| Centre Number | Candidate Number | Name |
|---|---|---|
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

**ENVIRONMENTAL MANAGEMENT** **5014/01**

Paper 1

May/June 2006

**2 hours 15 minutes**

Candidates answer on the Question Paper.
Additional Materials: Ruler

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
All questions in Section A carry 10 marks.
Both questions in Section B carry 40 marks.
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

| For Examiner's Use | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| Total | |

This document consists of **23** printed pages and **1** blank page.

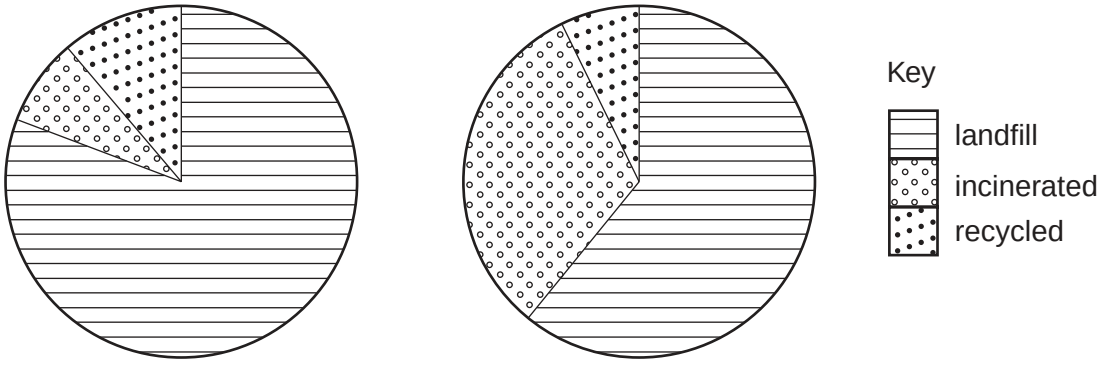



UNIVERSITY of CAMBRIDGE
International Examinations

[Turn over

## Section A

**1** **(a)** The pie graphs show how household waste is managed in a developed country and in one region of the country.




Country Region

How does the management of waste in the region differ from that in the country as a whole?

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.....[3]

**(b)** The photograph below shows an incinerator.

Some of the local people object to having an incinerator near their homes. Suggest why.

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.....[3]

**(c)** Why is the disposal of nuclear waste considered to be an even greater problem?

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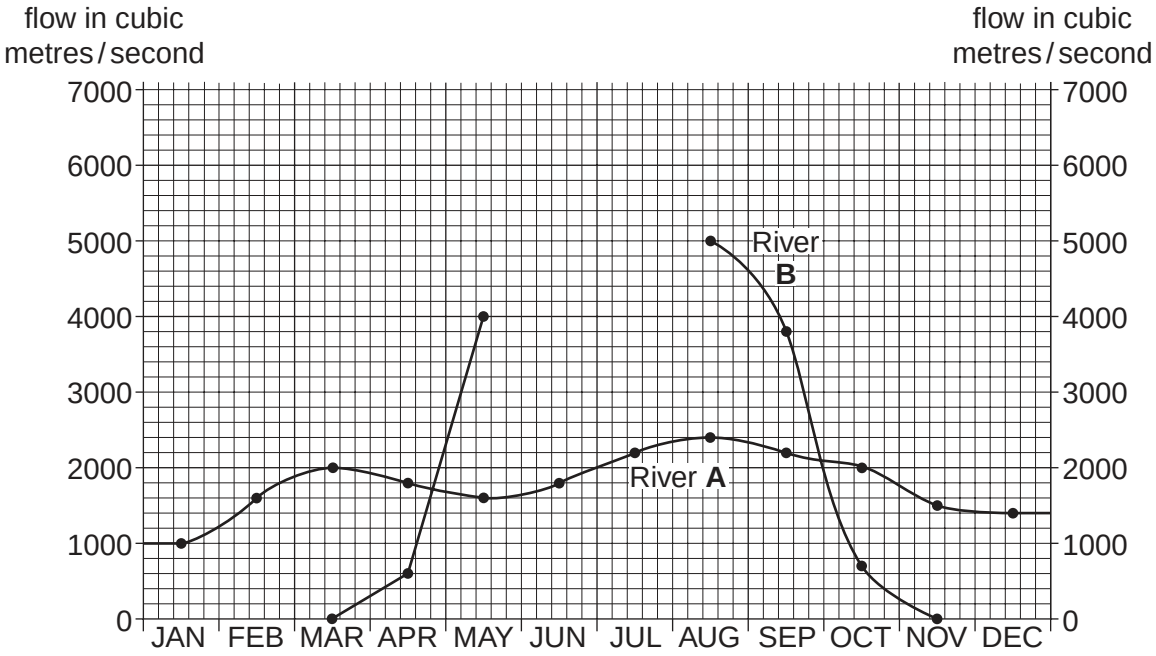
.....[4]

**2** **(a)** The graph shows the average flow of two rivers during the year.




**(i)** Complete the graph for River **B** using the information below.

| month | flow in cubic metres / second |
|---|---|
| June | 5 200 |
| July | 6 700 |

[1]

**(ii)** Which of the two rivers is the more useful as a source for water supply? Explain your answer.

.....

.....[2]

**(iii)** Suggest why there is no flow in River **B** between November and March.

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.....[3]

**(b)** Describe the possible **disadvantages** of constructing and using canals to take water from areas of surplus to areas of shortage.

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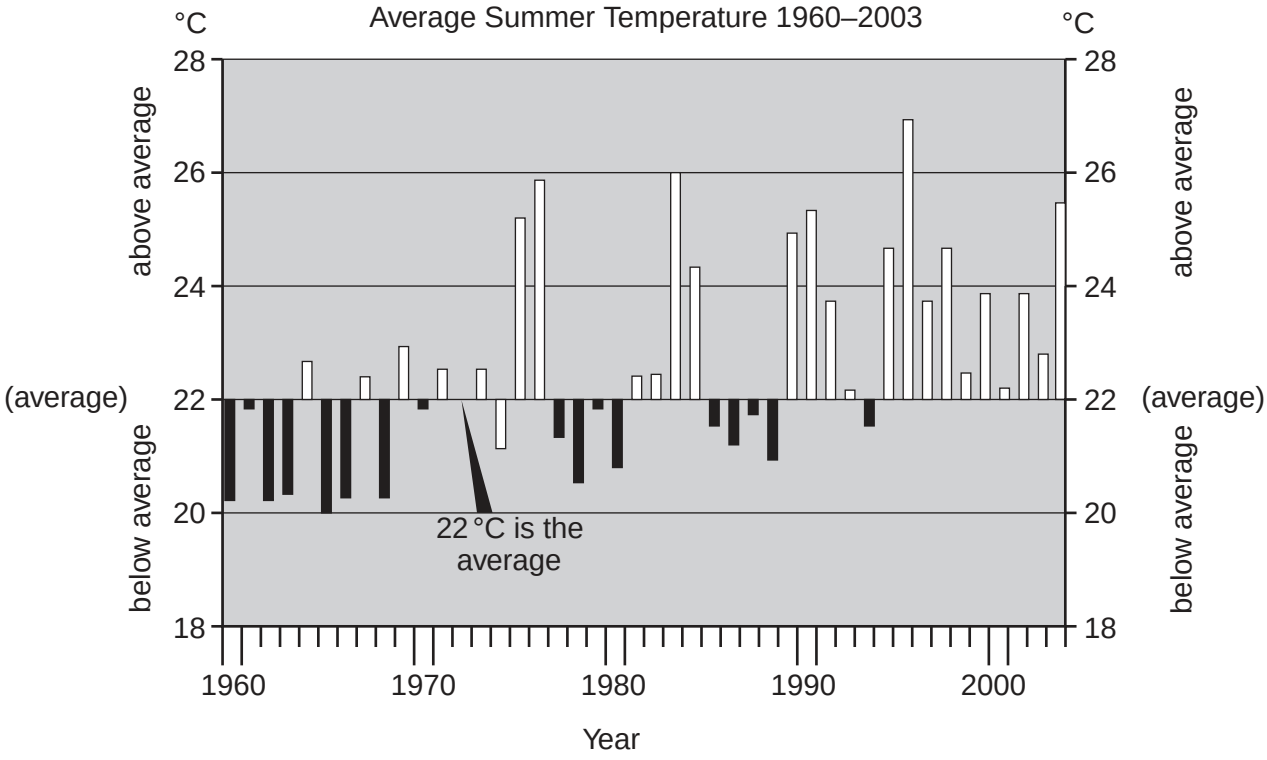
.....[4]

**3** **(a)** The bar graph shows variations from the average for summer temperatures in a European city, 1960–2003.




**(i)** Which year had the warmest summer and which the coldest summer?

warmest summer .....

coldest summer ..... [1]

**(ii)** How much warmer was the warmest summer than the coldest one?

.....°C [1]

**(iii)** How do the temperatures after 1990 differ from those before 1990?

.....[1]

**(iv)** Name the weather instrument used at a weather station to record the highest and lowest temperatures of a day.

.....[1]

**(v)** Describe how you would use the readings from the instrument to calculate the average temperature for a day.

.....

.....[1]

**(b)** How might farming be affected if the trend shown after 1990 in the graph for **(a)(i)** continues?

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.....[3]

**(c)** How could a farmer in a temperate environment create an artificially warm environment?

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.....[2]

**4** **(a)** The photograph below shows an area that has been cleared and managed for agriculture. The area has a wet and a dry season.

The farmer has changed

- the natural shape of the land
- the stream channel.

Describe these changes and suggest why the farmer made them.

Change to the natural shape of the land

.....

Reason(s)

.....

.....

Change(s) to the stream channel

.....

.....

Reason(s)

.....

.....[5]

**(b)** Describe the method the farmer is using to try to increase yields.

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.....[2]

**(c)** Suggest why much of the land shown in the photograph is at risk of erosion.

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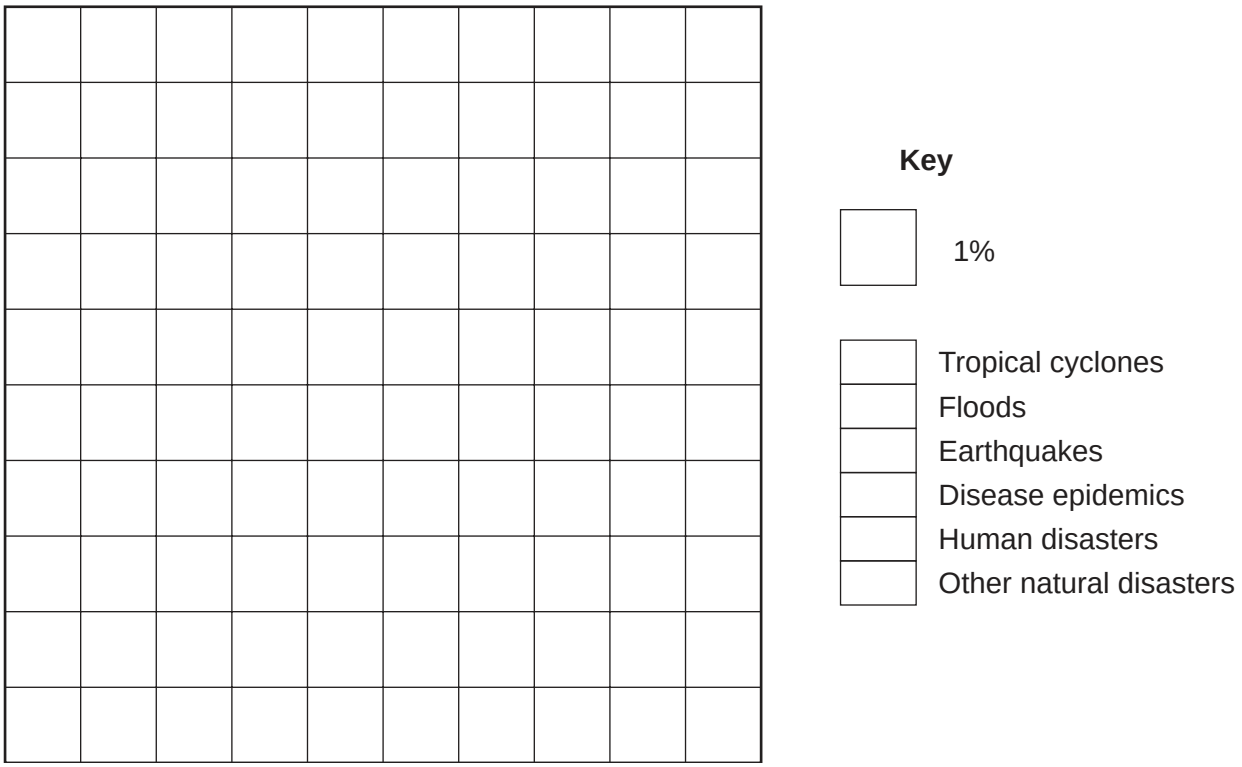
.....[3]

## Section B

**5** **(a)** During the 1990s, 600,000 people died in natural and human disasters.

**% deaths by disaster type**

| | |
|---|---|
| 34 | Tropical cyclones |
| 18 | Floods |
| 16 | Earthquakes |
| 14 | Disease epidemics |
| 13 | Human disasters (e.g. transport and industrial) |
| 5 | Other natural disasters (e.g. volcanoes) |




**(i)** Plot the percentages in the block graph and complete the key. [4]

**(ii)** Explain why disease epidemics often follow from a disaster.

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.....[3]

**(b) (i)** What is the difference between an earthquake and a volcano?

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.....[3]

**(ii)** Why are more people killed by earthquakes than volcanoes?

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.....[3]

**(iii)** Name two strategies for preventing loss of life during an earthquake.

1 .....

2 .....[2]

**(iv)** Why are these strategies usually more effective in developed than in developing countries?

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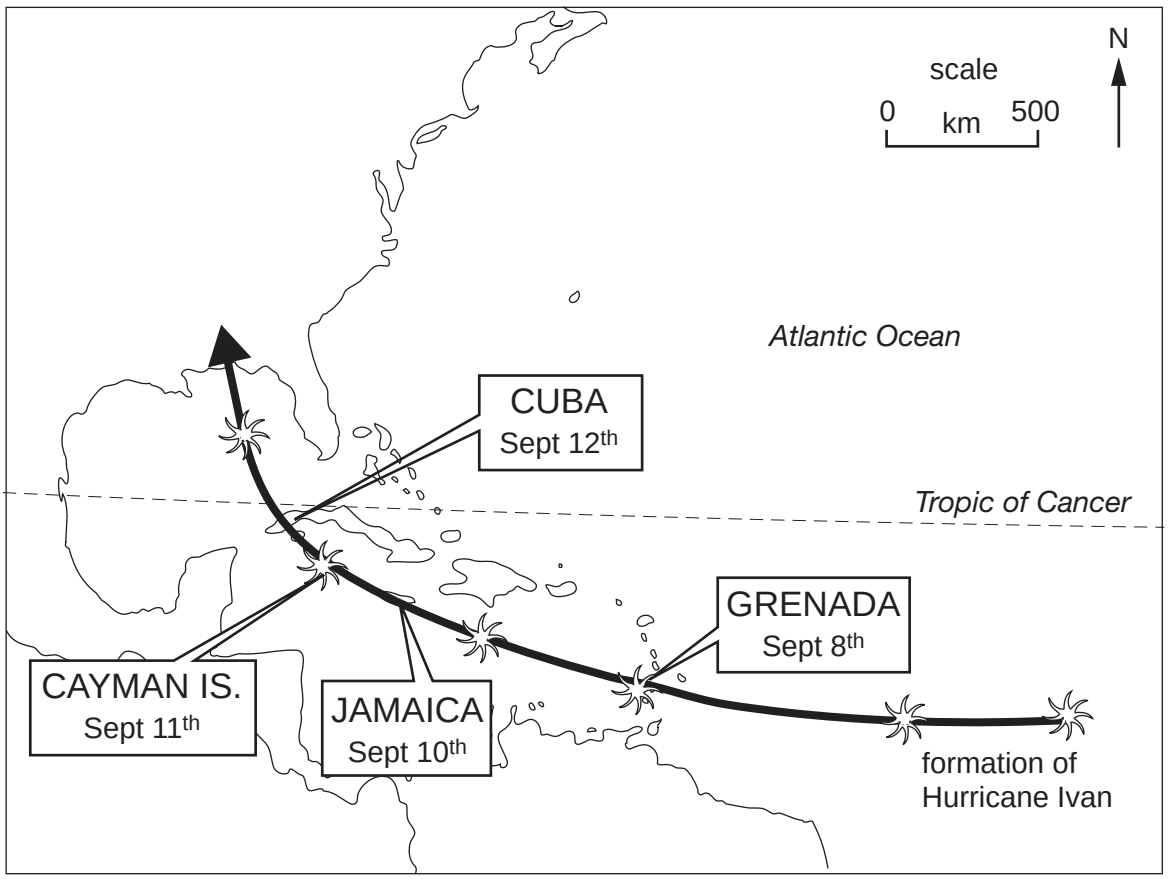
.....[3]

**(c)** The map shows the track of Hurricane Ivan through the Caribbean in September 2004. Its track was similar to the ones followed by many other tropical storms in the Caribbean.




**(i)** Where was Hurricane Ivan formed?

.....[1]

**(ii)** Give reasons why tropical storms form in places such as this in the northern hemisphere in September.

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.....[3]

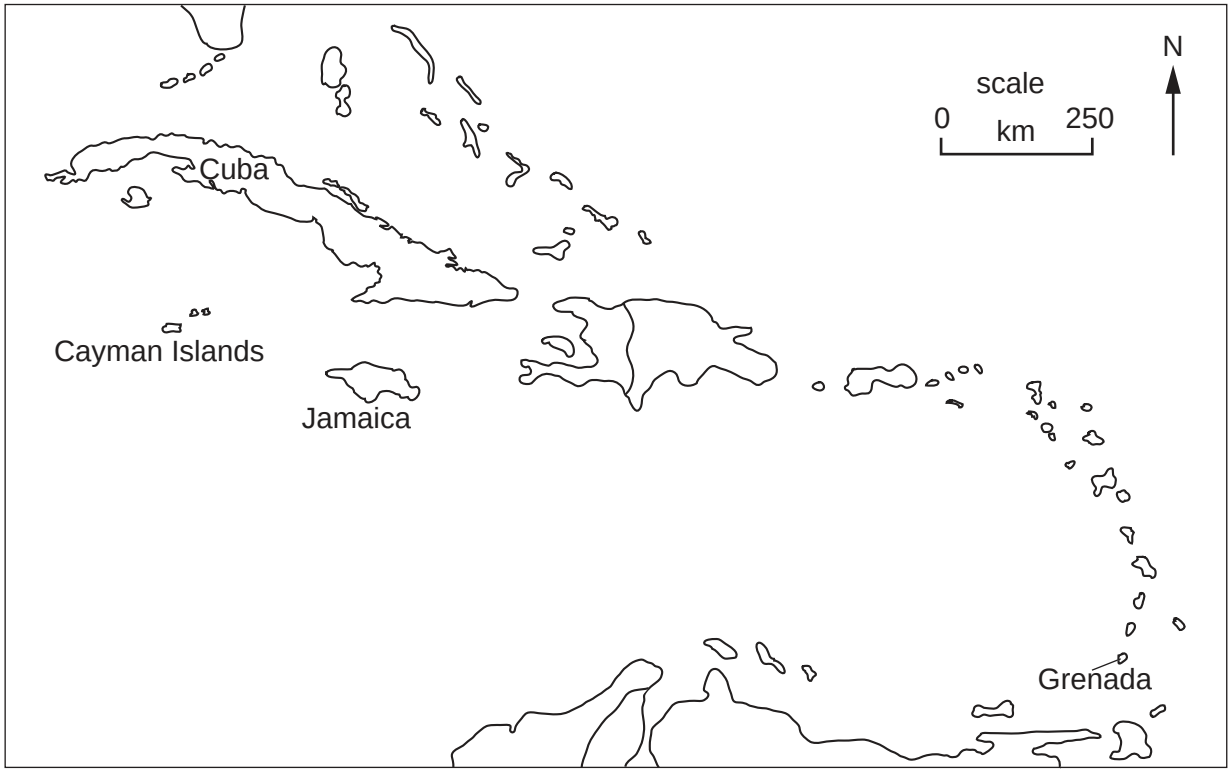
**(iii)** In which directions did Hurricane Ivan move after its formation?

.....[1]

**(iv)** The number of deaths caused by Hurricane Ivan were as follows;

Grenada 34; Jamaica 16; Cayman Islands 11; Cuba 0.

On the outline map below, write in the number of deaths in each location. [1]




**(v)** What is the trend?

.....

.....[1]

**(d)** Read the following newspaper headlines and reports about Hurricane Ivan.

**On September 9**

**Hurricane Ivan devastates Grenada**
**90% of houses destroyed, 60,000 homeless**

**Reporter** – 'The Spice Island looks like a wasteland of ruined properties and damaged vegetation'.

**Tourist** – 'I flew to Grenada expecting a luxurious holiday of sun and sea, peace and quiet, of day trips into the beautiful interior with its vegetation covered hills. During the hurricane, I lay awake, trembling at every bang and sweating with fear'.

**Local man who had lost all** – 'The hurricane has gone, people are dead, but there is no water, no electricity, no food – who will help rebuild paradise?'

**On September 10**

**In Jamaica people wait in fear for 225kph Ivan to sweep in**

**On September 11**

**Ivan the Terrible brings deadly fury to Jamaica**

**On September 12**

**200kph winds and massive high waves batter the Cayman Islands**
Cubans brace themselves for Ivan

Government of Cuba orders evacuation (removal) of half a million people from the western tip of the island.

Cubans instructed by the government to store essential supplies of food and water, board up windows and move to hurricane shelters.

**(i)** Before Hurricane Ivan arrived, the government of Cuba ordered four actions to save lives. Write these on the branches of the spider diagram below. [1]


**(ii)** In your view, which action was most important for saving lives? Explain your choice.

.....

.....

.....[2]

**(iii)** Why was it easier for the government of Cuba to be well prepared for Hurricane Ivan than the government and people of Grenada? Explain as fully as you can.

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.....[3]

**(iv)** What were the urgent problems for the government and people of Grenada, immediately after the hurricane?

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.....[2]

**(v)** Describe what was needed to try to overcome these problems.

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.....[2]

**(vi)** Before Hurricane Ivan, the main income of Grenada came from the export of crops (mainly spices from bushes and trees) and tourism.
How badly will the economy of Grenada be affected over the next two or three years as a result of Hurricane Ivan? State and explain the possibilities.

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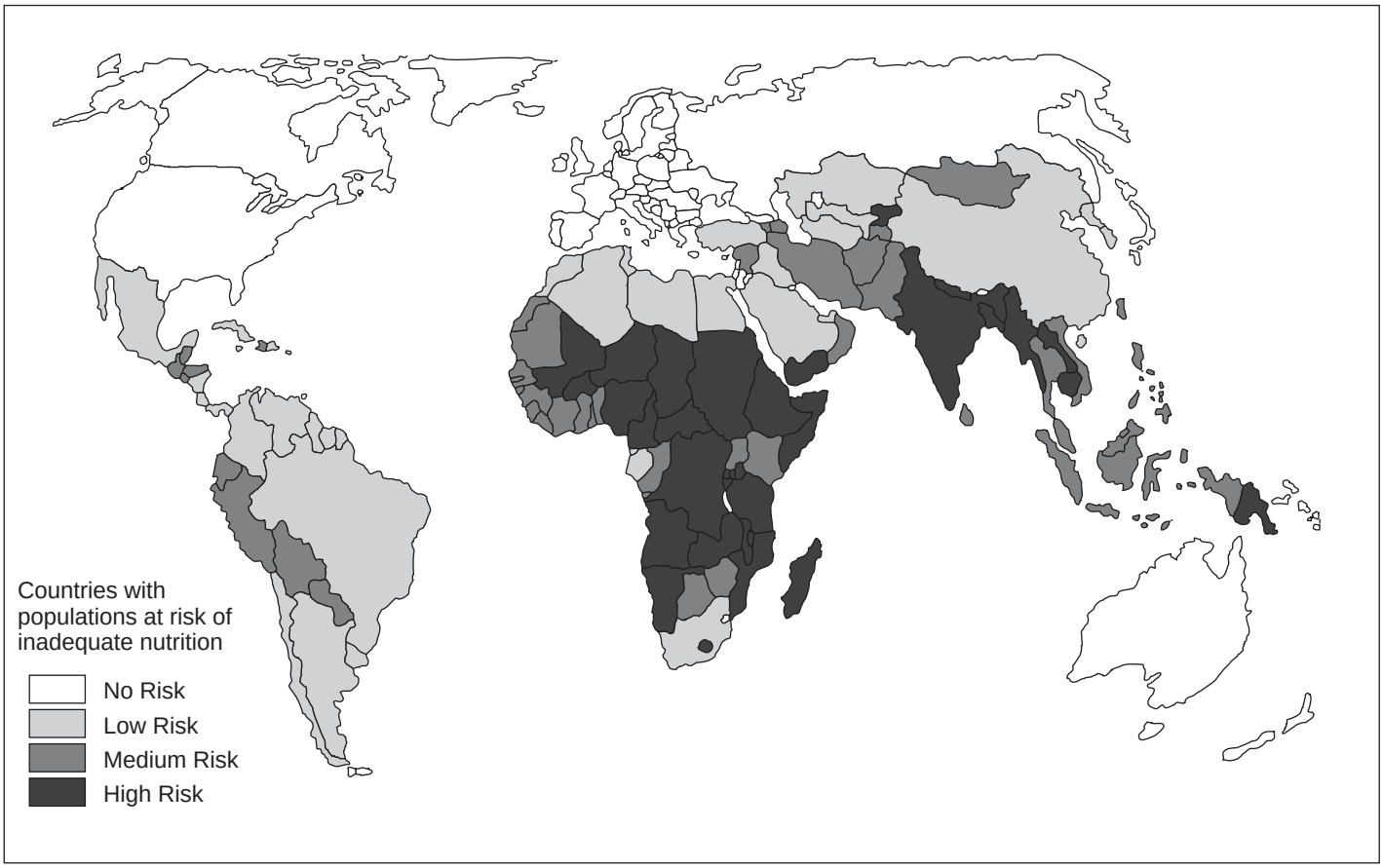
.....[5]

[Total: 40]

**6** **(a)** Look at the world map of malnutrition. It shows where people are at risk from lack of food.

**Risk of malnutrition**




Describe what the map shows about malnutrition in

**(i)** developed countries in the rich world;

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.....

**(ii)** developing countries in the poor world.

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.....[4]

**(b)** Poverty among people living in rural areas is one of the main causes of malnutrition in developing countries.

**Causes of poverty in rural areas**

| | | |
|---|---|---|
| **Salinisation**<br>Increasing soil salt levels | **Soil Erosion**<br>Topsoil washed or blown away | **Desertification**<br>Farmland less productive |
| **Shortage of farmland**<br>Many farmers do not own their own land | **Drought**<br>Rainfall less than expected | **Floods**<br>High water levels in rivers |

**(i)** Name an area where salinisation is a major problem.

.....[1]

**(ii)** Give reasons for its occurrence in the area named.

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.....[3]

**(iii)** Land reform is a strategy for reducing poverty. For which one of the six causes of poverty could this strategy be used?

.....[1]

**(iv)** Why is it impossible for people to stop all droughts and floods?

.....

.....

.....[2]

**(v)** Poor management of farmland by people causes and increases soil erosion. State **two** ways in which farmers cause soil erosion.

1 .....

2 .....[2]

**(vi)** Choose a different method of soil conservation that can be used in **crop growing areas** for each of the following locations. Describe how each one helps to stop soil erosion.

1 On steep hillsides
Method chosen .....

.....

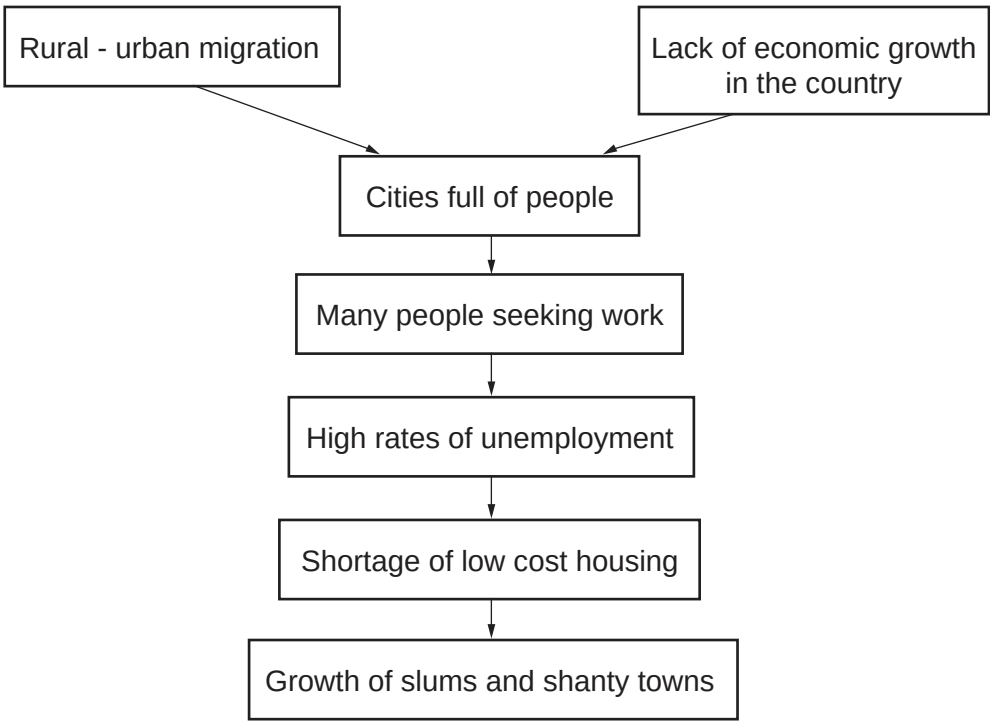
.....

2 In flat lowland areas with low rainfall
Method chosen .....

.....

.....[4]

**(c)** Study the flow diagram.




**(i)** Explain how the flow diagram shows that poverty results in the growth of slums and shanty towns.

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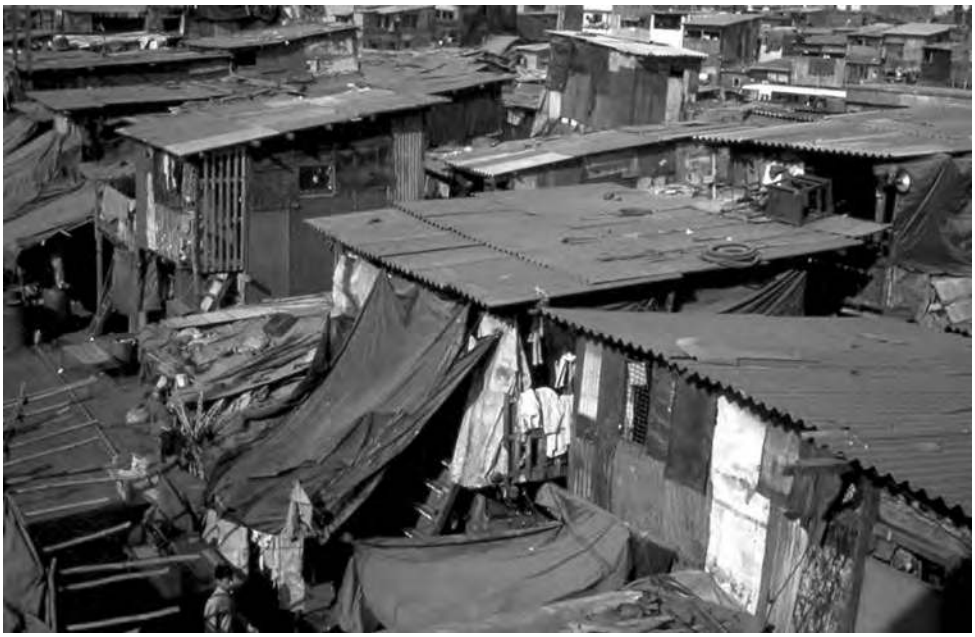
.....[3]

**(ii)** The photograph below shows part of a shanty town in Mumbai (India).



In the frame below draw a labelled sketch to show the main features of the houses and lay-out.

[4]

**(iii)** Describe strategies for improving shanty town environments, such as the one in the photograph. Refer to a named example in your answer.

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**(d)** Case study of a drainage basin project in a village in Gujarat (India)

This **small scale** project, which started in 1991, involved
- planting trees on bare slopes
- building small dams across streams
- 'harvesting rainwater' by collecting it in tanks

| | Before 1991 | In 2001 |
|---|---|---|
| Drinking water wells with all year supplies | 0 | 23 |
| River dams | 0 | 1 |
| Months of water availability | 4 | 12 |
| Land under cultivation (hectares) | 85 | 135 |
| Number of crops per year | 0–1 | 2–3 |
| Agricultural production (yield per hectare) | 900 | 4,000 |
| Out-migration rate (% of working men) | 78 | 5 |
| Average period of out-migration (months) | 10 | 2 |
| Income per household (rupees per year) | 8,590 | 35,620 |

**(i)** There was a big increase in farm output in the village between 1991 and 2001. State two pieces of evidence from the table which show this.

1 .....

2 .....[1]

**(ii)** For the two pieces chosen, calculate the size of the differences between 1991 and 2001.

1 .....

2 .....[2]

**(iii)** What was the main reason for increased farm output? Explain your answer.

.....

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.....[2]

**(iv)** There was a big decrease in out-migration from the village. Explain why, using values from the table to support your answer.

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.....[3]

**(v)** Does this suggest that improvement in rural areas is a good strategy for reducing problems in big cities? State and explain your views on this.

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.....[3]

[Total: 40]

**[Total for paper: 120]**

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