

CANDIDATE  
NAME

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CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**ENVIRONMENTAL MANAGEMENT**

**5014/11**

Paper 1

**May/June 2014**

**2 hours 15 minutes**

Candidates answer on the Question Paper.

Additional Materials:     Ruler  
   Insert

**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 an HB pencil for any diagrams or graphs.

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

**DO NOT WRITE IN ANY BARCODES.**

Answer **all** questions.

Electronic calculators may be used.

You may lose marks if you do not show your working or if you do not use appropriate units.

Write your answers in the spaces provided on the Question Paper.

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.

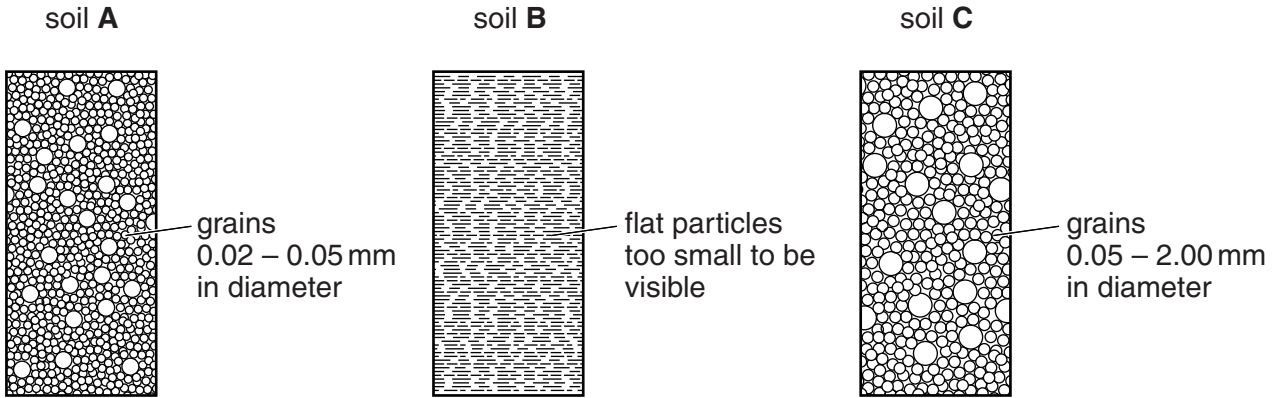
The number of marks is given in brackets [ ] at the end of each question or part question.

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

**Section A**

Answer **all** the questions.

1 (a) Look at the diagrams of the mineral content of three different soils, **A**, **B** and **C**.



(not to scale)

(i) Place a tick in the table below for the correct answer to the following questions. The first has been done for you as an example.

Which of the three soils

	<b>A</b>	<b>B</b>	<b>C</b>
has the largest particles?			✓
would be the most waterlogged after rain?			
will dry fastest after rain?			
is the easiest for plant roots to grow into?			

[3]

(ii) Identify the three soils shown in the diagrams. Choose from clayey, sandy, silty.

**A** .....

**B** .....

**C** .....

[2]

(b) Give **one** reason why each of the following is important for good soil:

(i) organic content .....  
.....  
.....[1]

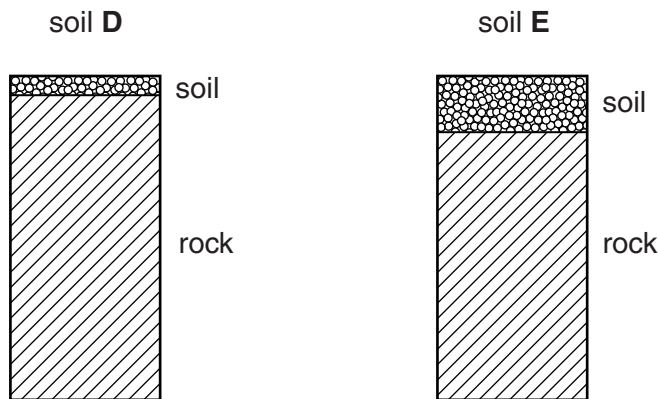
(ii) soil organisms .....  
.....  
.....[1]

(iii) air .....  
.....  
.....[1]

(iv) nutrients .....  
.....  
.....[1]

(c) Look at the diagrams below of soils **D** and **E**.

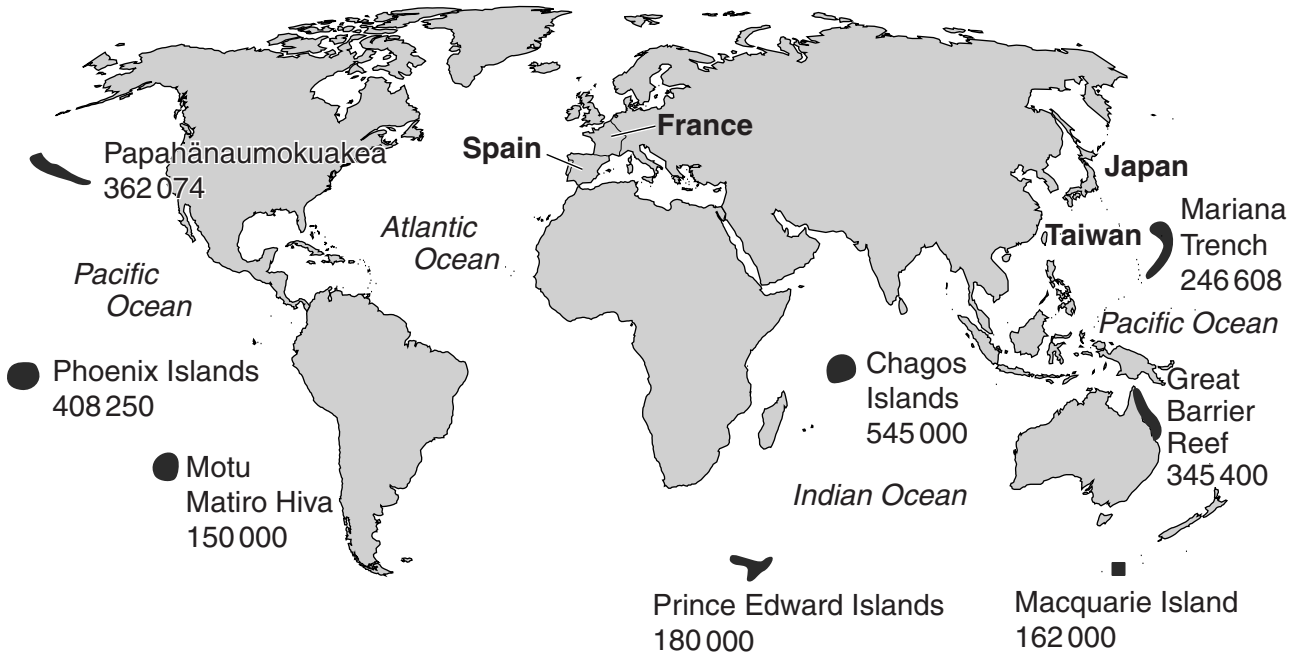
Use evidence in the diagrams to suggest why soil **D** may be less suitable for plant growth than soil **E**.



.....  
.....[1]

[Total: 10]

- 2 (a) Look at the map which shows the world's largest marine protected areas (MPAs). Countries that used to send fishing boats to the Chagos Islands MPA before fishing was banned, are also shown.



**Key**

- marine protected area (MPA)
- 362 074 area of MPA in kilometres square
- France** country fishing in the Chagos Islands

- (i) Name the world's largest MPA.  
 .....[1]
- (ii) How many of the eight largest MPAs are in the Pacific Ocean?  
 .....[1]
- (iii) Using the map, suggest what is common about the locations of the four countries that send fishing vessels to the Chagos Islands MPA.  
 .....  
 .....[1]

(b) In the past, the annual catch of tuna fish taken from the Chagos Islands to Spain and France varied from less than 100 tonnes to about 24 000 tonnes.

Suggest reasons why annual fish catches vary.

.....

.....

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.....

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.....

.....[4]

(c) Explain why areas where fishing is banned, have benefits for the environment but disadvantages for people.

benefits for the environment .....

.....

.....

.....

disadvantages for people .....

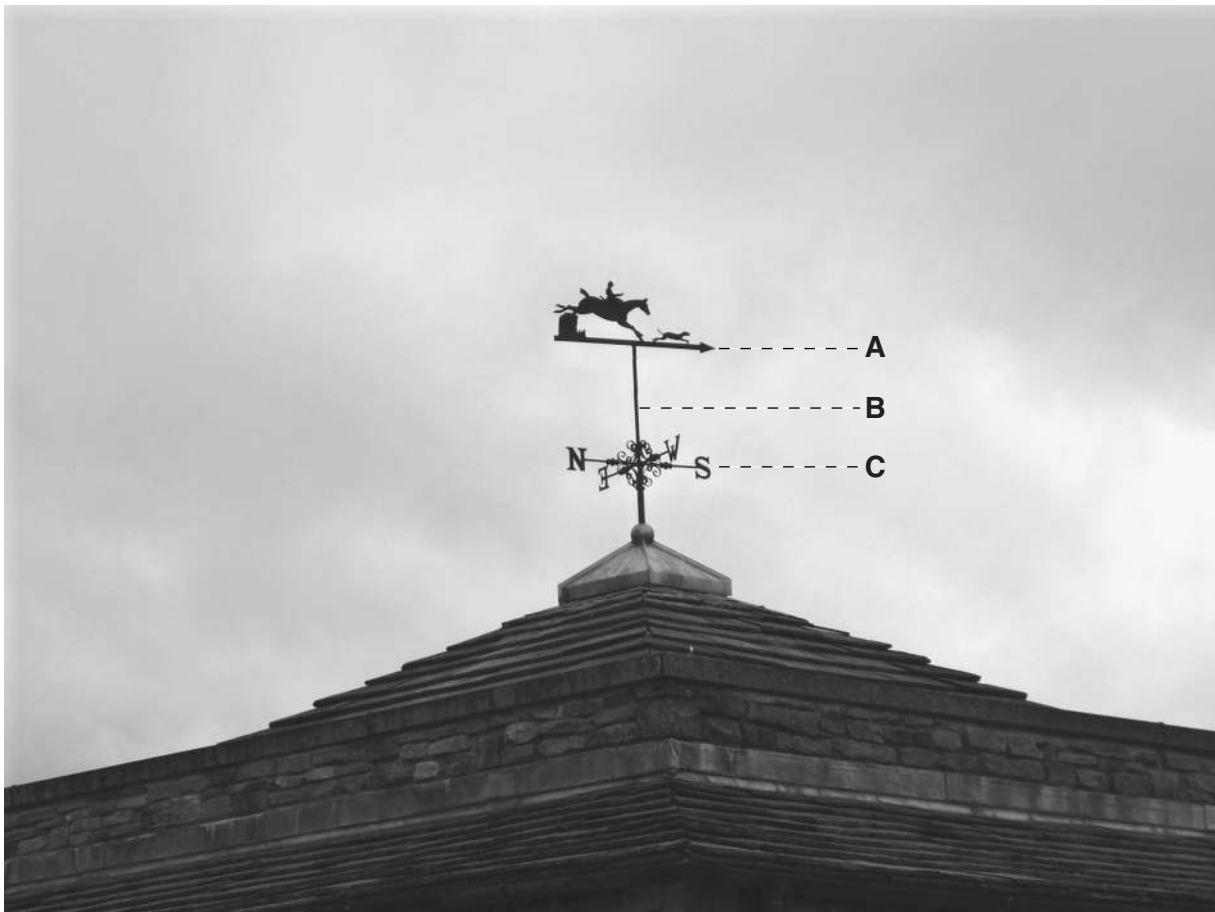
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.....[3]

[Total: 10]

3 (a) Look at the photograph of an instrument that records an element of weather.



(i) Name the weather instrument shown on the photograph.

.....[1]

(ii) From which direction was the wind blowing when the photograph was taken?  
Circle one answer.

                north                south                east                west                [1]

(iii) Describe the function of the three parts that make up the weather instrument shown in the photograph.

**A** .....

**B** .....

**C** .....[3]

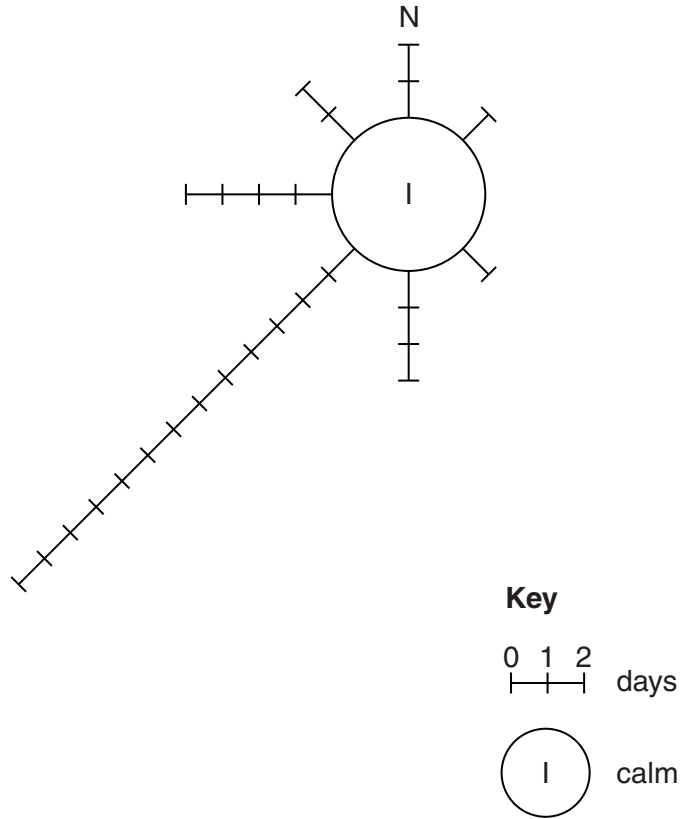
(iv) Describe the position of this weather instrument.

.....  
.....[1]

- (v) Suggest why the position of this weather instrument would give correct readings of the wind direction.

.....  
 .....[1]

- (b) The wind rose below shows wind directions for most of a month in a temperate area.



- (i) Complete the wind rose to show that four days had winds from the east. [1]  
 (ii) Suggest how this information could be used by farmers to position windbreaks.

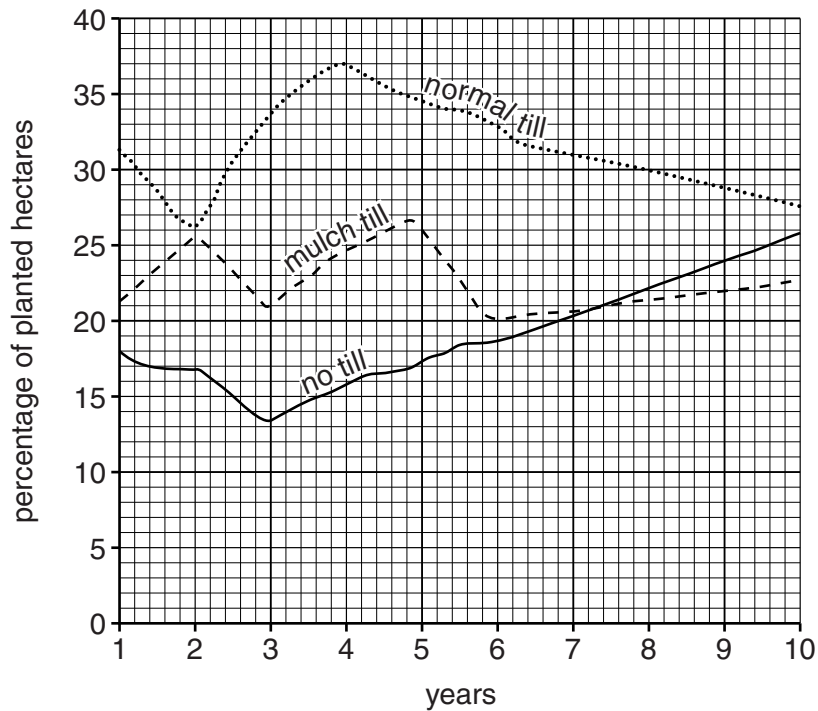
.....  
 .....  
 .....  
 .....[2]

[Total: 10]

4 (a) Three types of soil preparation for crops are used in a country.

type of soil preparation	description of the method
normal tilling	ploughing breaks up the soil
mulch tilling	a dry land farming method where the ploughed soil is covered with a mulch
no tilling	a dry land farming method where crops are sown or planted in soil that has not been ploughed

Look at the graph showing how the use of these methods changed over a ten year period.



(i) What percentage of planted hectares was prepared by normal tilling in year 4?  
 ..... % [1]

(ii) Describe the trends in normal tilling over the 10 year period.  
 .....  
 .....  
 .....  
 ..... [2]

(iii) If the trends shown on the graph continued, which method would be most likely to have been used in year 12 to prepare the most land?  
 ..... [1]



(b) Suggest why the recent trend in normal tilling may have been influenced by:

(i) the increased cost of energy

.....  
.....[1]

(ii) a series of drier years

.....  
.....[1]

(c) The no till and mulch till methods leave at least 30% of the soil covered. Explain why this helps to prevent soil erosion.

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.....  
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.....[3]

(d) Describe **one** method used to reduce soil erosion by water.

.....  
.....[1]

[Total: 10]

**Section B**

Answer **both** questions.

- 5 (a) Very large cities with populations over 10 million are called ‘mega-cities’. Look at the maps showing the distribution of mega-cities in 1975 and 2010.

**mega-cities in 1975**



**mega-cities in 2010**



- (i) Look at the table giving a summary of the distribution of mega-cities in 1975.

date	continents						total	ratio	
	Europe	Africa	Asia	Australasia (Oceania)	North America	Latin America		developing countries	developed countries
1975	0	0	1	0	1	1	3	1	: 2
2010	.....	.....	.....	.....	.....	.....	20	.....	: .....

Complete the table using the map for 2010.

[3]

- (ii) When comparing the world map of mega-cities in 2010 with that in 1975, three important differences can be seen.

One difference is stated below. State **two** other important differences.

1 Mega-cities are increasingly concentrated in developing countries.

2 .....

3 .....

[2]

- (iii) One cause of the increasing concentration of mega-cities in developing countries is the higher rate of natural increase of population than in developed countries.

State and explain **two** different reasons for the higher rate of natural increase in developing countries.

1 .....

.....

.....

.....

2 .....

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[4]

- (iv) Why are rates of rural to urban migration much higher in developing countries than in developed countries?

.....

.....

.....

.....[2]

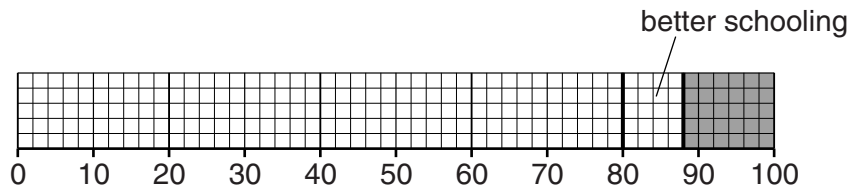
- (b) A survey was carried out among people living in an informal settlement (shanty town) in Mexico City. These people had recently migrated from rural areas and were asked the following question. “What was the **main** reason why you migrated from the countryside?”


The results are shown below.

reason	percentage (%) of total answers
A to find work	33
B to live near relatives	17
C for more and better public services	12
D to get away from poverty	10
E food shortages	8
F better chance of schooling for the children	8
G other reasons	12

- (i) Use the percentages to complete and label the divided bar graph below.

summary of answers



Key   
other reasons

[3]

- (ii) List the letters on the lines below to show which are the push and which are the pull factors.

push factors

.....

pull factors

.....

[3]

- (iii) State a different reason that some migrants might have given, which could have been included among the answers for 'other reasons'.

.....  
.....[1]

- (iv) What do the answers given by these migrants suggest about the relative importance of push and pull factors when they decided to migrate from the countryside to the city? Use the data in the table to support your answer.

.....  
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.....  
.....[2]

- (c) Many recent migrants from rural to urban areas live in poor housing areas in the big cities of developing countries (known as informal settlements, shanty towns or squatter settlements). Kibera in Nairobi, the capital city of Kenya, is an example of a shanty town.

Read the information about Kibera.

Kibera is home to between 700 000 and 1 million people. It is the largest shanty town in sub-Saharan Africa. Crowded, noisy and polluted, most families lack even the most basic amenities.

Even so, it is a place of great activity, full of people on the move, working, selling goods on the street, sorting through rubbish and looking after livestock.

- (i) Name an example of a basic amenity (service) that is likely to be lacking in shanty town areas like Kibera.

.....[1]

- (ii) Explain why the lack of this amenity can have serious consequences for the people in the shanty town.

.....  
.....  
.....[2]

(iii) Use your knowledge of shanty towns in cities of developing countries to describe fully:

1 characteristic features of the houses in which most people live

.....  
.....  
.....  
.....

2 types of places where shanty towns are located

.....  
.....  
.....  
.....

[4]

(iv) Suggest how people living in shanty towns might improve their standard of living.

.....  
.....  
.....  
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[2]

(v) Suggest how city authorities can improve shanty towns.

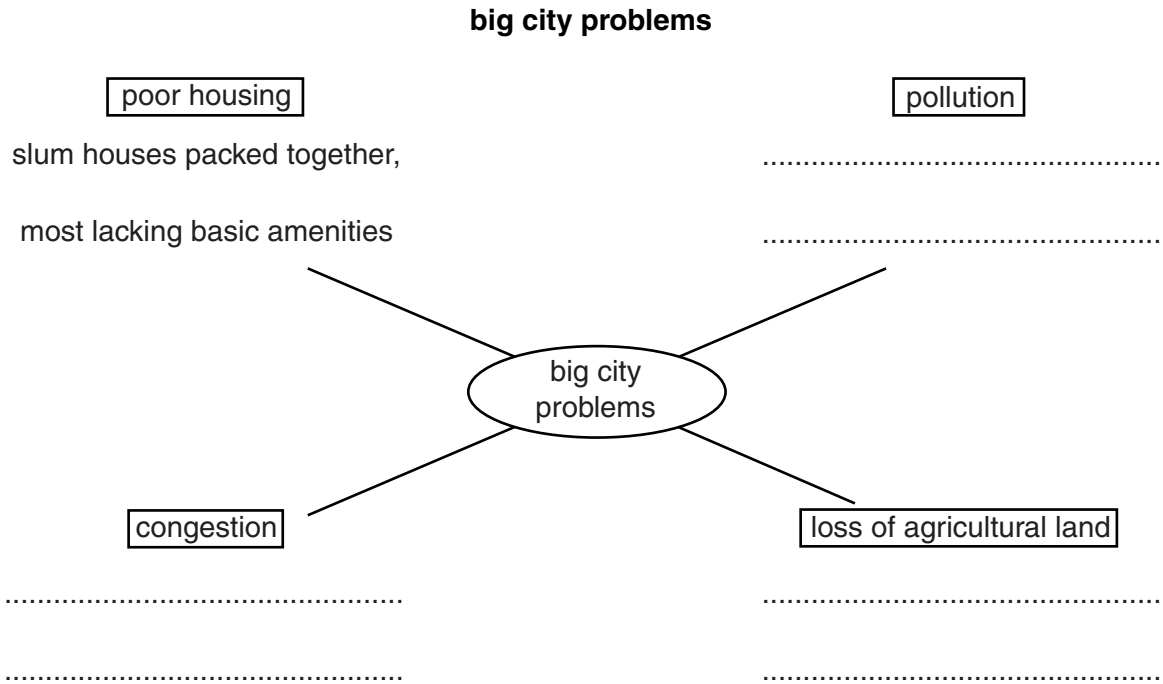
Explain your answer as fully as you can.

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[4]

(d) (i) Poor housing is just one of the many problems in the world's big cities.

Look at the spider diagram showing some problems of big cities.



In the spaces on the spider diagram, write short descriptions about congestion, pollution and loss of agricultural land. [3]

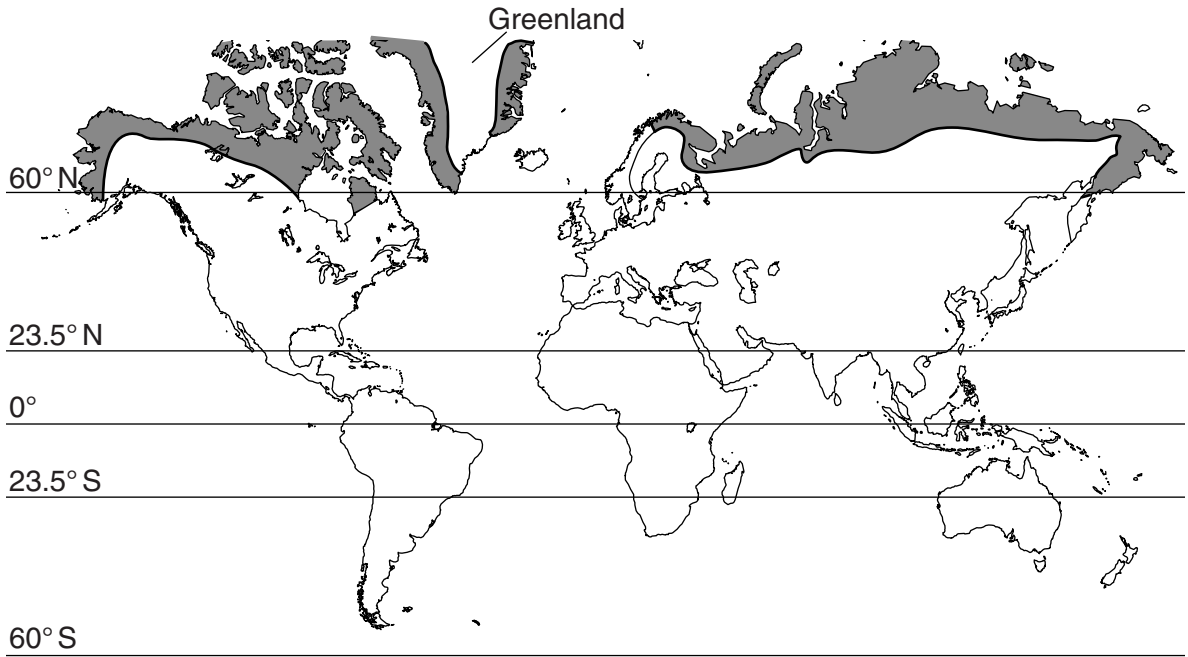
(ii) Suggest reasons why these urban problems tend to be worse in cities in developing countries rather than developed countries.

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..... [4]

[Total: 40]

6 (a) Look at the world map showing the location of land with a tundra climate.

location of land with a tundra climate



**Key**  
■ tundra climate

(i) Describe the location of land with a tundra climate in the northern hemisphere.

.....  
.....  
.....  
.....  
.....[3]

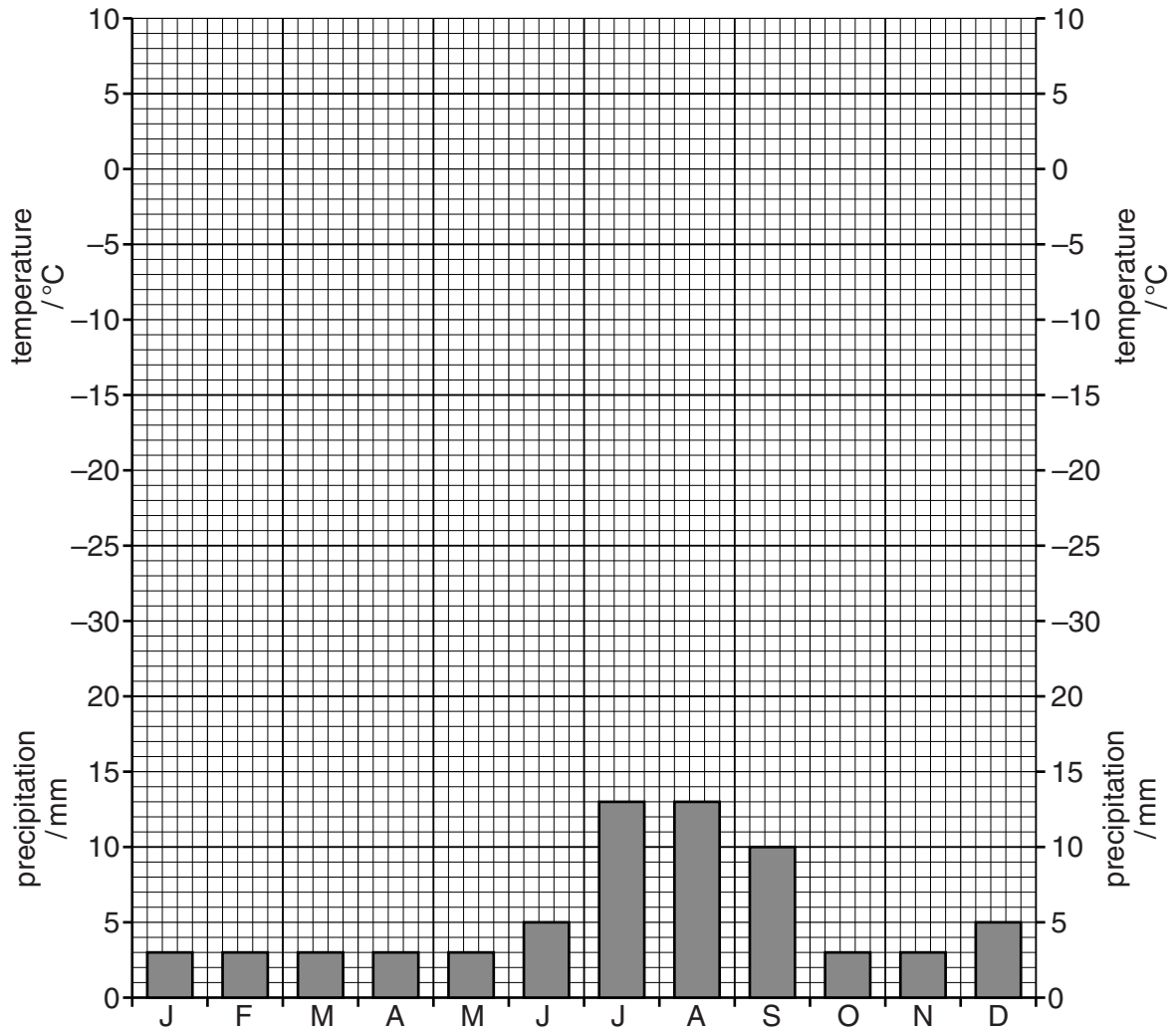
(ii) Why are there no large areas of tundra in the southern hemisphere?

.....  
.....[1]



(b) The climate graph below is for the small coastal settlement of Qaanaaq in north west Greenland.

**tundra climate: Qaanaaq, Greenland (76°N)**



(i) Mean monthly temperatures for Qaanaaq are:

	J	F	M	A	M	J	J	A	S	O	N	D
°C	-22	-24	-23	-18	-5	+2	+5	+3	-2	-9	-15	-22

Complete the climate graph for Qaanaaq. [2]

(ii) Calculate the annual range of temperature in Qaanaaq.

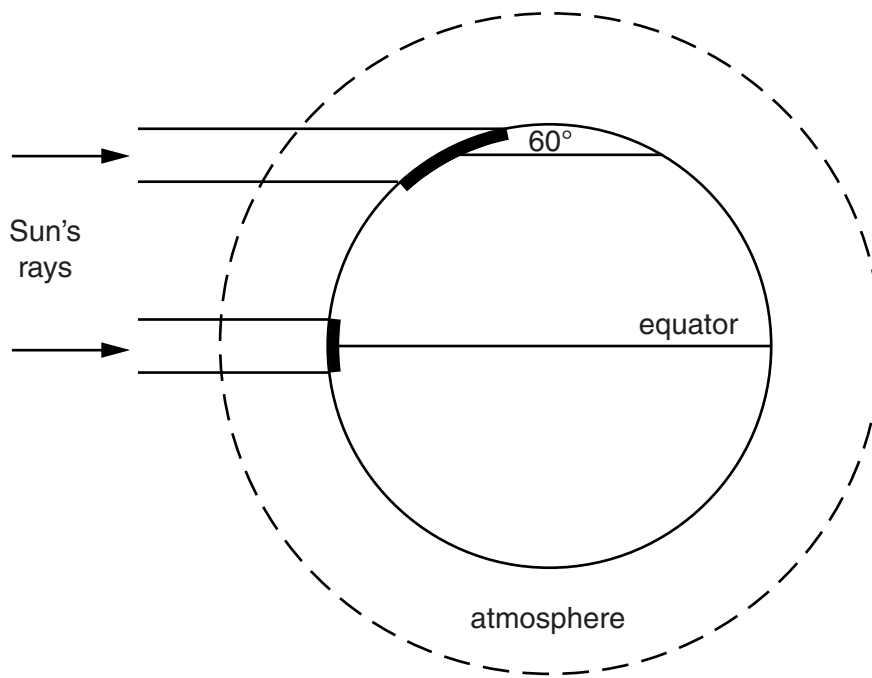
.....°C [1]

(iii) Tundra lands are often described as ‘cold deserts’. Look at the climate graph for Qaanaaq on page 17. What evidence is there to support this description?

.....  
.....  
.....  
.....  
.....  
.....  
.....[3]

(iv) Look at the diagram below of insolation. It can be used to explain why the tundra is so cold.

insolation



Add labels to the diagram to explain why it is much colder in the tundra than at the equator. [3]

(c) Look at the Insert photograph taken in summer near the coast in western Greenland.

(i) Describe what the photograph shows about tundra vegetation and its distribution in this area.

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.....  
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.....  
.....[3]

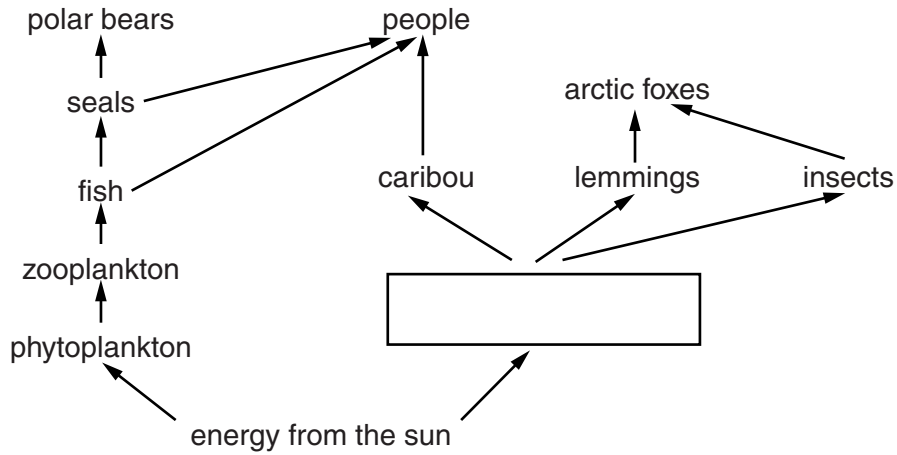
(ii) In western Greenland, the traditional way to make a living is from the sea, by fishing, hunting seals and whaling.

Look at both the climate data on page 17 and the Insert photograph. Explain why it is not possible to make a living from farming the land in western Greenland.

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.....[3]

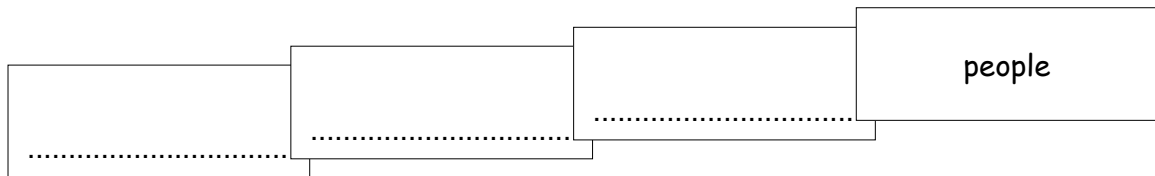
(d) The diagram below shows part of a food web in the Arctic.

**a food web in the Arctic**



(i) Complete the food web by writing in the box. [1]

(ii) Use the food web above to complete the food chain below.



[2]

(iii) Describe and explain the effects of a decline in fish numbers on the food web above.

.....  
 .....  
 .....  
 .....  
 .....  
 ..... [3]

(e) For many years, oil companies showed little interest in searching for oil under the sea bed in the Arctic Ocean off the coast of western Greenland.

(i) One reason for this was the high cost of searching for oil here.

Suggest reasons why searching for oil off the coast of Greenland is difficult and expensive.

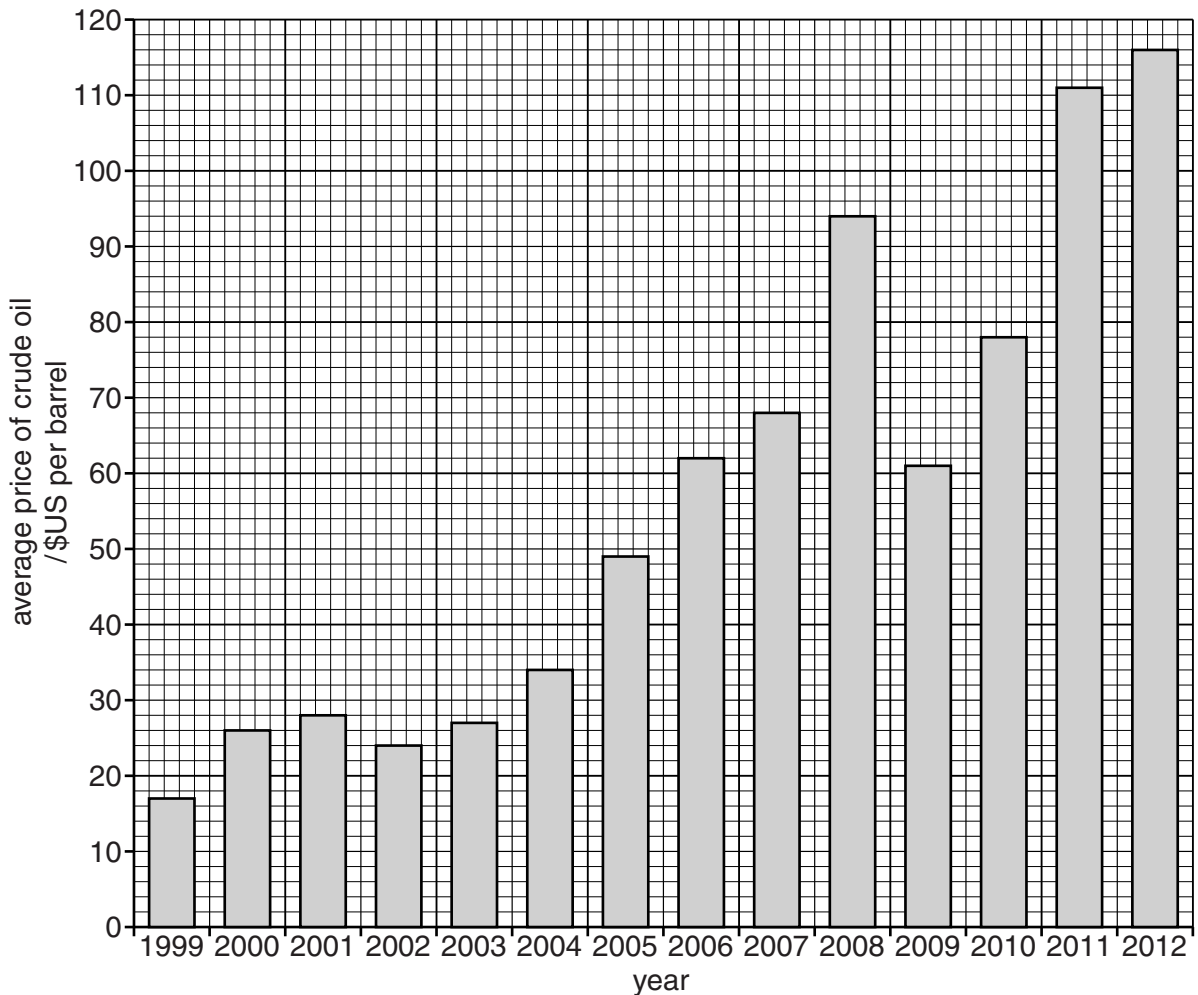
.....

.....

.....

.....[2]

(ii) The rush for oil exploration in the Arctic since 2005 is being driven by the world price of crude oil. The bar graph below shows average price of oil on world markets 1999–2012.



How many times higher was the average price of oil in 2012 than in 1999?  
Circle one answer.

- 4–5 times      6–7 times      8–9 times      10–12 times

[1]

(iii) Oil company interest in searching for oil under the Arctic Ocean has greatly increased since 2005. Use data from the bar graph on page 21 to explain why.

.....  
.....  
.....  
.....[2]

(f) People in Greenland have strong views about oil companies coming to the Arctic Ocean to search for oil. Some typical views are shown below.

‘Most people here think that developing an oil industry can only be good for Greenland.’

‘We have been waiting for something like this to happen for years. I hope it will provide income for Greenland so that we have the money to become a more independent nation.’

‘We are very dependent on fishing, a small amount of tourism and one working gold mine. Without the \$US 500 million Denmark gives us every year, we would not be able to afford our modern health and education services.’

‘Environmental groups are not popular here because they are opposed to the oil industry in Greenland.’

(i) What is the general opinion of the people of Greenland about developing an oil industry off the coast of Greenland? Explain why most people in Greenland have this opinion.

opinion .....

.....

explanation .....

.....

.....

.....

.....

.....[4]

- (ii) Environmental groups are against any development in the Arctic. The Arctic is one of the world's last remaining wilderness regions, largely untouched by humans.

Explain the problems for the environment of developing an oil industry in the Arctic.

.....

.....

.....

.....

.....[3]

- (iii) Should the people in Greenland take more seriously the arguments made by environmental groups? Explain your views.

.....

.....

.....

.....

.....[3]

[Total: 40]

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Insert                    John Pallister © UCLES

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