment in the tourism industry is temporarily unavailable.
- For example, the city of Sapporo Japan receives a large number of visitors from December

to February. Many visitors who go during these times plan to engage in winter sports such as skiing and snowboarding. Mountain ski resort operators will need to employ more people during winter to cater to the high tourist demand.

- In other times of the year, many people employed in the tourism industry may have to find other sources of income.
- Some workers may return to other jobs, such as farming or move away temporarily until the next tourist season.
- This decreases the income of these people who are only seasonally unemployed and in turn affects the economy.

Underuse of Facilities

- Since some types of tourism is seasonal, facilities built specifically for certain events may be underused when the event is over hence costly to maintain.
- Because money earned from tourists normally pays for the cost of maintaining such facilities.
- As a result, some of these facilities may become neglected when there are few tourists
- For example, some of the venues built specifically for the 2008 Summer Olympics in Beijing were reported to be deteriorating a few years after the Olympics.
- Beijing National Aquatics Center had been renovated into a water park in August 2010, but in 2011, only one-third of major sports venues in China have managed to break even. This means that they only made enough money to cover the maintenance cost each year.

Shortage of Services

- Tourist infrastructure may require 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.
- For example, large amounts of water are required to water the grass on golf courses and fill swimming pools. Hence, drinking water for nearby residents could be diverted to meet the needs of tourist infrastructure.

Environmental Impacts

- (+) Conservation of natural environments: Tourism receipts gained can go to funding conservation of environments such as coral reefs, rainforests and mountainous areas.
- (-) Increased congestion: Large numbers of tourists can cause overcrowding in areas close to popular attractions. Vehicular and pedestrian traffic may become congested.
- (-) Vandalism: Cultural, historical or natural sites may be vandalized or deliberately damaged by tourists or developers.
- (-) Pollution and littering: Pollution and litter from tourists coupled with poor waste management can lead to degradation of popular tourist sites.
- (-) Destruction of habitats: Popular tourist sites, such as quiet stretches of sandy beaches and scenic villages, can be overwhelmed with visitors during peak periods. These tourists may destroy habitat and wildlife.
- (-) Increased carbon footprint: Activities done while travelling involving the use of fossil fuel can contribute to significant amounts of greenhouse gas emissions. Carbon footprint of tourism contributes to enhanced greenhouse effect and global warming.

Socio-cultural Impacts

- (+) Preservation of culture and local customs is the protection of the way people live, including their economic activities, traditional beliefs and religious practices. The demand of tourism spurs the preservation and restoration of historical and cultural sites.
- With reference to photograph B and C, the performance of traditional dances and rituals can contribute to livelihoods of the local communities, while it improves their lives, it also helps preserve their culture, customs and practices which might otherwise disappear
- (-) Identity, culture and values of a place can be lost when tourism becomes the major activity. Commercialisation of culture and a place may lead to the risk of new and larger

buildings replacing the traditional. Local cultural festivals and religious rituals are also sometimes modified for tourists.

- With reference to the photographs, when dances and food are served for the tourists, they might be altered to suit the taste and preferences of the tourists. The authenticity and significance of these events and food might be compromised when commercialized.
- (-) High crime levels may occur at popular tourist sites. Tourists with conspicuous valuables become vulnerable targets for muggers and pickpockets.
- E.g. Louvre in Paris was forced to close due to a protest against the increasing problem of pickpockets working in the museum.

Students at each level will show the following in characteristics:

Level 1 (0 - 3 marks):

- At this level, answer is vague and lacks detail.
- Most statements are highly descriptive not going into any explanation on the impacts of tourism. Brief statements on the impact of tourism on the economy.
- The answer may also be highly skewed to either one particular impact. Only positive or negative impact written.
- Little or no examples are used to substantiate answers. Examples are either general or just stated, without explanation.
- There may or may not be evidence of terminologies used in answer. Terminologies (e.g. Preservation of culture, employment, socio-cultural, carbon footprint) used are generally only stated without explanation or evidence.
- E.g. Employment is work performed for a wage or salary, in cash or in kind. Employment in the tourist industry forms part of the service sector of an economy. The growth of tourism has led to an increase in the number of tourist-related jobs. The tourism industry offers many employment opportunities. For example, in 2011, the UNWTO estimated that the tourism industry employed 235 million people worldwide.

Level 2 (4 - 6 marks):

- At this level, answers will have appropriate detail. Details are mostly explanatory in nature but generally do not really evaluate or contribute to any weighing or comparison.
- Explains on at least 1 and 1 positive/negative impact of tourism on the economy. They are mere description of impacts.
- Balanced argument (Otherwise, maximum 4)
- There must be at least one specific example given to support the answer but examples are not used consistently throughout the answer. Examples are relevant but lack depth and details.
- Some terminologies are used, but with little explanation and evidence of understanding. Terminologies may also be used inappropriately in answer.
- E.g. Employment is work performed for a wage or salary, in cash or in kind. Employment in the tourist industry forms part of the service sector of an economy. The growth of tourism has led to an increase in the number of tourist-related jobs. The tourism industry offers many employment opportunities. These include workers in hotels, transportation, souvenir shops and tour agencies. Some jobs are directly linked to the tourism industry like travel agents, tour guide and cater to the needs of the tourists. Jobs can also be indirectly linked to the tourist industry whenever tourists travel and consume goods like taxi drivers and shop owners. For example, in 2011, the UNWTO estimated that the tourism industry employed 235 million people worldwide; this is roughly 6-8% of all the jobs in the world.

Level 3 (7 - 8 marks):

- Detailed description of at least 2 and 2 positive/negative impact of tourism on the economy. Balanced argument
- At this level, student's evaluation is evident consistently throughout answer. There are clear justifications of his evaluations.
- Impacts are explained in detail. There is evidence of balanced comparisons of impacts. Impacts must be comprehensively discussed, both positive and negative impacts considered.

- Examples to support answer can be found in most places in the answer. Examples are relevant and specific.
- Appropriate terminologies are used to substantiate answer with clear indication of understanding.
- E.g. Employment is work performed for a wage or salary, in cash or in kind. Employment in the tourist industry forms part of the service sector of an economy. The growth of tourism has led to an increase in the number of tourist-related jobs. The tourism industry offers many employment opportunities. These include workers in hotels, transportation, souvenir shops and tour agencies. Some jobs are directly linked to the tourism industry like travel agents, tour guide and cater to the needs of the tourists. Jobs can also be indirectly linked to the tourist industry whenever tourists travel and consume goods like taxi drivers and shop owners. For example, in 2011, the UNWTO estimated that the tourism industry employed 235 million people worldwide; this is roughly 6-8% of all the jobs in the world.

An example:

Tourism impact people and places in many different ways, and it can be both positive and negative within one destination. Tourism brings about both advantages and disadvantages to economy of countries, as well as socio-cultural and environmental impacts. Economic advantages of tourism for include employment opportunities, growth in income, increase in foreign exchange revenue and development of infrastructure and facilities. Economic disadvantages, on the other hand, consist of seasonal unemployment, underuse of facilities and shortage of services such as water supplies due to competition with tourists.

Employment in the tourism industry forms part of the service sector of an economy. The growth in tourism has led to an increase in the number of tourism-related jobs. Tourism industry offer many employment opportunities. These include workers in hotels, transportation, souvenir shops and tour agencies. Some jobs that are directly linked to the tourism industry are travel agents, tour guides, hotel staff and waiters and waitresses. These jobs cater to the needs of tourists. Jobs can also be indirectly linked to the tourist industry whenever tourist travel and consume goods. Examples are taxi drivers and shop owners.

Growth in tourism can lead to growth in income for individuals and for a country. An example of this is the fishermen on Pamilacan Island in the Philippines. There, local tour companies hire fishermen to take domestic and international tourists on their boats to look for and swim with whale sharks and dolphins. The fishermen are paid between US\$80 to US\$100 per boat for their services, which is a significant amount for an average Filipino fisherman. Tourism receipts, which refer to the money received from tourist spending, also generate large revenue for countries. In 2011, worldwide tourism receipts exceeded US\$1 trillion. However, the revenue generated from tourism does not always remain in the country where tourists spend their money. This is because a large portion of the tourism receipts is lost as a leakage, especially in LDCs. In these countries, the leakage occurs when revenue earned from tourism is paid to other countries for the import of goods and services needed to meet the needs of tourists. For example, travellers may fly into Phuket on a non-local airline, stay in a foreign-owned hotel, drive around in foreign-made cars and eat imported food. As a result, money spent by tourists will contribute to paying for these imported items. The profits made by hotels, rental companies and fast food restaurants are then sent to another country. In the end, the money spent by a tourist may not stay in the local economy and bring few benefits to local businesses and workers.

Foreign exchange is money earned from other countries in exchange for goods and services. Foreign exchange earned from the spending of international traveller plays a big role in a

country's economy. A larger amount of money earned from other countries allows the receiving country to purchase goods and services from elsewhere in the world. For example, tourism is Fiji's largest foreign exchange earner, it makes up for between 20 to 25 percent of the country's economy. The tourist industry also contributes directly and indirectly to government revenues. Government collect revenues directly from taxes such as airport tax, on tourists, and from income tax on employees of tourism-related businesses. Indirect sources of government revenues from tourism are taxes placed on goods and services which are supplied to tourists. These would include manufactured goods such as the petrol used in rented cars. These taxes are collected in the local currency, which increases the foreign exchange of the host country.

Infrastructure development is the construction of transport and communication networks, electrical frameworks and systems for water and waste disposal. Without sufficient infrastructure and appropriate facilities, such as airports, roads, electricity and hotels, tourism cannot develop and would not be able to operate at a large scale. Examples are train infrastructure in Singapore and Beijing National Stadium in China. Roads that link airports, cities and tourist sites allow tourists access to local attractions and allow local people better access to more markets, healthcare, education and jobs. Therefore, infrastructure built enhances tourism and also brings benefits to the locals. An example is sporting venue and other infrastructure built for major sporting events, such as Olympic Games. Such venues improve the sporting infrastructure of the host countries and they are also useful after the key event for the locals. Developing infrastructure also create employment for local workers. This is because many workers are needed during the construction process. Local materials may be used in the constructing infrastructure, hence boosting local industries. The increased spending in the local economy encourages economic growth.

However, there are always two sides to a coin. Hence, tourism has its economic disadvantages too. The tourism industry in some countries experience seasonal unemployment, this is because certain tourist activities depend on climatic conditions. These countries may experience a rise in tourist numbers for several months followed by a drop in tourist numbers for the next few months. As a result, people in some tourism-related jobs may have to find other sources of income when employment in the tourism industry is temporarily unavailable. For example, the city of Sapporo in Japan, receives a large number of visitors from December to February. Many visitors who go during these times plan to engage in winter sports such as skiing and snowboarding. Mountain ski resort operators will need to employ more people during winter to cater to the high tourist demand. In other times, they find other sources of income, such as farming. This decreases the income of these people who are only seasonally employed and in turn affects the economy of the country.

Adding on, facilities built specifically for certain events maybe underused when the event is over. When this happens, these facilities can be costly to maintain because money from tourists normally pays for the cost of maintaining such facilities. As a result, some of these facilities become neglected when there are few tourists. An example is the 2008 Summer Olympic Games in Beijing, China, were reported to be deteriorating a few years after the Olympics. Some has to be renovated to become more profitable.

The last economic disadvantage is the shortage of services. This happens when 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. An example is when large amounts of water are required to water the grass on golf courses and fill swimming

pools, and drinking water for nearby residents could be diverted to meet the needs of tourist infrastructure.

Tourism brings about socio-cultural advantage when culture and local customs are preserved. Preservation of culture is the protection of the way people live, including their economic activities, traditional beliefs and religious practices. When preserved and restored, historical and cultural sites make a place more attractive to tourists. In addition, the restored sites benefit the local population by enhancing their sense of history and by building a sense of belonging to their community. Revenue generated from the tourism can also fund the preservation and restoration of cultural heritage. Entry fees to specific sites such as Angkor Wat complex in Siem Reap, Cambodia, can be used directly to help fund the conservation efforts.

Conversely, tourism brings about socio-cultural disadvantage such as increased crime. High crime levels may occur at popular tourist sites. Some tourists carry valuable items such as watches, cameras and clothes. Thus, they may be vulnerable to mugging near hotels, transport terminals, automated teller machines and tourist attractions.

Tourism also brings about environmental advantage when tourism is the funding to help conserve environments such as coral reefs, rainforests and mountainous areas. From entrance fees to national parks and diving sites, or even levies on nearby accommodations can be used to help protect and conserve the environment. For example, the Sepilok Orang-utan Rehabilitation Centre in Sabah, Malaysia, partly relies on visitor entry fees to pay its staff. The staff help rehabilitate orang-utans that have been orphaned or injured.

However, tourism brings along environmental disadvantage too. Vandalism is the crime of deliberately property belonging to other people. Cultural, historical or natural sites may be vandalised by individuals or developers. For example, the thousands of stones and bricks of the Great Wall of China, which is visited by about 10 million tourists a year, are covered with graffiti.

It is inevitable for tourism to bring about economic, socio-cultural and environmental advantages and disadvantages to countries. What each individual can do is to consciously help to reduce the disadvantages.

- End of Paper -

St Andrew's Secondary School
Humanities Department – Geography Unit
Pure Geography (2236/02)
Sec 4E5N Mid-Year Examination 2016
Marking Scheme

- 1 a Refer to Fig. 1, describe the climatic characteristics of the Asian city.** [5]

Credit 1m each, max 5m

Award max of 3m if only temperature or rainfall patterns are described.

- It is a tropical monsoon climate [reserve 1m]
- Max temp of 30 °C and min temp of 25 °C
- Temperature range of 5 °C
- Mean annual temperature of 27.5 °C
- It has constant high temperature throughout the year
- High total annual rainfall of 1397 mm
- Distinct wet and dry season
- Wet season is from May to Oct while dry season is from Dec to Apr

- b Describe the relationship between temperature and relative humidity.** [4]

Credit 1m each, max 4m

- Relative humidity is the ratio between the actual amount of water vapour present in a mass of air and the maximum amount of water vapour the air could hold at a given temperature.
- Relative humidity varies with temperature
- Warm air can hold more water vapour than cool air
- When temperature increases, the amount of water vapour in the air stays the same, but the rise in temperature makes air more able to hold water vapour
- Thus relative humidity decreases as temperature increases [reserve 1m]

- c Explain why a sea breeze may blow in the area shown on Fig. 2.** [4]

Credit 1m each, max 4m

- A sea breeze is wind that blows from the sea to the land
- It is formed by the difference in air pressure due to the different rates at which land and water bodies heat up
- During the day, the land heats up faster (33°C) than its nearby water bodies (22°C)
- As a result, the air pressure over the land is lower than the sea, and thus, wind blows from the sea (high pressure) to the land (low pressure) during the day to form a sea breeze.

- d Describe how the international community has attempted to respond to climate change.** [4]

Credit 1m each, max 4m

- The United Nations (UN) discusses climate change, and the organisation helps countries make special agreements to work together in dealing with climate change
- Examples of international agreements are the Kyoto Protocol and the Copenhagen Accord which are contracts signed by two or more countries
- The Kyoto Protocol aims to reduce the levels of greenhouse gases in the atmosphere
- The Copenhagen Accord is an international agreement with the long-term goal of keeping any increases in the global mean maximum temperature to within 2°C of the global temperatures before 1850
- The purpose of the Copenhagen Conference was to improve on the measures developed

for the Kyoto Protocol to deal with the issue of climate change

- e 'Sea level rise is the main challenge posed by climate change.' How far do you agree with this statement? Give reasons for your answer. [8]

Answers may include the following points

Sea level rise

- Have changed over millions of years due to natural climate changes.
- However there has been a steady increase in sea levels recorded since the late 1800s until today
- Sea level rise is the increase in the mean height of the sea's surface between high tide and low tide relative to land.
- Higher temperatures cause the melting of glaciers in Greenland and Antarctica.
- The resultant meltwater causes a rise in the sea level
- Higher temperatures in the atmosphere cause water in seas and oceans to expand. This increases the sea level.
- Rising sea levels have a negative impact on places where humans live
- Over 600 million people worldwide live in areas less than 10m above sea level
- Rising sea levels threaten low-lying areas and islands
- 2/3s of the world's largest cities located in coastal areas are also at risk due to rising sea levels
- According to the Intergovernmental Panel on Climate Change (IPCC), 33% of coastal land and wetland habitats are likely to be lost in the next 100 years if sea levels continue to rise at the current rates
- As the increase in sea levels varies from place to place, different places are and will be affected differently
- Majuro in the Pacific Ocean will lose 80% of its land if the sea rises by half a metre

More frequent extreme weather events

- An extreme weather event is a severe and rare weather phenomenon that results in significant economic losses and the loss of lives
- Extreme weather events include heat waves, floods, droughts and tropical cyclones
- The occurrence of extreme weather events has increased in the last few decades
- Extreme weather events are believed to be increasing due to higher land and sea surface temperatures
- Higher temperatures have resulted in greater amounts of water vapour and latent heat in a warmer atmosphere
- Such an atmosphere serves as a powerful driving force for extreme weather events

Spread of some infectious insect-borne diseases

- Climate change could result in increased temperatures and rainfall in various parts of the world
- Insects thrive in these favourable conditions
- This may lead to the spread of some infectious insect-borne diseases, which are diseases transmitted to humans or animals by insects
- For example, heavy rainfall may allow mosquitoes to grow in numbers in aquatic habitats, resulting in the spread of malaria and dengue fever
- Malaria is an insect-borne disease spread by the mosquito parasite, which causes high fever, chills and flu-like symptoms
- Dengue fever is caused by a virus transmitted to humans by the bite of an infected mosquito
- Symptoms include fever, headaches and even severe bleeding
- The distribution of the occurrence of infectious insect-borne diseases is also changing
- Regions with moderate temperatures, such as Europe and North America, are facing diseases once confined to the tropics

- For example, dengue fever was reported in the cool climate areas of Nepal and Bhutan for the first time in 2004

Lengthening the growing season in certain regions

- Higher temperatures may result in longer growing seasons in some regions
- The growing season refers to the period during which crops can be grown
- The growth period varies from crop to crop
- Advantage: An increase in the types of crops that can be grown in the UK. New crops such as blackberries and maize can be cultivated
- Advantage: the production of fruit, soybeans, potatoes and wheat is projected to increase in Canada
- Disadvantage: In the Yunnan province, China, the production of fruits such as apples and cherries, and nuts such as almonds and walnuts is reduced as these fruits and nuts require cool weather conditions
- Disadvantage: In Canada, the average wheat grain yield has reduced

A full answer does not need to include all the above points

At each level, students will show the following characteristics

Level 1 (0-3m)

Only mentions sea level rise

Brief details of sea level rise

No examples given.

E.g. Sea level rise has changed over millions of years due to natural climate changes. However there has been a steady increase in sea levels recorded. Sea level rise is the increase in the mean height of the sea's surface between high tide and low tide relative to land. Rising sea levels have a negative impact on places where humans live.

Level 2 (4-6m)

Mentions sea level rise and one other factor

Some details, still lacking depth

Examples are relevant but lack depth and details.

E.g. Sea level rise has changed over millions of years due to natural climate changes. However there has been a steady increase in sea levels recorded since the late 1800s until today. Sea level rise is the increase in the mean height of the sea's surface between high tide and low tide relative to land. Higher temperatures cause the melting of glaciers in Greenland and Antarctica. This increases the sea level. Rising sea levels have a negative impact on places where humans live, Over 600 million people worldwide live in areas less than 10m above sea level. Rising sea levels threaten low-lying areas and islands.

Level 3 (7-8m)

Mentions sea level rise and two other factors

Detailed description of all three factors

Detailed examples

Provides a stand

Mentions that along with sea level rise, there are also other challenges due to climate change

E.g. Sea level rise has changed over millions of years due to natural climate changes. However there has been a steady increase in sea levels recorded since the late 1800s until today. Sea level rise is the increase in the mean height of the sea's surface between high tide and low tide relative to land. Higher temperatures cause the melting of glaciers in Greenland and Antarctica. The resultant meltwater causes a rise in the sea level. Higher temperatures in the atmosphere cause water in seas and oceans to expand. This increases the sea level. Rising sea levels have a negative impact on places where humans live. Over 600 million people worldwide live in areas less than 10m above sea level. Rising sea levels threaten low-lying areas and islands. 2/3s of the

world's largest cities located in coastal areas are also at risk due to rising sea levels. According to the Intergovernmental Panel on Climate Change (IPCC), 33% of coastal land and wetland habitats are likely to be lost in the next 100 years if sea levels continue to rise at the current rates. As the increase in sea levels varies from place to place, different places are and will be affected differently. Majuro in the Pacific Ocean will lose 80% of its land if the sea rises by half a metre.

2 a Explain why an earthquake might occur along the San Andreas Fault. [4]

Credit 1m each

- San Andreas fault is a **transform fault**
- At the transform plate boundary, plates slide past each other
- In the process, tremendous stress builds up
- and is eventually released, causing an earthquake to occur

b Describe how the movements taking place at a plate boundary may result in the formation of fold mountains. [4]

Credit 1m each

- At convergent plate boundaries, continental plates face compressional forces
- This causes the plates to break and slide along the fractures in the crust
- Layers of rock on the upper part of the crust are then compressed together,
- and they fold upwards or sideways, forming fold mountains

c With reference to Fig. 4, explain why the west coast of India experiences heavy rainfall from June to September. [5]

Credit 1m each, max 5m

- The west coast of India experiences heavy rainfall from June to September due to the **Southwest monsoon**.
- During this period, it is summer in the northern hemisphere. The air over Central Asia heats up, expands and rises, forming a region of low pressure over the area
- During the same time, the southern hemisphere is experiencing winter. The low temperature causes the air to be cold and dense, exerting a greater force on the earth's surface. This results in an area of high pressure over Australia.
- Due to the difference in pressure between Central Asia and Australia, air from Australia moves to the Indian sub-continent and Central Asia as the southeast monsoon winds.
- As the winds cross the equator, the Coriolis effect deflect the winds to the right. These winds become the southwest monsoon winds and warm up they head for Central Asia
- The warm air picks up moisture as it travels over the Indian Ocean and brings heavy rain to the west coast of India

d (i) Describe the effects of Hurricane Ike as shown in Figs. 5A and 5B only. [4]

Credit 1m each, max 5m

- Damage of structures such as houses and buildings
 - Flooding that destroyed properties
 - Properties caught fire
 - Destruction of coastline / The wide beach has been eroded and becomes narrower
 - Loss of vegetation along the coastline
- [Accept other possible answers]

(ii) 'Strategies used to reduce the effect of typhoons have been largely unsuccessful.'

[8]

To what extent do you consider this statement to be true? Give reasons to support your answer.

Answers may include the following points:

1) Prediction and Warning

- Man can analyse long-term climate records to predict tropical cyclones.
- This method seeks to establish the pattern of the occurrences and the severity of the damage caused by past cyclones. In this way, it is possible to predict when cyclones of such severity will occur.
- Another prediction method used is by computer modelling which can predict the cyclone's path and the degree of the damage.
- For example, Japan and USA are some countries that have installed warning systems for tropical cyclones.
- However, such measures have limitations. Climate records of past events only indicate the frequency of tropical cyclones and do not give accurate details about when future tropical cyclones will occur.
- Computer modelling systems on the other hand may not be completely accurate as predictions are based on weather conditions of that time and place.
- Weather conditions may change quickly.

2) Land use control

- regulates the use of the land by placing restrictions on how the land can be used.
- Developers may need to pay higher taxes to use the land along the coasts.
- This is aimed at discouraging development in vulnerable areas.
- Protected zones can also be allocated so that they serve as a barrier against storm surges and flooding.
- However land use controls are only effective when the authorities are able to enforce them.
- Some residents may also be reluctant to move out of the protected areas as they have been around for quite some time.
- It may also be costly for the government to purchase the land in the protected zones and convert them into recreational areas.

3) Floodplain management

- refers to a masterplan that aims to reduce the potential of flood damage
- It involves mapping the land use of an area and implementing measures to prevent floods.
- In addition, the masterplan can also include the drawing up of evacuation plans to ensure that people are able to leave a flooded area as soon as possible.
- An example is the floodplain management of Cairns, Australia that identified areas of highest to moderate risk of flooding from a tropical cyclone.
- However, such measures are successful if government authorities can enforce the implementation of the masterplan.
- Moreover, governments must be ready to pay high compensation fees for buildings that are already located at the highest risk area.

4) Reducing vulnerability of infrastructure

The Australian Building Codes Board developed a Building Code of Australia which outlines the type of design, features or materials to be included in construction.

- Building codes reduce property damage from tropical cyclones and prevent injury and death from such damages.
- From houses built in the worst affected areas after the 1980s, less than 3 percent had badly damaged roofs.

- For houses built in the same areas before the 1980s, the number was more than 12 percent
- There was failure to comply with the building codes and standards within all areas.
- This is partly because it can be costly to modify homes to meet building codes and standards.
- There were poorly constructed houses in the area of the declining sugar cane industry.
- Buildings that were constructed in compliance with the building codes and standards were also damaged.
- This indicated that building codes and standards should be revised as these buildings were still unable to cope with tropical cyclones of great strength.

A full answer does not need to include all the above points
At each level, students will show the following characteristics

Level 1 (0-3m)

Brief mention of strategies.

No examples given.

No evaluation done.

E.g. Man can analyse long-term climate records to predict tropical cyclones. This method seeks to establish the pattern of the occurrences and the severity of the damage caused by past cyclones. Another prediction method used is by computer modelling which can predict the cyclone's path and the degree of the damage.

Level 2 (4-6m)

Some mention of strategies, still lacking depth

Examples are relevant but lack depth and details.

Some evaluation done.

E.g. Man can analyse long-term climate records to predict tropical cyclones. This method seeks to establish the pattern of the occurrences and the severity of the damage caused by past cyclones. Another prediction method used is by computer modelling which can predict the cyclone's path and the degree of the damage. For example, Japan and USA are some countries that have installed warning systems for tropical cyclones. However, such measures have limitations. Climate records of past events only indicate the frequency of tropical cyclones and do not give accurate details about when future tropical cyclones will occur.

Level 3 (7-8m)

Detailed description of at least 3 strategies

Detailed and well supported examples

Well-supported evaluation of strategies

Provides a stand

E.g. Man can analyse long-term climate records to predict tropical cyclones. This method seeks to establish the pattern of the occurrences and the severity of the damage caused by past cyclones. In this way, it is possible to predict when cyclones of such severity will occur. Another prediction method used is by computer modelling which can predict the cyclone's path and the degree of the damage. For example, Japan and USA are some countries that have installed warning systems for tropical cyclones. However, such measures have limitations. Climate records of past events only indicate the frequency of tropical cyclones and do not give accurate details about when future tropical cyclones will occur. Computer modelling systems on the other hand may not be completely accurate as predictions are based on weather conditions of that time and place. Weather conditions may change quickly.

- 3 a Describe the distribution of undernourishment in the world as shown in Fig. 6 and explain how inadequate food consumption impacts individuals and the economy of a country. [6]

Describe

Credit 1m each, max 3m

- Many African countries experience very high rates of undernourishment of 35% and above, countries such as Chad, Ethiopia, Malawi.
- Mongolia is also one of the Asian countries to experience very high rates of undernourishment of 35% and above
- South American countries such as Brazil and Paraguay, China in Asia and Eastern African countries such as Mauritania, Mali and Burkina Faso experience moderately low rates of undernourishment of 5-14%.
- Mostly Asian countries suffer from moderately high rates of undernourishment at 15-24%, countries such as India, Burma and Thailand
- The developed countries such as Australia, the United States of America, and European countries such as France, the United Kingdom and Germany experience very low rates of undernourishment below 5%.

[Accept other possible answers]

Explain

Credit 1m each, max 3m

- **Lower productivity:** When workers consume imbalanced amounts of nutrients, they fall sick more often, and this lowers their productivity
- **Lower productivity** will lead to lower income due to inability to work as productively as before.
- Children will also suffer from **low productivity** as they will fall sick often, leading to loss of school days and educational opportunities.
- **Higher public health expenditures** as the demand for health services increases.
- For LDCs, the higher spending on health care means that limited financial resources are diverted from other areas such as education, housing, transportation or even agriculture, and this slows down the country's economic growth.
- **Long-term debt:** For countries receiving financial aid to help their people and cope with insufficient food supply, long-term debt problems will arise.
- In some cases, the food aid is more expensive than if purchased locally, causing the increase in national debt of LDCs to DCs.

- b Refer to Fig. 7, describe and account for the meat consumption in China and the U.S. from 1960 to 2012. [6]

Describe

Credit 1m each

- Both China and the U.S. are showing a general increase in meat consumption. China shows a rapid increase from 1974 of 8 million tons to 71 million tons in 2012
- U.S. on the other hand shows a slower rate of increase from 16 million tons in 1960 to 32 million tons in 2010.
- U.S.'s meat consumption is taking a downward trend from 2008 (35 million tons) to 2012 (32 million tons)

[Accept any other possible answers]

Account

Credit 1m each, max 3m

- China's increase in meat consumption could be linked to an increase in disposable income
 - As the country is developing, the Chinese have rising incomes and demand for meat is increasing.
 - Meat consumption is slow and starting to decrease in the U.S. because the Americans are becoming more health-conscious
 - As red meat is linked to health problems such as obesity and heart diseases, people are consuming lesser of it.
- [Accept any other possible answers]

c Suggest reasons why consumption of fast food has been rising in less developed countries.

[5]

Credit 1m each

- Convenience – may be eaten as a quick meal or packaged for take-away
- Affordable price
- The standardised production and handling process in fast food outlets ensures the quality of food served, attracting people
- Young adults prefer to spend time at such outlets because they are attracted by the comfortable dining atmosphere
- Globalisation has made it possible for fast food chains to set up restaurants in many LDCs

d The Green Revolution refers to the rapid increase in the productivity of agriculture through the use of science and technology.

[8]

With the use of specific examples, evaluate the use of irrigation and chemicals in producing a sustainable food supply.

Answers may include the following points:

Irrigation

Description and benefits

- The method of supplying water to the land other than by natural means such as rain to help crops grow
- By supplying water to areas that used to be dry for farming, irrigation has increased the amount of arable land worldwide
- In the North African country of Libya, for example, the Great Man-made River is one of the most extensive irrigation projects in the world and has made it possible to grow crops in the Sahara Desert.
- It is a network of underground pipes, canals, wells, reservoirs and tunnels that draws water from underground aquifers deep in the Sahara desert
- The water will be channelled to the coastal cities of Libya for agriculture, domestic and industrial use
- The irrigation project will be completed in several phases and has since started to supply water in 1991
- Some examples of irrigation methods are: centre-pivot, flood and mechanical move

Limitations

- Farmlands e.g. in Bangladesh are intensely worked to meet increasing demands for food.
- **Salinisation** is the result of the accumulation of salt in the upper layers of the soil to the extent that plant growth is affected.
- When farmers carry out flood irrigation, whereby the water covers the surface of the field, salinity of the soil increases as water contains naturally occurring salt.
- When the water is used up by plants or evaporates, salts are left behind.
- Over time, the salt level in the soil builds up.
- It can also occur where dams are constructed for irrigation such as in Egypt where the water contains high levels of dissolved minerals or in arid regions like Syria and Kuwait which uses groundwater rich in minerals and salts.
- When salinisation occurs, the salt reduces the ability of the plants to absorb water from their roots. Plants are also unable to transpire.
- Crop yields will hence decrease which thus worsens food shortage.
- Sometimes, water will collect on the surface as it is unable to drain away or infiltrate into the saturated soil beneath. This is called **waterlogging**. Air and nutrients that the crops need cannot reach the roots of the crops, causing them to wither and die.

Use of chemicals

Description and benefits

- Fertilisers are substances added to the soil to provide nutrients for healthy plant growth
- Fertilisers are applied to the farm as the nutrients in the soil will be depleted gradually, especially after continuous use of the farmland
- Often, the farmland is not given the chance to fallow
- In such cases, the small amount of nutrients in the soils will produce a smaller crop yield
- The application of fertilisers will bring nutrients back to the soil, thus increasing crop yield
- HYV also require more fertilisers compared to non-HYV crops
- Organic fertiliser such as manure is slow-releasing and helps to retain soil moisture
- Chemical fertilisers can provide very specific quantities of nutrient such as potassium and nitrogen
- However, they are also more easily removed by water percolating through the soil
- Pesticides are chemical substances used to kill insects and small animals that destroy crops
- Herbicides are used to kill weed and other undesirable plants that compete with crops for resources
- The pesticide, Malathion, was widely used in the 1980s to address a fruit fly problem in fruit orchards in California, the USA
- The use of pesticides is necessary to fight the high level of pest damage that always occurs when only a single crop covers a wide area
- With the removal of pests, the crop is protected which in turn would increase the crop yield

Limitations

- **Eutrophication** is a form of water pollution due to an increase in nutrient levels in rivers and lakes.
- Nutrient enrichment stimulates the rapid growth of phytoplankton which results in an algae bloom.
- This then disrupts the ecosystems of rivers and lakes because the algae absorb the oxygen in the water and prevents light from entering the water.
- Therefore, fish and aquatic creatures are starved of oxygen and sunlight, and die.
- Furthermore, when algae blooms, dies or is eaten, toxins are released which can kill livestock and even the humans who consume poisoned meat.
- With the eutrophication of rivers and lakes, the polluted water becomes unsuitable for

consumption and growing crops. This reduces the supply and quality of water for farming which then offsets any gains made in increased crop yields.

- **Imbalanced soil nutrients**
- Most chemical fertilisers supply only two or three out of more than 20 nutrients needed by plants.
- Thus, chemical fertilisers cannot restore all the nutrients that have been used up.
- Unlike natural fertilisers (manure and plant ash), chemical fertilisers do not add humus to the soil which causes the soil to lose its fertility in the long run.
- **Water pollution**
- Excessive pesticides may seep into groundwater or dissolve in surface runoff and flow into nearby water bodies
- It causes water pollution which is the contamination of water by substances that cause a reduction in the quality of water.
- The chemicals in the water will harm or kill the aquatic plants and animals.
- People who drink the contaminated water unknowingly may also be poisoned.
- E.g. the distribution of drinking water from a dam near Rennes, France, had to be stopped by the public health authorities due to pesticides contamination

A full answer does not need to include all the above points

At each level, students will show the following characteristics

Level 1 (0-3m)

Only benefits or limitations of the use of irrigation and chemicals

Brief details of benefits or limitations

No examples given.

No evaluation.

E.g. Irrigation is the method of supplying water to the land other than by natural means such as rain to help crops grow. By supplying water to areas that used to be dry for farming, irrigation has increased the amount of arable land worldwide.

Level 2 (4-6m)

Provides both benefits and limitations of the use of irrigation and chemicals

Some details, still lacking depth

Examples are relevant but lack depth and details.

Some evaluation

E.g. Irrigation is the method of supplying water to the land other than by natural means such as rain to help crops grow. By supplying water to areas that used to be dry for farming, irrigation has increased the amount of arable land worldwide. In the North African country of Libya, one of the most extensive irrigation projects in the world has made it possible to grow crops in the Sahara Desert. The water will be channelled to the coastal cities of Libya for agriculture, domestic and industrial use. However, farmlands e.g. in Bangladesh are intensely worked to meet increasing demands for food. Salinisation is the result of the accumulation of salt in the upper layers of the soil to the extent that plant growth is affected. When farmers carry out flood irrigation, whereby the water covers the surface of the field, salinity of the soil increases as water contains naturally occurring salt. When the water is used up by plants or evaporates, salts are left behind.

Level 3 (7-8m)

Provides both benefits and limitations of the use of irrigation and chemicals

Detailed description of benefits and limitations

Detailed examples

Detailed evaluation

E.g. Irrigation is the method of supplying water to the land other than by natural means such as rain to help crops grow. By supplying water to areas that used to be dry for farming, irrigation has increased the amount of arable land worldwide. In the North African country of Libya, for example,

the Great Man-made River is one of the most extensive irrigation projects in the world and has made it possible to grow crops in the Sahara Desert. It is a network of underground pipes, canals, wells, reservoirs and tunnels that draws water from underground aquifers deep in the Sahara desert. The water will be channelled to the coastal cities of Libya for agriculture, domestic and industrial use. The irrigation project will be completed in several phases and has since started to supply water in 1991. Some examples of irrigation methods are: centre-pivot, flood and mechanical move. However, farmlands e.g. in Bangladesh are intensely worked to meet increasing demands for food. Salinisation is the result of the accumulation of salt in the upper layers of the soil to the extent that plant growth is affected. When farmers carry out flood irrigation, whereby the water covers the surface of the field, salinity of the soil increases as water contains naturally occurring salt. When the water is used up by plants or evaporates, salts are left behind. Over time, the salt level in the soil builds up. It can also occur where dams are constructed for irrigation such as in Egypt where the water contains high levels of dissolved minerals or in arid regions like Syria and Kuwait which uses groundwater rich in minerals and salts.

- 4 a Refer to Fig. 8, describe the distribution of malaria in the world and explain how climate may influence the spread of malaria. [6]

Credit 1m each, max 4m

- Most widespread in the tropical and subtropical zones
 - Malaria transmission occurs throughout in North Brazil and Guyana and transmissions occurs in some parts of South America such as Columbia and Venezuela
 - Malaria transmission occurs throughout the African region, countries like Congo, Angola, Zambia
 - Malaria is not known to occur in some parts of Africa, countries in northern Africa like Libya and Tunisia
 - Malaria transmission occurs throughout in South Asian countries like India and Sri Lanka
 - Malaria occurs in some parts of countries such as Pakistan, China, Laos, Thailand
- [Accept other possible answers]

Credit 1m each, max 3m

- Temperature, rainfall and relative humidity have a direct impact on mosquitoes
- Monsoons create favourable conditions for mosquitoes to breed by bringing large amounts of rainfall
- Heavy rains form pools of water and provide ideal and secure breeding grounds for mosquitoes
- During the post-monsoon period, there are pools of stagnant water forming breeding grounds for mosquitoes
- Temperatures in the range of 22°C to 30°C increase the lifespan of, and the frequency of bites by, female mosquitoes
- Higher humidity level leads to mosquitoes having a longer lifespan, and are able to infect more people, spreading malaria

- b Describe how the three indicators in Fig. 9 be used to measure the level of health in a country. [6]

Credit 1m each, max 2m for each indicator

- Infant mortality rate (IMR) of a country is the number of infants that die before reaching one year old per 1000 live births in a year
- Developed countries have a lower IMR than less developed countries; a lower IMR usually signifies good living standards where infants have access to good health care, clean

drinking water and a hygienic environment

- Life expectancy is the average number of years from time of birth that a person can expect to live
- A lower life expectancy shows that the country is lacking nutritious food and proper hygiene and sanitation
- Daily calorie intake represents the energy obtained from food consumed per person per day
- Energy from food is used by the body for many different functions, such as performing physical activities, repairing cells and fighting diseases
- Excessive energy consumption can cause weight gain, which could lead to health complications / Insufficient energy consumption can cause weight loss and people may lack the nutrients their body requires [reserve 1m]

c Explain how environmental factors may account for people in Less Developed Countries (LDCs) having poor health. [5]

Credit 1m each, max 5m

- In LDCs, people are faced with **poor living conditions** such as living in slums
 - Slums are often poorly secured structures with poor ventilation and overcrowding
 - As such, slums often result in poor health and contribute to the spread of diseases
 - In LDCs, there is also a **lack of access to safe drinking water** which causes the spread of waterborne diseases, such as cholera, and even lead poisoning
 - People also fall sick from consuming water that has not been stored safely.
 - Such water can encourage harmful organisms to grow and provide a breeding ground for mosquitoes – potential carriers of diseases – causing poor health
 - In LDCs, there is **poor sanitation** with improper disposal of human waste which contain harmful microorganisms that cause diseases to spread to the population
 - Poor sanitation may also result from the dumping or leakage of sewage into water bodies, leading to the spread of waterborne diseases, and causing poor health to the people
- [Accept other possible answers]

d 'Governments are the most important influence in attempting to control the spread of infectious diseases.' [8]

To what extent do you consider this statement to be true? Give evidence to support your answer.

Answers may include the following points:

Government

- Governments are actively involved in managing the spread of diseases by carrying out precautionary measures that aim to prevent outbreaks of diseases. Governments also use mitigation measures to try to reduce the occurrence of an epidemic.
- Governments can implement precautionary measures, which are strategies used to reduce the occurrence of diseases. Examples of these are providing vaccinations against H1N1 and thermal fogging.
- Mitigation measures are strategies that are used to reduce the impact of a disease or health problem, after it has emerged in a country. When an outbreak or epidemic occurs within a country, governments need to respond with mitigation measures. These can

include organising the closure of schools and public places during an epidemic. In many cases, it may involve providing health care services as well as requiring doctors to report cases of diseases. For example, Singapore responded to the Sars outbreak in 2003 through control measures such as detecting and isolating infected people in a dedicated hospital, and subjecting potential patients to home quarantine by law.

Individual

- Individuals can take action to help manage the spread of infectious diseases when they are aware of what these diseases are and the conditions which favour their spread. For example being aware about hand, foot and mouth disease (HFMD) outbreaks in a community could make individuals more mindful about their own hygiene. Individuals may also become more aware of the likely ways the disease can be transmitted.
- Individuals can exercise social responsibility. Examples of these include being constantly aware of unsanitary conditions or conditions which make it conducive for diseases to spread. This allows individuals to take precautionary measures against infectious diseases.

Community

- Communities can work together to control diseases by introducing possible disease control strategies
- Deciding when and where strategies will be implemented and by whom and
- Engaging health workers to train and monitor members

International organisations

- The WHO'S 'Directly Observed Treatment, short-course' address TB among the poor and vulnerable populations, contribute to health system strengthening based on primary health care, engage all care providers, empower people with TB, and communities through partnership, enable and promote research.
- The Joint United Nations Programme on HIV/AIDS (UNAIDS) 'Getting to Zero Strategy'. Their goal is to reduce sexual transmission of HIV/AIDS by half, provide universal access to antiretroviral therapy for people living with HIV, and address HIV-specific needs of women and girls.

A full answer does not need to include all the above points
At each level, students will show the following characteristics

Level 1 (0-3m)

Only mention of government involvement

No examples given.

No evaluation given.

E.g. Governments are actively involved in managing the spread of diseases by carrying out precautionary measures that aim to prevent outbreaks of diseases. Governments also use mitigation measures to try to reduce the occurrence of an epidemic. Governments can implement precautionary measures, which are strategies used to reduce the occurrence of diseases.

Level 2 (4-6m)

Mention of government and one other stakeholder.

Examples are relevant but lack depth and details.

Some evaluation done.

E.g. Governments are actively involved in managing the spread of diseases by carrying out

precautionary measures that aim to prevent outbreaks of diseases. Governments also use mitigation measures to try to reduce the occurrence of an epidemic. Governments can implement precautionary measures, which are strategies used to reduce the occurrence of diseases. Mitigation measures are strategies that are used to reduce the impact of a disease or health problem, after it has emerged in a country. When an outbreak or epidemic occurs within a country, governments need to respond with mitigation measures. These can include organising the closure of schools and public places during an epidemic. An example would be how Singapore responded to the Sars outbreak in 2003.

Level 3 (7-8m)

Detailed description of government's involvement and two other stakeholders

Detailed and well supported examples

Well-supported evaluation of stakeholders' roles

Provides a stand

E.g. Governments are actively involved in managing the spread of diseases by carrying out precautionary measures that aim to prevent outbreaks of diseases. Governments also use mitigation measures to try to reduce the occurrence of an epidemic. Governments can implement precautionary measures, which are strategies used to reduce the occurrence of diseases. Examples of these are providing vaccinations against H1N1 and thermal fogging. Mitigation measures are strategies that are used to reduce the impact of a disease or health problem, after it has emerged in a country. When an outbreak or epidemic occurs within a country, governments need to respond with mitigation measures. These can include organising the closure of schools and public places during an epidemic. In many cases, it may involve providing health care services as well as requiring doctors to report cases of diseases. For example, Singapore responded to the Sars outbreak in 2003 through control measures such as detecting and isolating infected people in a dedicated hospital, and subjecting potential patients to home quarantine by law.