

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT

Paper 2



0680/02

October/November 2006

1 hour 45 minutes

Candidates answer on the Question Paper.
Additional Materials: Ruler

Candidate
Name

Centre
Number

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Candidate
Number

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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 **both** questions.
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.

DO NOT WRITE IN THE BARCODE.

DO NOT WRITE IN THE GREY AREAS BETWEEN THE PAGES.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

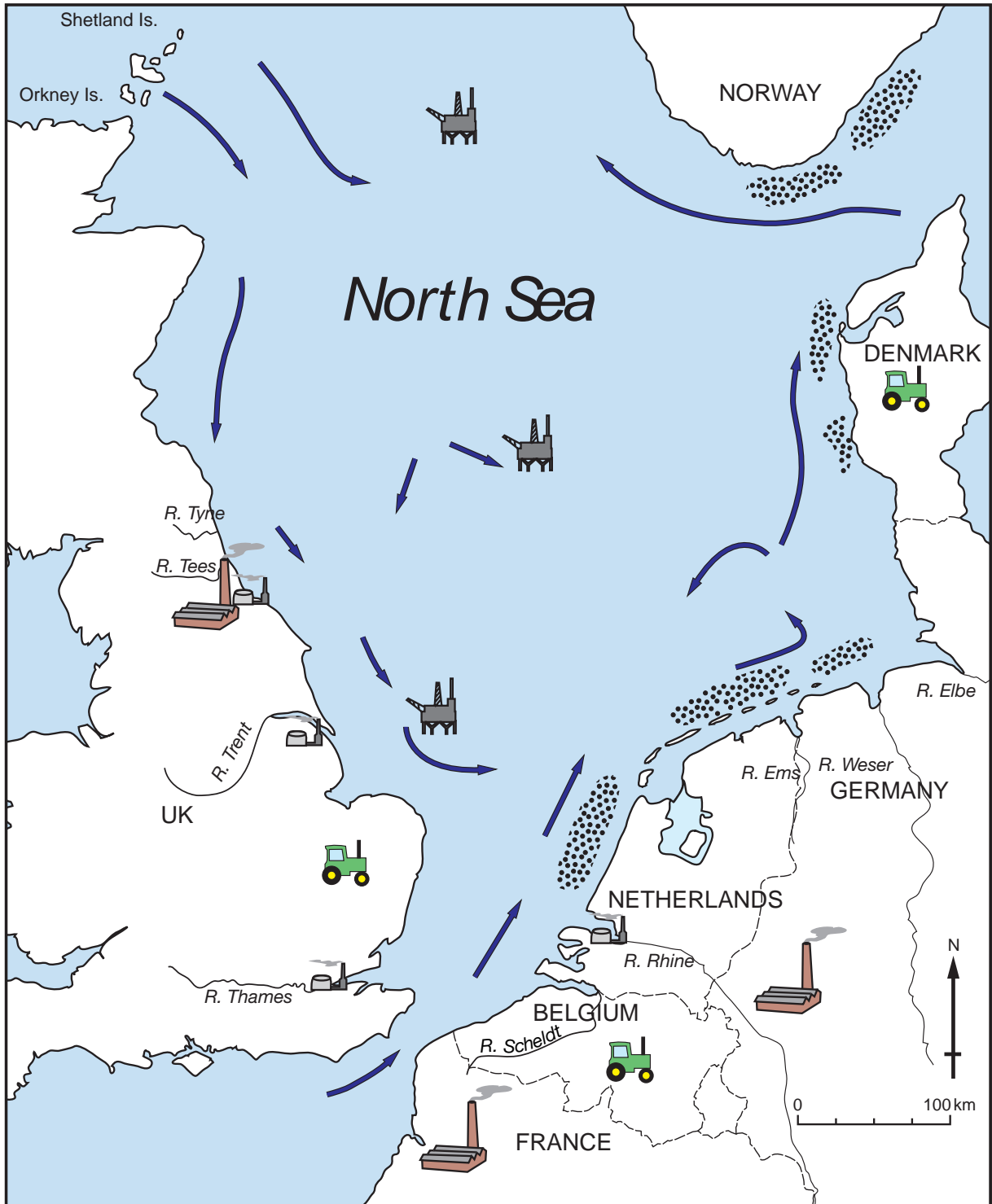
Stick your personal label here, if provided.







| For Examiner's Use | |
|--------------------|--|
| 1 | |
| 2 | |
| Total | |

This document consists of **16** printed pages.

1 The map gives information about pollution in the North Sea.

Threats to the North Sea



| Map Key | | | | | |
|---|------------------------|---|---------------------|---|-------------------|
|  | Fertilisers and Manure |  | Oil/gas Fields |  | Main sea Currents |
|  | Oil Refineries |  | Chemical Industries |  | Algal Blooms |

(a) (i) Name three sources of pollutants in the North Sea shown on the map.

1

2

3[1]

(ii) Pollutants build up in the North Sea. Why are pollutants not dispersed quickly after reaching the North Sea?

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.....[2]

(iii) Where in the North Sea are algal blooms found?

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.....[1]

(iv) Suggest why algal blooms are located in these places.

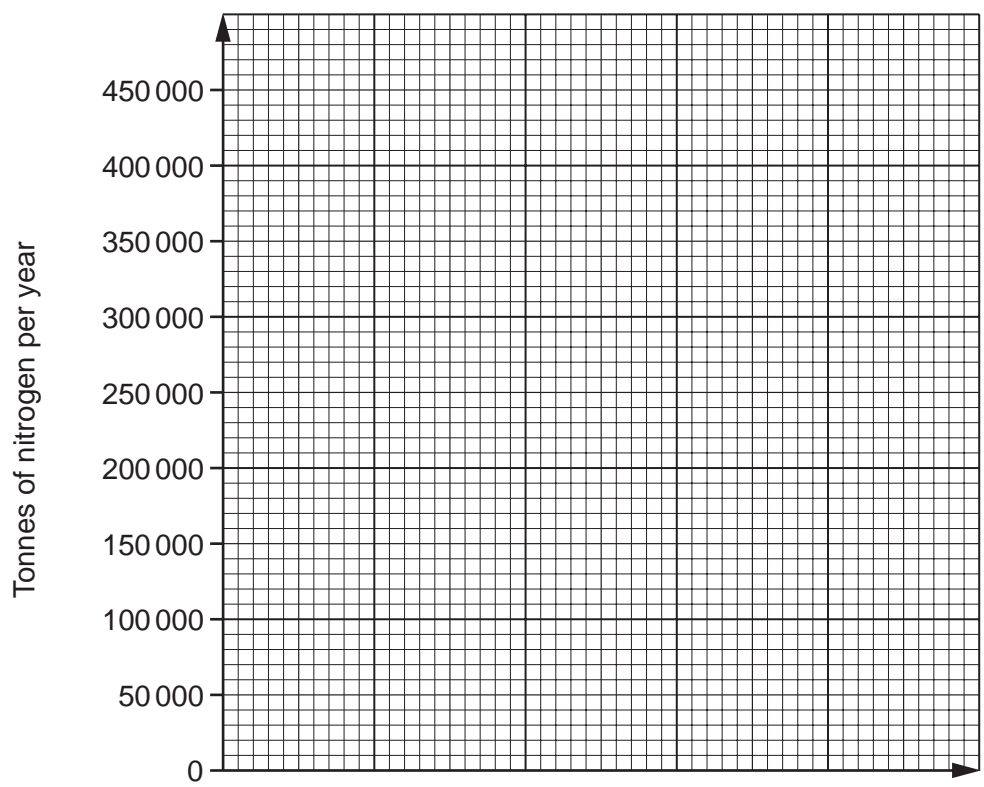
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.....[1]

(b) Amount of nitrogen from rivers flowing into the North Sea
(tonnes per year)

| River | Amount | Countries passed through |
|---------|---------|---|
| Thames | 31 000 | UK |
| Rhine | 420 000 | Switzerland, France, Germany, Netherlands |
| Scheldt | 49 000 | France, Belgium |
| Weser | 87 000 | Germany |
| Elbe | 150 000 | Czech Rep., Germany |

(i) Draw a bar graph to show amounts of nitrogen from the five rivers.



[3]

(ii) Name two sources of nitrogen in the North Sea from human activities.

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..... [2]

(c) In Europe, as in other continents, some rivers carry more pollutants than others.

Give reasons why

(i) most of the world's rivers carry pollutants;

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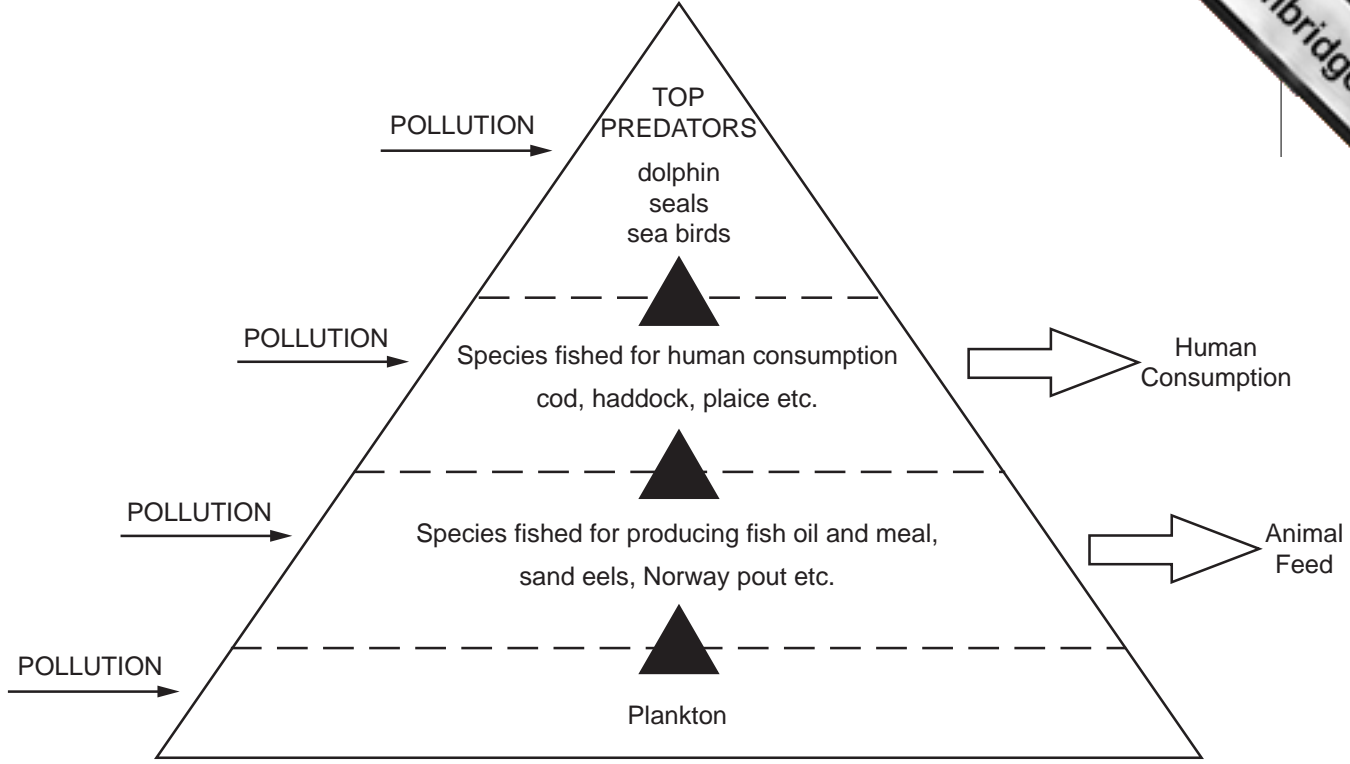
(ii) some carry more than others.

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[6]

(d)

NORTH SEA FOOD CHAINS



(i) Why is plankton important in the North Sea food chains?

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.....[1]

(ii) These are food chains under threat, with great competition for marine resources. Describe how the food chains diagram shows this.

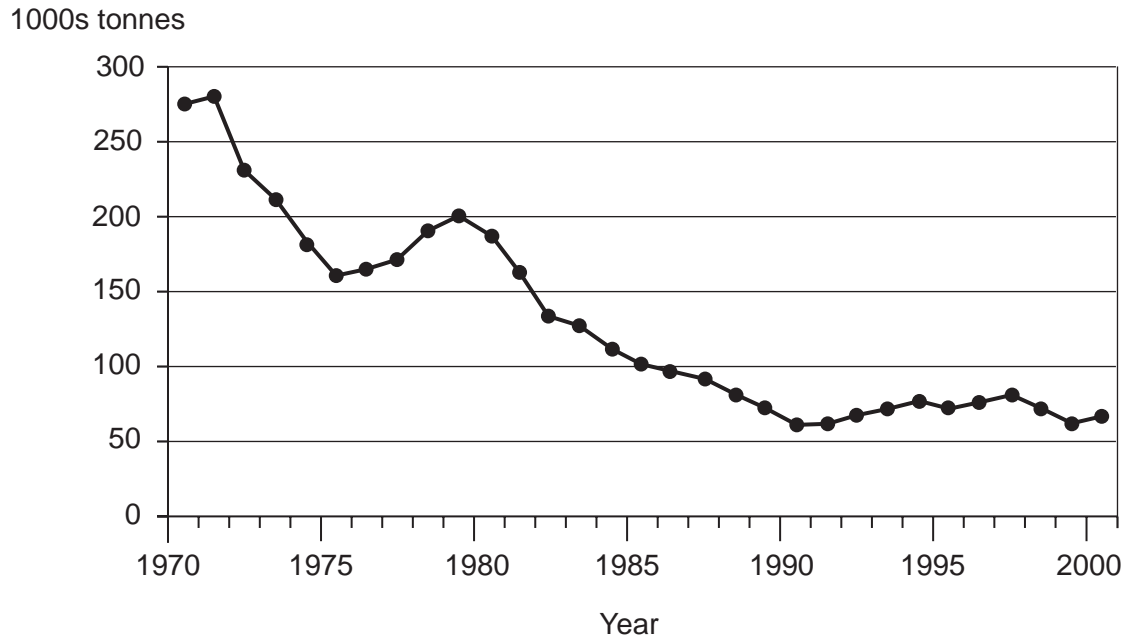
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.....[3]

(iii) Explain how the growth of algal blooms affects marine life.

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.....[3]

(e) The graph shows breeding stocks of cod in the North Sea.

North Sea Spawning Cod Stock



Describe the trends shown in the graph.

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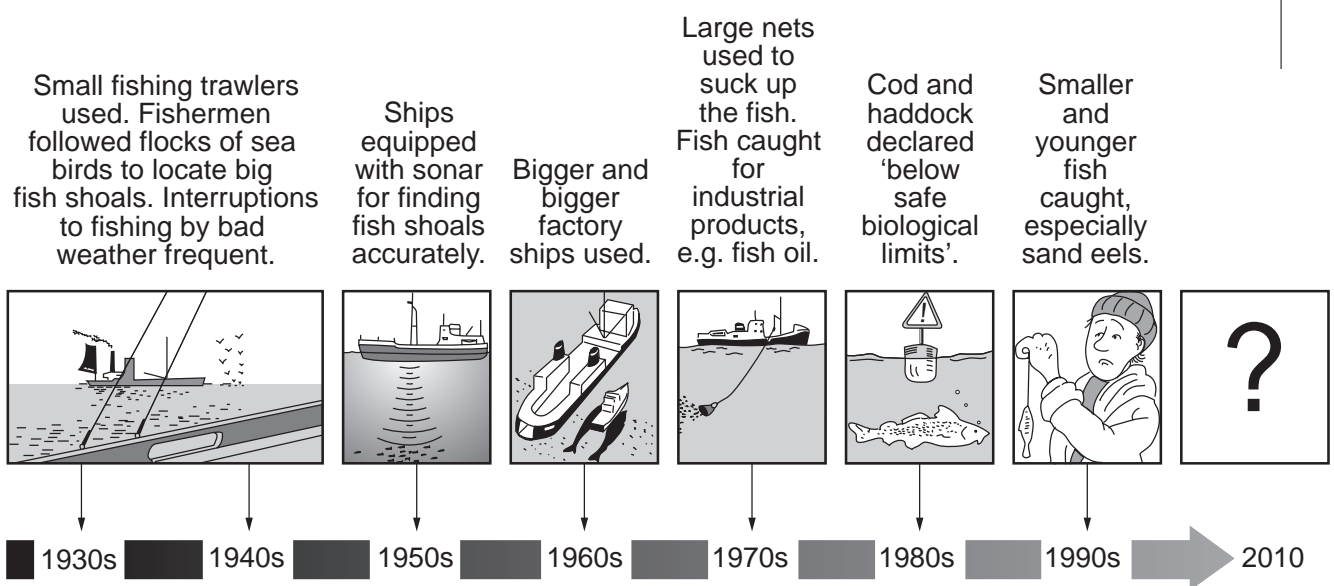
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[3]

(f) Time Line for North Sea Fishing

North Sea Fishing Time Line



(i) What is meant by fish stocks falling 'below safe biological limits'?

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.....[2]

(ii) Describe what happened between the 1950s and 1990s to cause over-fishing in the North Sea and in many other parts of the world.

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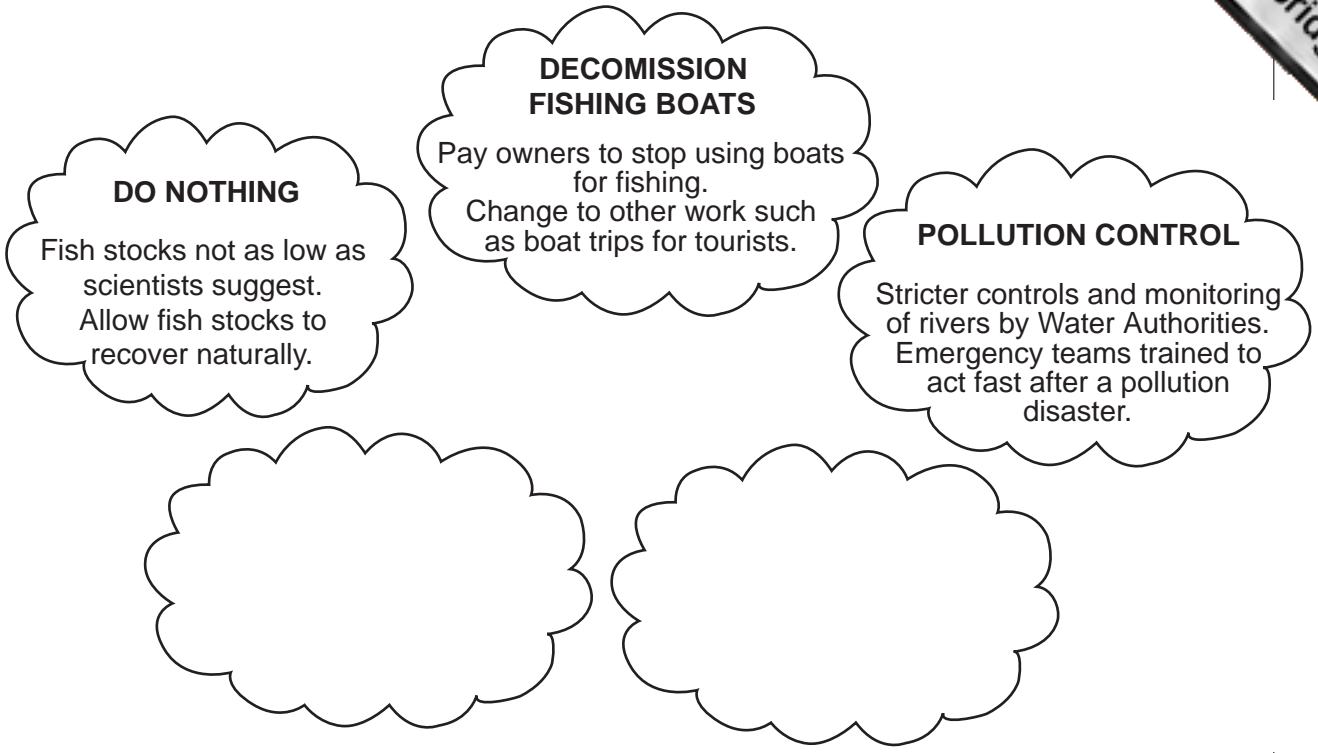
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.....[3]

(g) Options for Fishing Grounds under threat



(i) Add two more options in the spaces provided for management of fishing grounds which have been over-fished. [4]

(ii) Are all the options sustainable?

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(iii) Is it better to use several different options instead of just using one? Explain your views as fully as you can.

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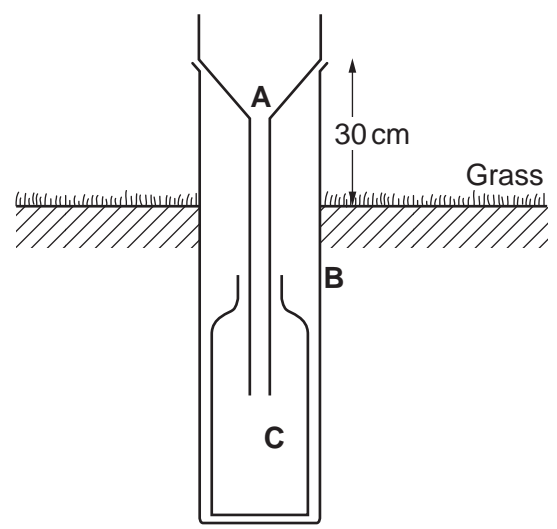
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2 (a) The diagram below shows a rain gauge.



(i) Name the three parts labelled **A**, **B** and **C**.

A

B

C[3]

(ii) This rain gauge is partly buried in the ground and placed on grass with its top 30 cm above the ground surface. Explain the advantages of siting the rain gauge in this way.

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.....[3]

(iii) When or why is it sometimes difficult to obtain accurate readings of precipitation with a rain gauge?

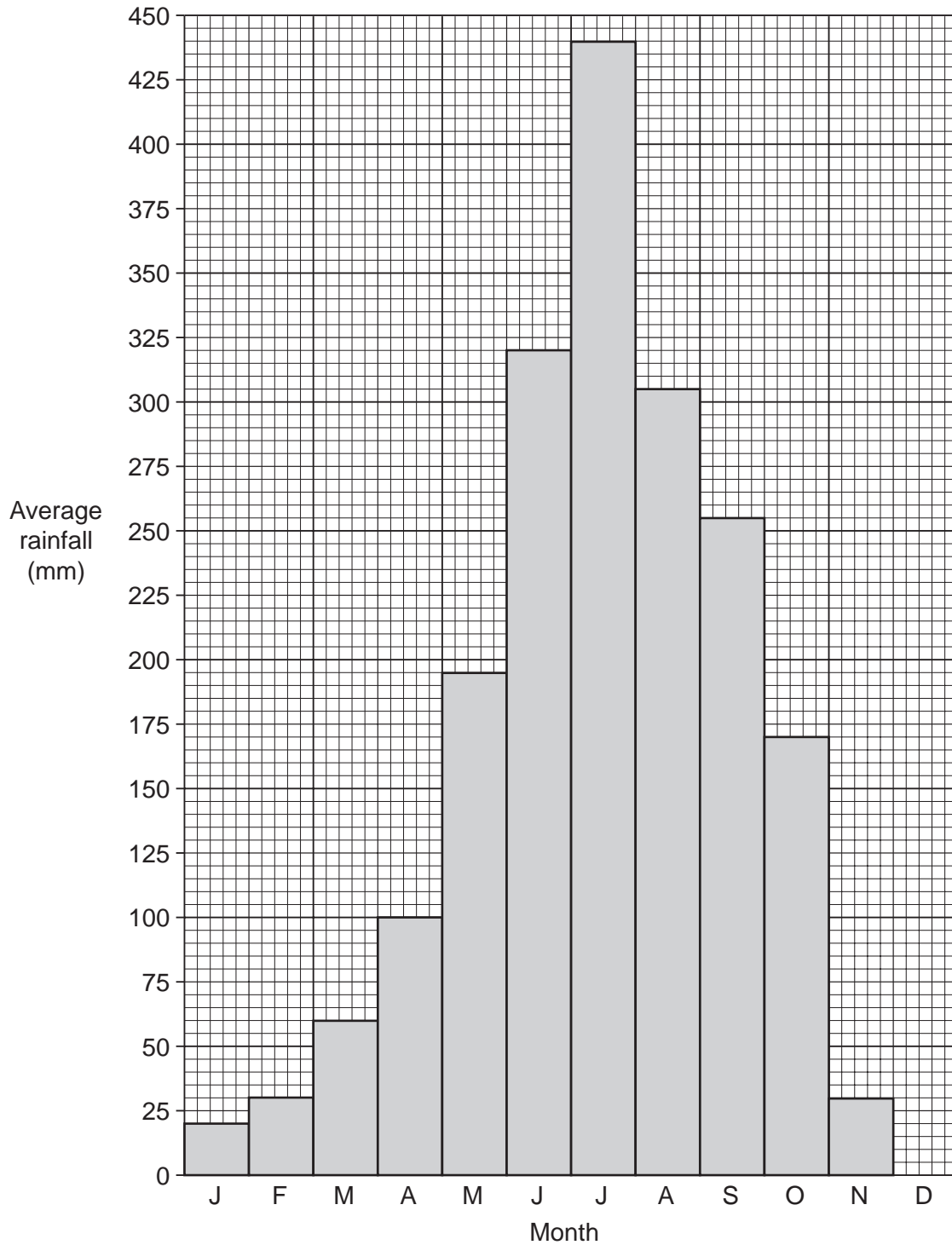
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.....[2]

(b) Many places in South Asia have wet summers because of monsoon rains. Look at the rainfall graph for Dhaka, the capital city of Bangladesh.



(i) How much rain falls in Dhaka during the three wettest months? Show your working.

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..... [2]

(ii) Explain why the risk of flooding is greater in August and September than in June?

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.....[2]

(c) In summer 2004 large areas in South Asia were affected by some of the worst-ever floods. Bangladesh was the country most badly affected. Read this newspaper report.

Bangladesh stretches across the world's largest delta, where two of Asia's great rivers meet. The people of Bangladesh live with the risk of flooding. Summer is always wet, because it is the monsoon season; in 2004 it was very wet.

After almost non-stop rains in July and August, more than half of Bangladesh was already flooded. Then on 13 September 350mm of rain fell in 24 hours in Dhaka, the worst rains for 50 years.

Not only were monsoon rains heavy in Bangladesh, but the rivers were full of floodwater. This came from the very heavy monsoon rains in northern India and Nepal. Every year Bangladeshis become more worried about trees being cut down in the hills and mountains of India and Nepal. Deforestation increases run off into rivers.

As a result of the floods in 2004, at least 760 were killed and more than 35 million Bangladeshis were affected. River floods washed away countless homes, roads and stores of vital subsistence crops, especially rice. It was estimated that 8.5 million homes were destroyed. The government put the cost of repairs to roads, agriculture and industry at US\$6bn.

In the countryside where 75% of Bangladeshis live, the monsoon is normally welcomed. Houses are built on raised ground, sometimes on stilts. The river floods leave a new layer of rich silt which fertilises the padi (wet rice) fields. The many rivers and lakes are important sources of fish, which adds protein to the diet of rice farmers.

But in 2004 flood waters were more than four metres above normal flood levels, surrounding homes, wiping out the rice crop and threatening diarrhoea, dysentery and other diseases spread by dirty water.

(i) What is the evidence that flooding in 2004 in Bangladesh was much worse than normal?

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.....[2]

(ii) Where do people in Bangladesh live so as to avoid the normal monsoon floods?

.....[1]

(d) Floods have both advantages and disadvantages for farmers in Bangladesh.

(i) State two advantages of floods to farmers in Bangladesh. Explain their importance.

1

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.....[4]

(ii) State one short-term and one long-term problem caused by floods in Bangladesh.

Short-term

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Long-term

.....[2]

(iii) Explain why different strategies are needed to reduce the effects of short-term and long-term problems.

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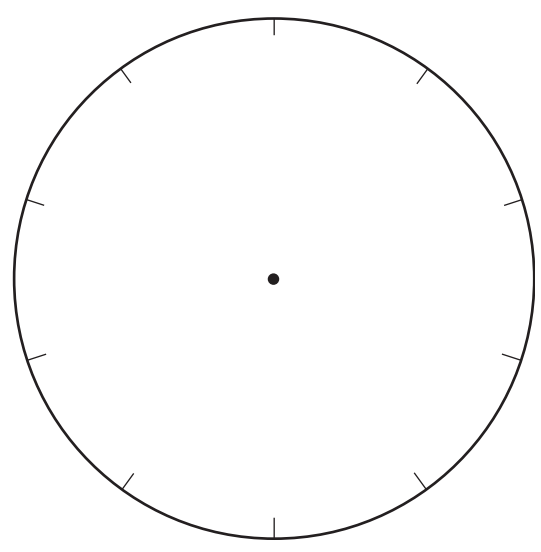
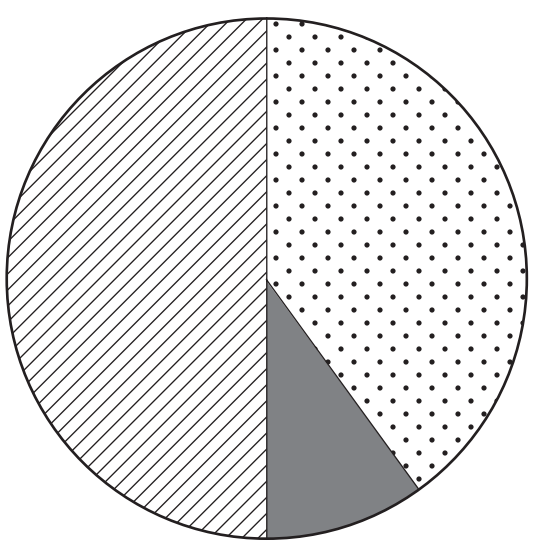
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.....[3]




(e) The pie graphs are to show what happens to 100% of precipitation in forested and non-forested areas.

Forested

Non-forested



KEY

-  Evapo-transpiration
-  Runoff
-  Groundwater

(i) % in non-forested areas

| | |
|---------------------|----|
| evapo-transpiration | 25 |
| runoff | 45 |
| groundwater | 30 |

Show these percentages in the **non-forested** pie graph. [3]

(ii) For which process is there the largest difference between forested and non-forested areas?

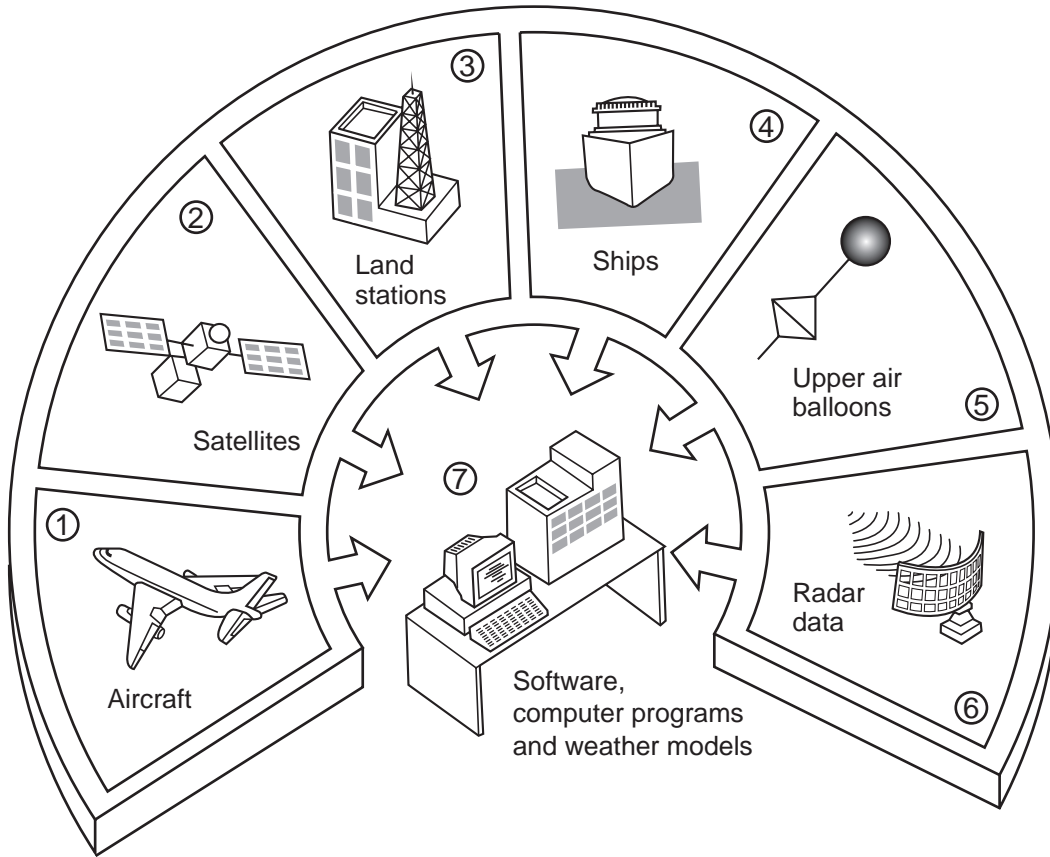
.....[1]

(iii) The newspaper report suggested that deforestation in the mountains and hills of India and Nepal increased the floods in Bangladesh. Explain how this can happen.

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- (f) One strategy to reduce the harmful effects of climatic hazards is improved weather forecasting.

Sources and use of data for weather forecasts



Explain why the accuracy of weather forecasts is increasing.

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[4]

(g)

'Improved weather forecasting will not help farmers and others living in rural areas of developing countries like Bangladesh.'

'More reliable weather forecasts always help. Governments can plan what to do before bad weather reaches their countries.'

- (i) Would improved weather forecasts have helped the people of Bangladesh in summer 2004?
- (ii) Can governments in developing countries plan adequately for climatic hazards?

Give and explain your views on these.

(i)

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(ii)

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[5]

[Total: 40]

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