UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

ENVIRONMENTAL MANAGEMENT **5014/11**

Paper 1 **October/November 2012**

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.
DO **NOT** WRITE IN ANY BARCODES.

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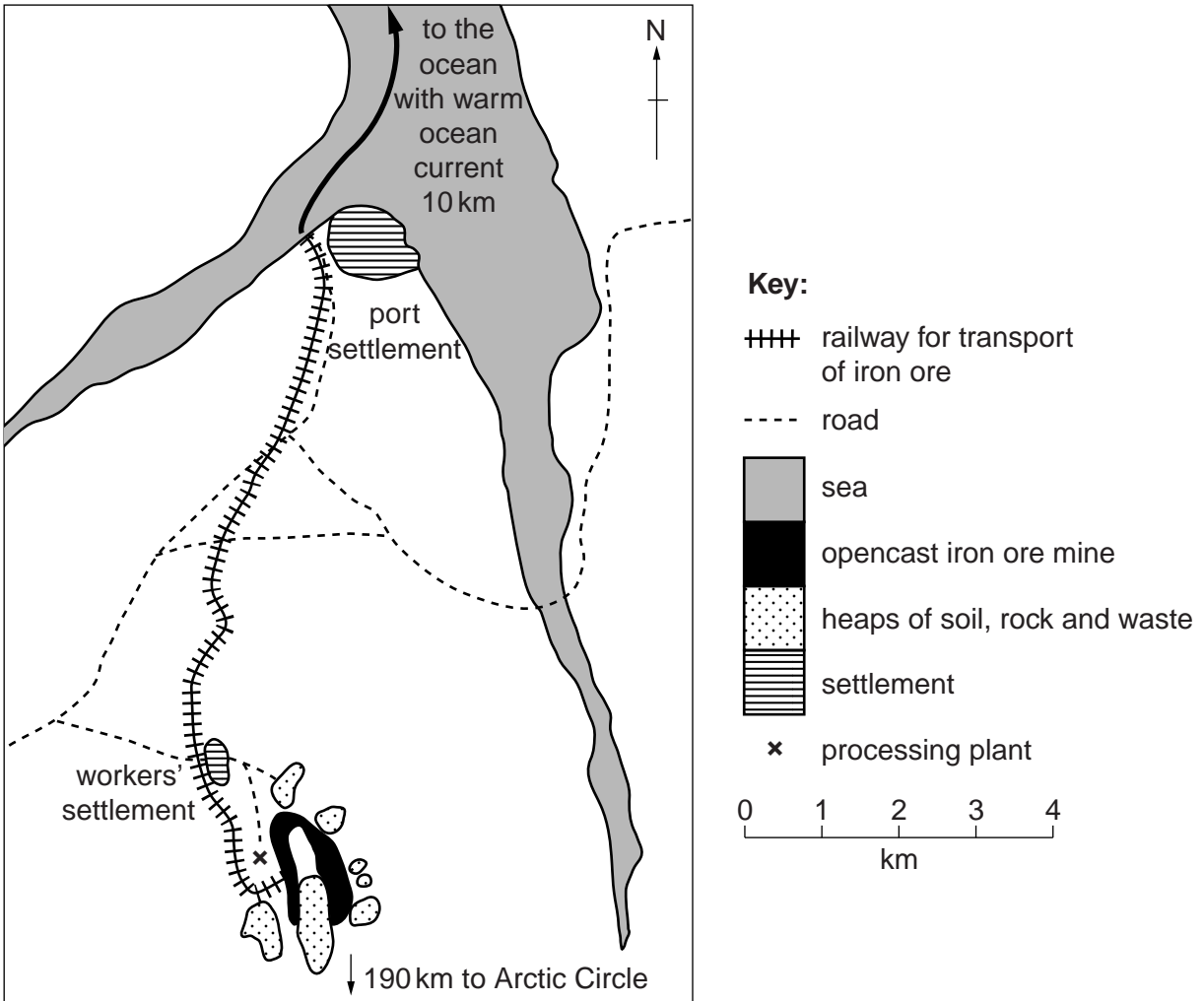
For Examiner's Use	
1	
2	
3	
4	
5	
6	
Total	

This document consists of **22** printed pages and **2** blank pages.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

Section A

1 **(a)** Look at the map showing the location of an opencast iron ore mine in northern Europe.
The railway and settlements were built for the mine.

Key:

⊞⊞⊞	railway for transport of iron ore
- - - -	road
▨	sea
■	opencast iron ore mine
⠿	heaps of soil, rock and waste
▤	settlement
✕	processing plant

0   1   2   3   4
km

(i) How long is the railway line from the mine to the coast?

....[1]

(ii) Why is it easy to export iron ore from this mine all year?

....

....[1]

(iii) Describe the impact of this mine on the environment.

....

....[1]
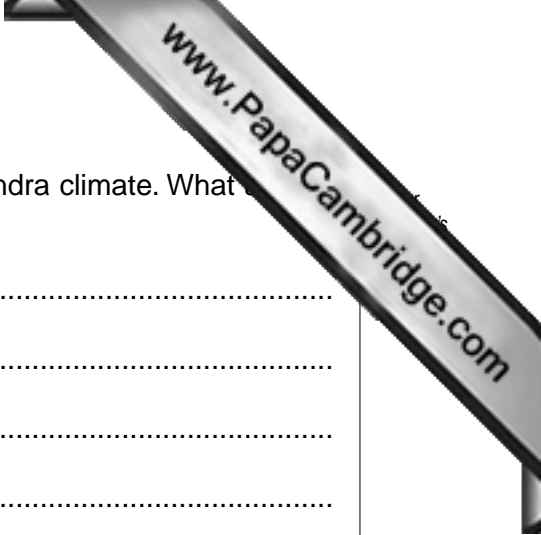
(iv) The mine is at approximately 70° North in an area of tundra climate. What problems for opencast mining at high latitudes?

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....[3]

(b) (i) The iron ore is about 35% pure. Explain what this means.

....[1]

(ii) Explain why the ore is partially processed at the mine, before being transported to market.

....

....[1]

(c) The mine closed in 1996 and re-opened in 2009. Suggest reasons why some mines re-open.

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....[2]

2 **(a)** Look at the diagram showing how nitrate fertiliser can reach a river.

nitrogen

nitrate fertiliser

X

Y

uptake by plant roots

denitrification
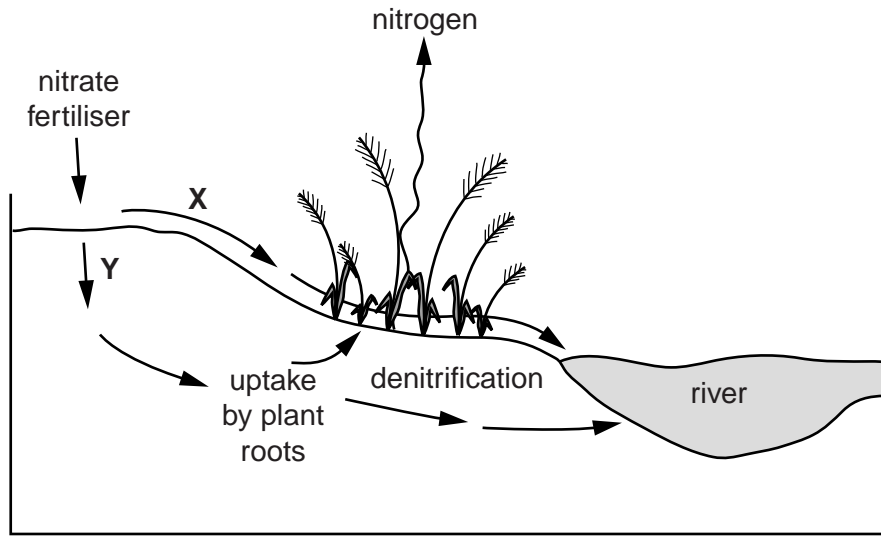
river

(i) The arrows labelled **X** and **Y** on the diagram show two ways in which pollutants can move to the river as part of the water cycle. Name the processes.

X ....

Y ....[2]

(ii) From the diagram, state **two** ways in which nitrates can be prevented from reaching the river.

1 ....

....

2 ....

....[2]

(iii) What is produced during denitrification?

....[1]

(b) Algae and water plants grow quickly when large amounts of nitrate reach rivers. Explain **two** effects of this increased growth.

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....

....[2]
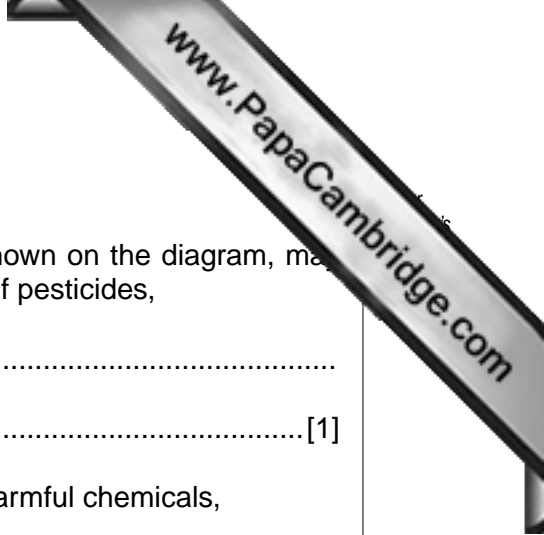
(c) Suggest:

(i) how strips of vegetation along the sides of rivers, as shown on the diagram, may help to reduce pollution of the river during the spraying of pesticides,

....

....[1]

(ii) a weather condition in which farmers should not spray harmful chemicals,

....

....[1]

(iii) an advantage to wildlife of growing a variety of different types of vegetation in these strips.

....

....[1]

3 (a) Look at the climate graph for a Swedish city with a cool temperate interior climate.
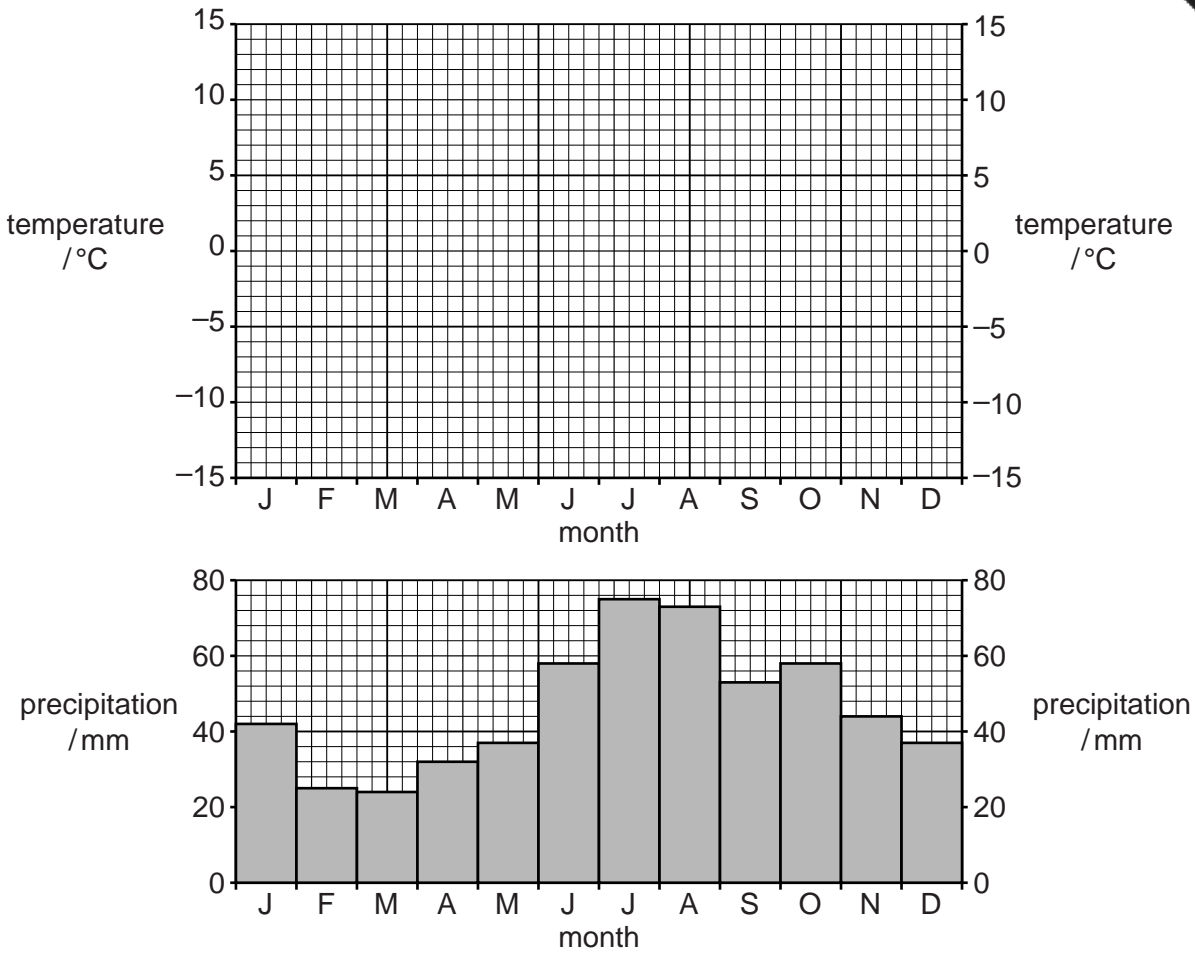
Use the temperature figures in the table to complete the climate graph. Plot the figures as a line graph. [3]

month	J	F	M	A	M	J	J	A	S	O	N	D
temperature °C	−11	−12	−7	−2	6	11	15	12	6	−1	−6	−10

(b) Coniferous forest grows in this climate. In Sweden the forests have been badly affected by acid rain.

(i) Name the two main pollutants that cause acid rain.

....

....[1]

(ii) Explain how acid rain damages forests.

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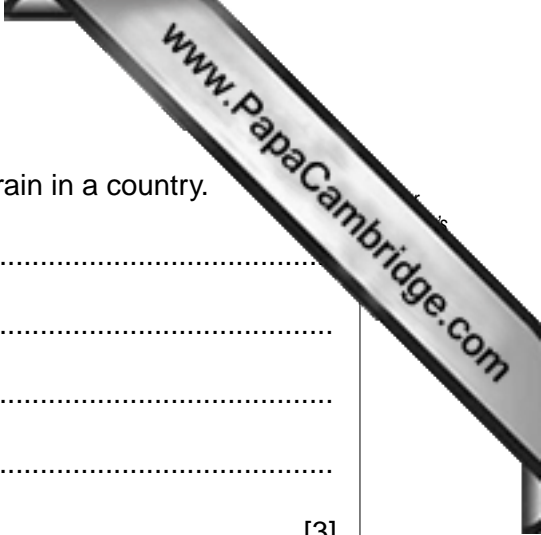
(c) Suggest why it is often difficult to reduce the problem of acid rain in a country.

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....[3]

4   **(a)** Look at the population pyramid, which shows the population of Rwanda in 2010.

age range

male   80 and over   female
                                               75–79
                                               70–74
                                               65–69
                                               60–64
                                               55–59
                                               50–54
                                               45–49
                                               40–44
                                               35–39
                                               30–34
                                               25–29
                                               20–24
                                               15–19
                                               10–14
                                                5–9
                                                0–4

1.0 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0   0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

population (in millions)
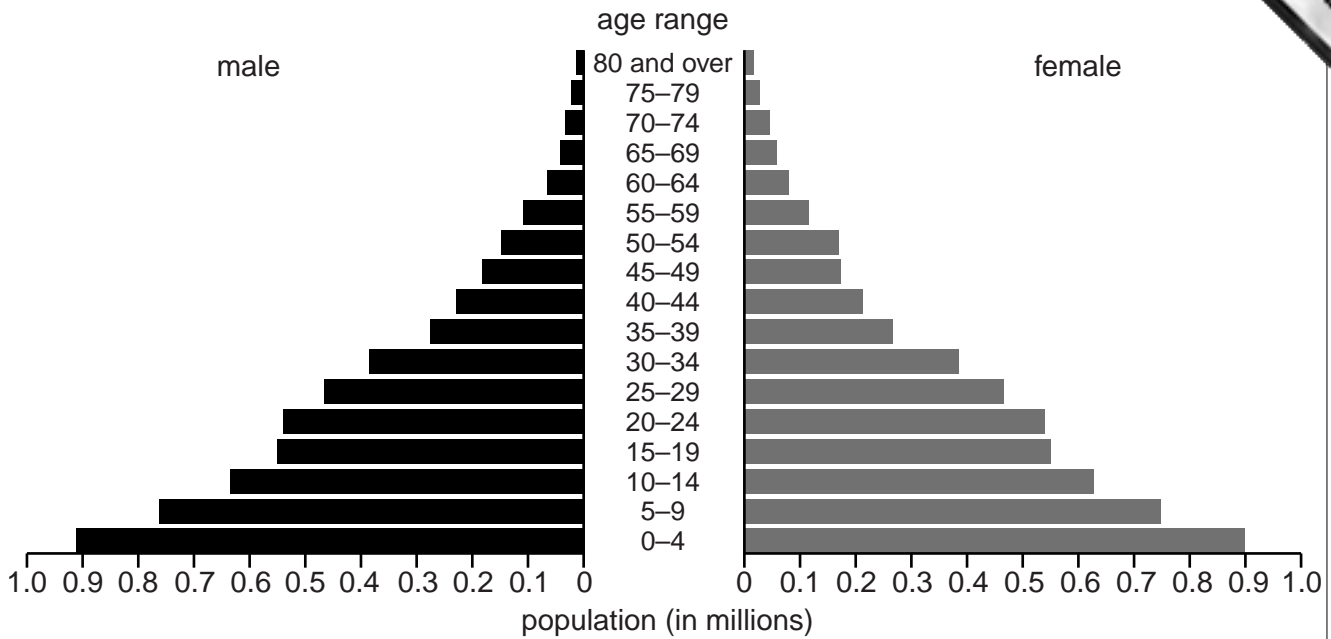
(i)   What is the total number of children in Rwanda aged 0 to 9 years old?

.... million   [1]

(ii) How does the number of people in older age groups differ from that in younger age groups?

....[1]

(iii) Migration into a country can affect the shape of its population pyramid. State one age group in Rwanda which appears to have been affected by this.

....[1]

(b) The increase in population in rural areas leads to rural-urban migration. This leads to loss of many middle-aged people from rural areas.

Suggest the problems caused for rural areas by the loss of middle-aged people.

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....[3]

(c) Describe the different ways in which city authorities have attempted to deal with the problem of housing large numbers of migrants.

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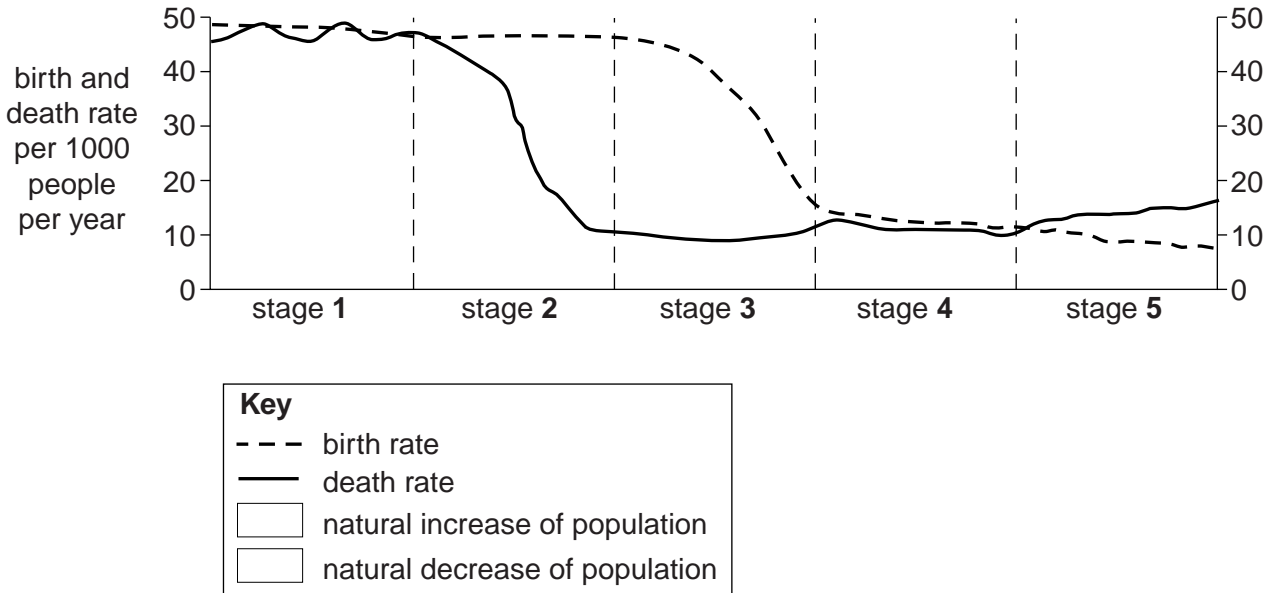...[4]

Section B

5 **(a)** Over the past 200 years countries have passed through the stages of the Demographic Transition Model at different rates. The diagram shows the stages in the Demographic Transition Model for a country.

Key
- – – birth rate
- —— death rate
- natural increase of population
- natural decrease of population

(i) Look at the diagram. Give the stage number which matches each of these two descriptions:

fastest decrease in birth rate ....

fastest increase in rate of population growth .... [2]

(ii) State one similarity and one difference between stage **1** and stage **4**.

similarity ....

....

difference ....

....[2]

(iii) On the graph, use two different types of shading to show where there are natural increases and natural decreases of population. Complete the key for the types of shading used. [3]

(b) The spider diagram shows factors which can decrease the rate of population gro̶ country.

family planning   urban growth

factors for decreasing rate of
population growth

education of women   very high death rates
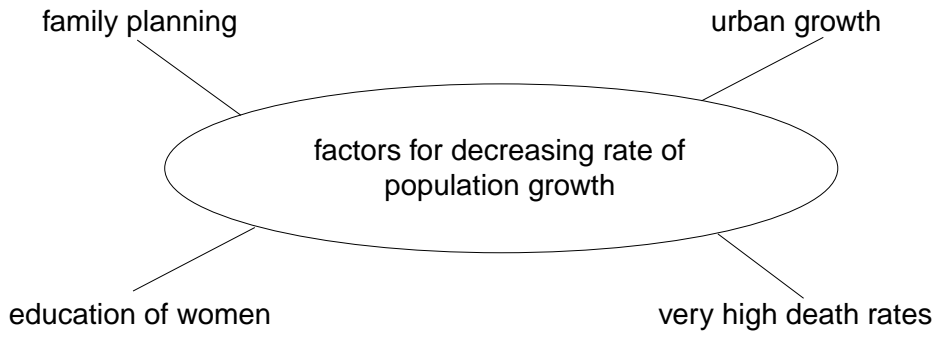
(i) Choose three of these factors. For each factor, describe how it can decrease the rate of population growth in a country.

1 ....

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2 ....

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3 ....

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....[6]

(ii) Another factor which can affect the rate of population growth in a country policy of the government.

Look at the information box showing how national population policy changed in Iran between the early and late 1980s.

Population policy in Iran	
Early 1980s Islamic Revolution Ayatollah Khomeini's regime said that it was the duty of all Iranian citizens to have children and expand the population.	Late 1980s Regime realised that it had made a mistake. Instead it introduced a policy to reduce population growth * contraception was made more widely available * couples were forced to attend family planning clinics before marriage * child benefits were stopped after three children
Population in 1980 40 million	
Population estimate made in 1980 for 2005 100 million	Actual population in 2005 70 million

How and why did the population policy of the government change in Iran between the early and late 1980s?

....

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....[2]

(iii) As a result of this change in policy, how big was the decrease in population between the number estimated in 1980 for 2005 and the actual population in 2005?

....[1]

(iv) Look at the data for fertility rates (average number of children per woman of lifetime) in Iran between 1980 and 2010.

year	1980	1985	1990	1995	2000	2005	2010
fertility rate	6.5	6.6	5.6	4.3	2.5	2.1	2.1

Draw a line graph to show the change in fertility rates in Iran from 1980 to 2010.
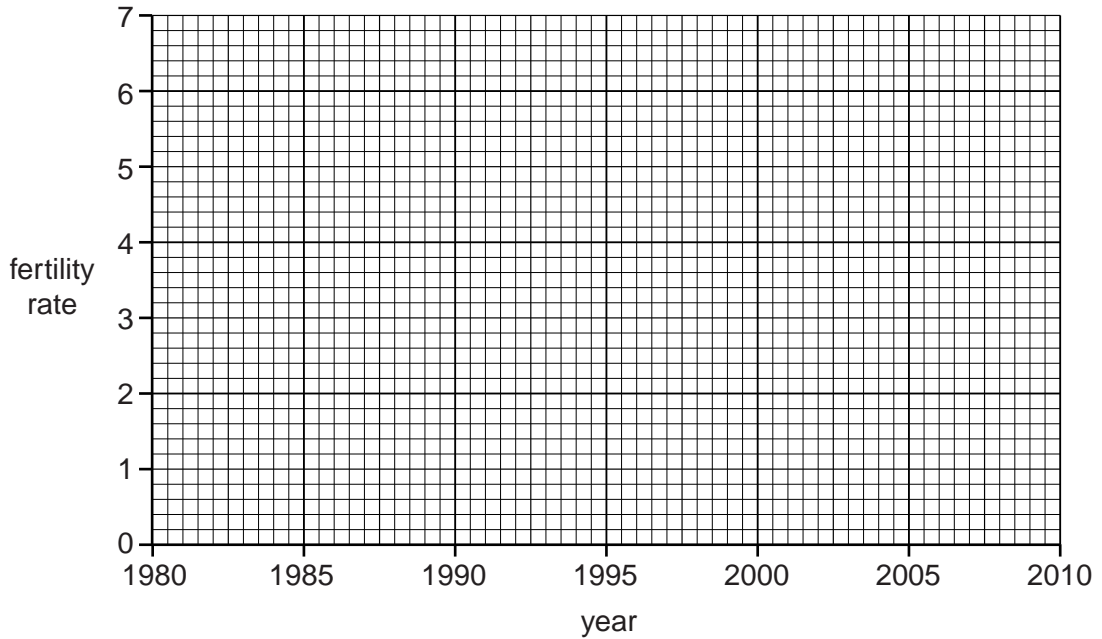
[3]

(v) Describe how the data and your graph show that fertility rates in Iran decreased most quickly during the 1990s.

....

....

....

....[2]

(vi) Suggest reasons why fertility rates decreased faster during the 1990s than after 2000.

....

....

....

....[2]

(c) Why do national population policies have a big effect on the size of population in countries? Explain as fully as you can. Use examples of countries with and wit population policies to illustrate your answer.

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....[5]

(d)   **Population data for Iran (2005)**

birth rate	20.3 per 1000
death rate	5.2 per 1000
population under 15 years	28.7 per cent
population over 60 years	6.4 per cent

(i) What was the rate of natural increase per 1000 in Iran in 2005?

   ....[1]

(ii) Look again at the Demographic Transition Model in part **(a)**.
In which stage does the example of Iran fit best? Explain your choice.

   ....

   ....

   ....[2]
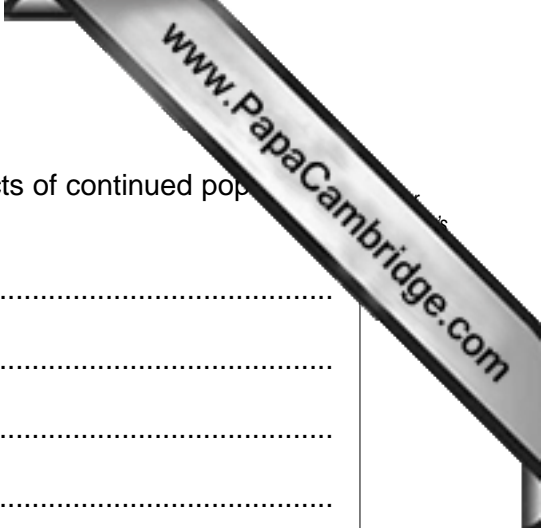
(iii) Describe some of the economic and environmental effects of continued population growth for countries such as Iran.

economic ....

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....

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environmental ....

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....[4]

(e) Many people believe that the continued growth of world population is unsustainable.

(i) Why do they think this?

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(ii) Do you agree? Explain your views on this.

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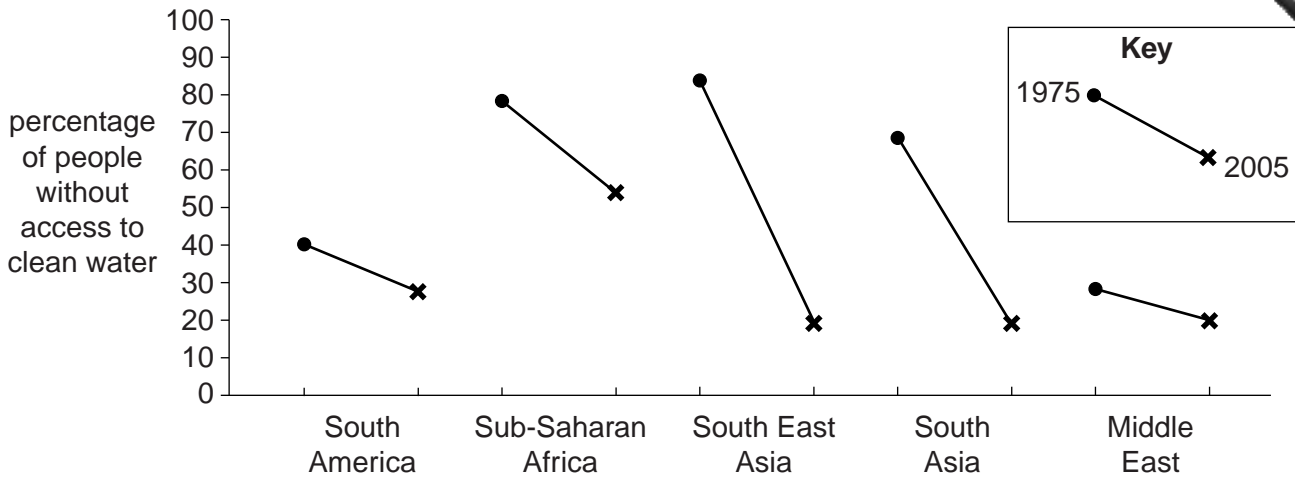
[5]

[Total: 40]

6 (a) Look at the chart. It shows percentages of people without access to clean (safe) water in five regions of the developing world for 1975 and 2005.

(i) From the chart, name the world region in which:

1. over 80 per cent of the people were without access to clean water in 1975;

   ....

2. the greatest percentage of people were without access to clean water in 2005;

   ....

3. there was the largest percentage increase of people with access to clean water between 1975 and 2005.

   ....
   [3]

(ii) Using the chart, state how the Middle East is different from the other four regions.

....

....[1]

(iii) Suggest reasons why rates of improvement in access to clean water between 1975 and 2005 varied so greatly between developing world regions.
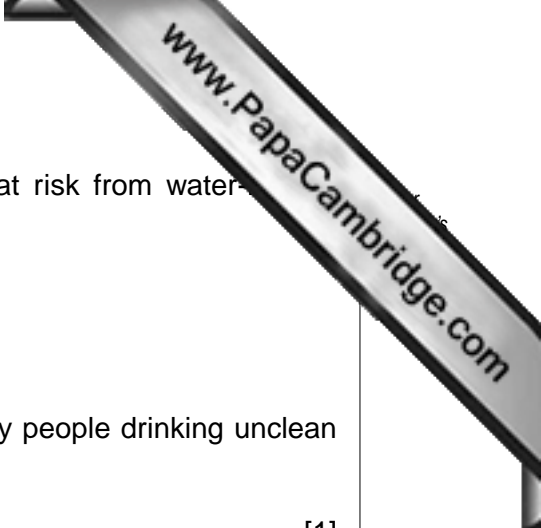
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....[3]

(b) People without access to clean water are the ones most at risk from water-related diseases.

The most widespread water-related diseases are:

bilharzia   **cholera**   **malaria**   **typhoid**

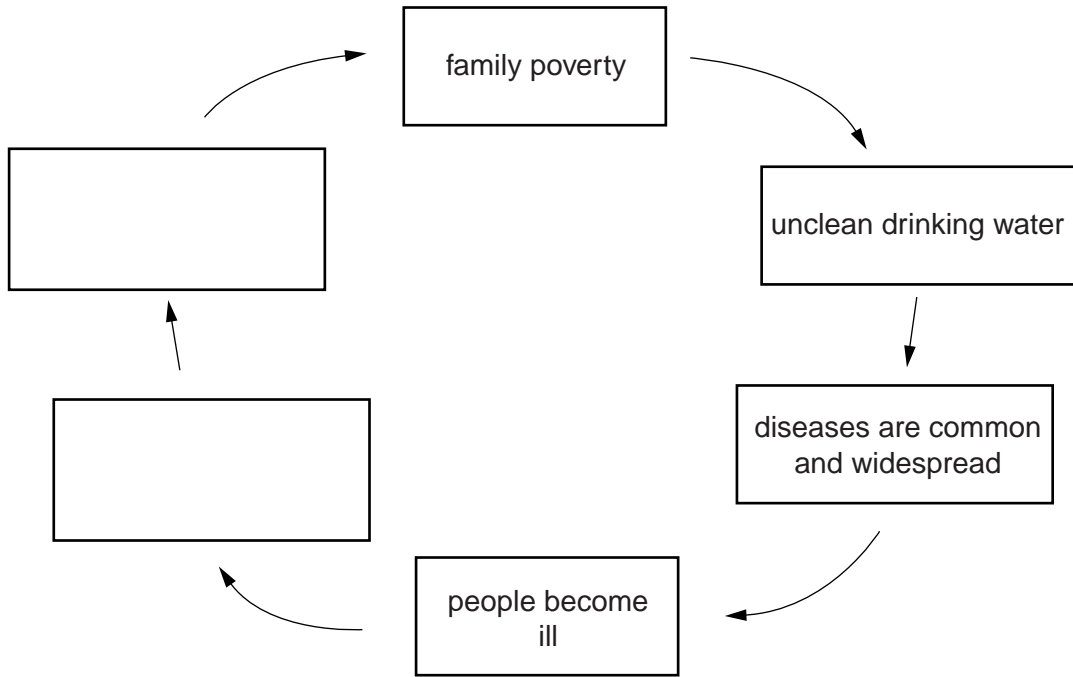**(i)** Which two of these diseases are water-borne, caught by people drinking unclean (polluted) water?

....[1]

(ii) Describe how the other two named water-related diseases are different from the water-borne ones.

....

....

....

....[2]

(iii) Some people die from water-related diseases. Which people and groups of people are most at risk and why?

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....[4]

(iv) Many other people feel ill and weak for long periods of the year. This contrib[...]
the family poverty cycle.

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        ┌──────────────┐
   →    │ family poverty│   ↘
        └──────────────┘
┌──────────────┐              ┌──────────────────┐
│              │              │ unclean drinking water│
│              │              └──────────────────┘
└──────────────┘                      ↓
   ↑                          ┌──────────────────┐
┌──────────────┐              │ diseases are common│
│              │              │   and widespread │
│              │              └──────────────────┘
└──────────────┘                      ↙
   ↖          ┌──────────────┐
              │ people become│  ←
              │      ill     │
              └──────────────┘
```

Complete the poverty cycle by filling in the two remaining boxes with suitable labels.
[2]

(c) (i) Some people struggle to find enough water, and the water that they do find is rarely clean.

Read this report from Practical Action, a NGO (non-governmental organisation) working in developing countries.

> For years, the people of Turkana in northern Kenya have suffered persistent periods of drought. In great heat, the women have to walk up to 10 km to dried-up river beds to find water for their families. The women are in danger of being attacked along the way. When they reach the river beds, they dig 'scoop holes' with their bare hands, uncovering small amounts of dirty, polluted water. They have no choice but to drink it.

Explain why the people of Turkana suffer from problems of both water shortage and water quality.

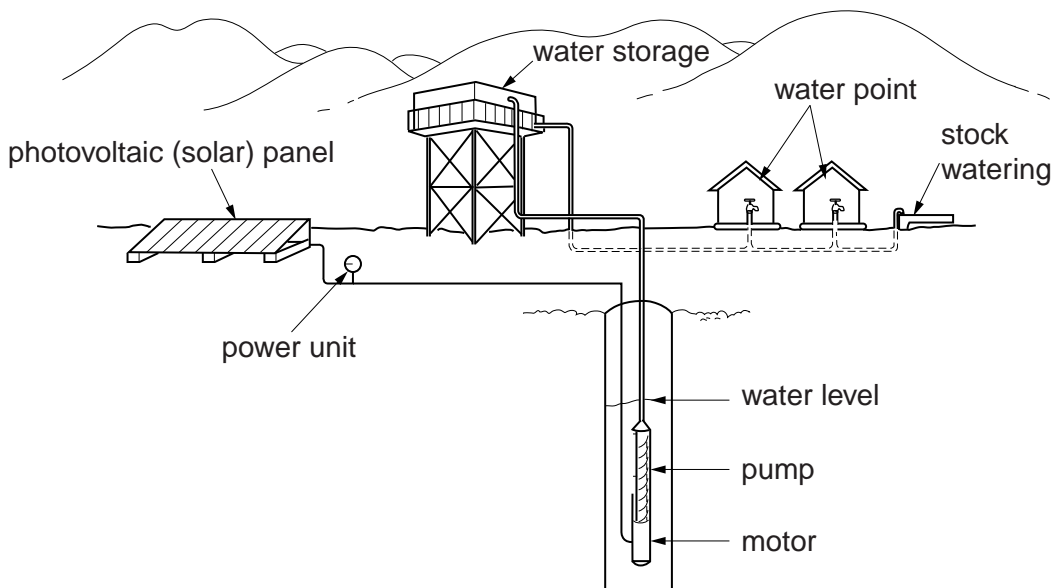water shortage ....

....

....

water quality ....

....

.... [3]

(ii) Look at the diagram showing Practical Action's solution to this problem.

Describe how the solution works to provide poor communities with water.

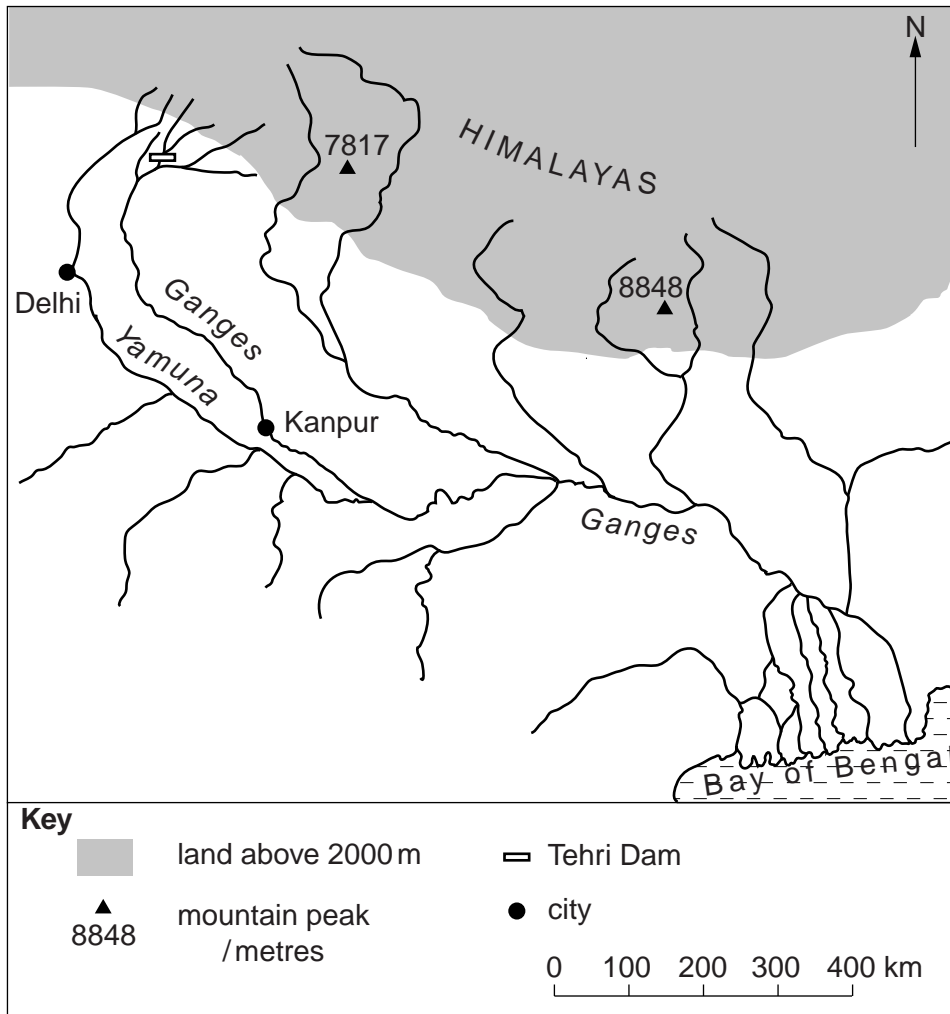..

....

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....

....[3]

(iii) Is this a sustainable solution to the problems of lack of water and poor water quality for poor people living in developing countries in the tropics?

Explain as fully as you can.

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....[4]

(d) Look at the map of the River Ganges, India's largest river.

Course of the River Ganges

Key

▨	land above 2000 m	▭	Tehri Dam
▲ 8848	mountain peak / metres	●	city

0   100   200   300   400 km

(i) The map shows the location of the Tehri Dam, one of the largest in India, 265 m high with a reservoir 75 km long behind it.

Suggest reasons why this is a good location to build a large dam.

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....[3]

(ii) One of the main reasons for building the dam was to supply Delhi with drinking water.

Delhi is the capital city with a population of 16 million people.

Approximately how far is Delhi from the dam?

.... [1]

(iii) After the construction of the dam, the town of Tehri and many villages were flooded. More than 100 farming villages still remain in the area around the Tehri Dam. People living in these villages have found that the construction of the dam has interfered with the natural springs, their main source of water supply for living and farming.

Farmer in the village of Pipola

'For the first time ever, we are now short of water. We cannot get water from the reservoir itself because its high sides are made of loose gravel and are too steep.'

'Please give us time. In the due course of time, we will be able to help the villagers. We are already sending a daily water tanker.'

Local state official

Villager

'What choice have we but to migrate to Delhi?'

'These villagers must look at the bigger picture. The government must think of the national need. India needs to develop into a big power.'

Indian government official in Delhi

Explain what the comments show about the economic and social disadvantages for local people of building large dams.

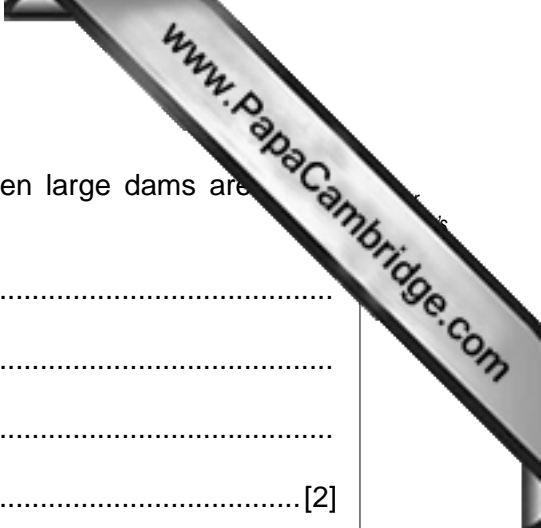...

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.... [3]

(iv) Why are the views of local people usually ignored when large dams are planned?

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....

....

....[2]

(v) Is the migration of people to Delhi a good way of dealing with the water problems of villages around the Tehri Dam? Explain your view on this.

....

....

....

....[2]

(vi) Between Tehri and Kanpur two large canals take river water from the Ganges for farm use. Kanpur is an industrial city with a population of over 3 million people. It is best known for tanning leather. Its 400 leather tanneries release 30 million litres of waste water back into the Ganges every year. This water is contaminated with chromium and chemical waste.

Building the Tehri dam has made environmental pollution worse in the River Ganges at and below Kanpur. Suggest reasons for this.

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....[3]

[Total: 40]

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