



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

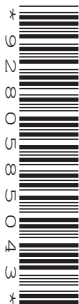
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ENVIRONMENTAL MANAGEMENT

0680/13

Paper 1

May/June 2016

1 hour 30 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

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.

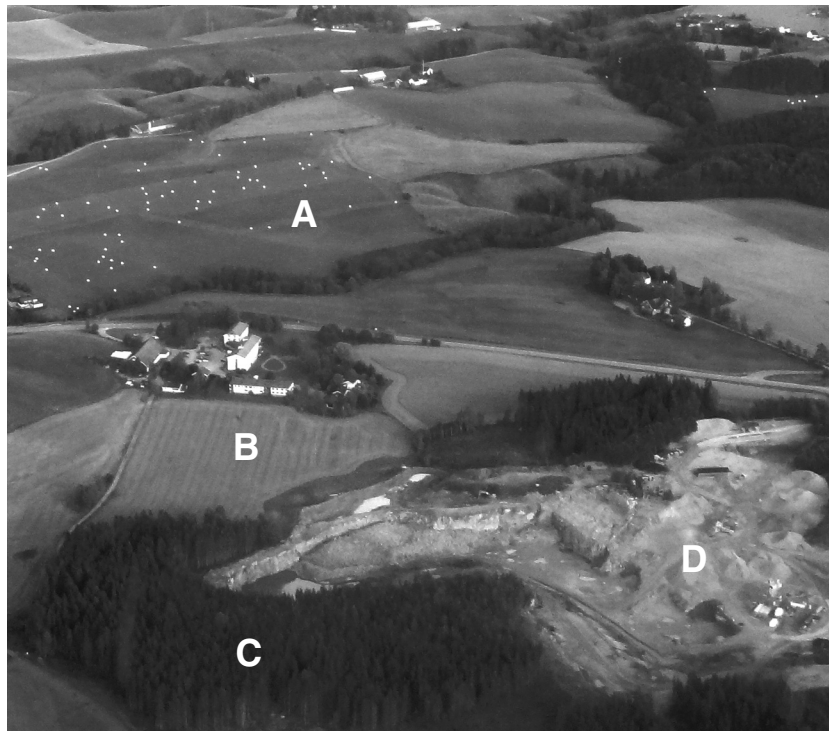
You may lose marks if you do not show your working or if you do not use appropriate units.

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 **13** printed pages and **3** blank pages.

1 Look at the photograph below.



(a) (i) Complete the table below using letters from the photograph. [2]

| land use | letter |
|--------------------|--------|
| crop farming | |
| grazing land | |
| natural vegetation | |

(ii) Some areas shown in the photograph are still covered in trees.

Suggest why humans have not used these areas for other purposes.

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.....[2]

(iii) Suggest why there is an open-pit (opencast) mine at **D**.

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.....[1]

(iv) Describe ways in which environments damaged by mining can be improved.

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.....[3]

(b) Hardwood trees are found in tropical forests.

Explain how hardwood forests can be managed by sustainable harvesting.

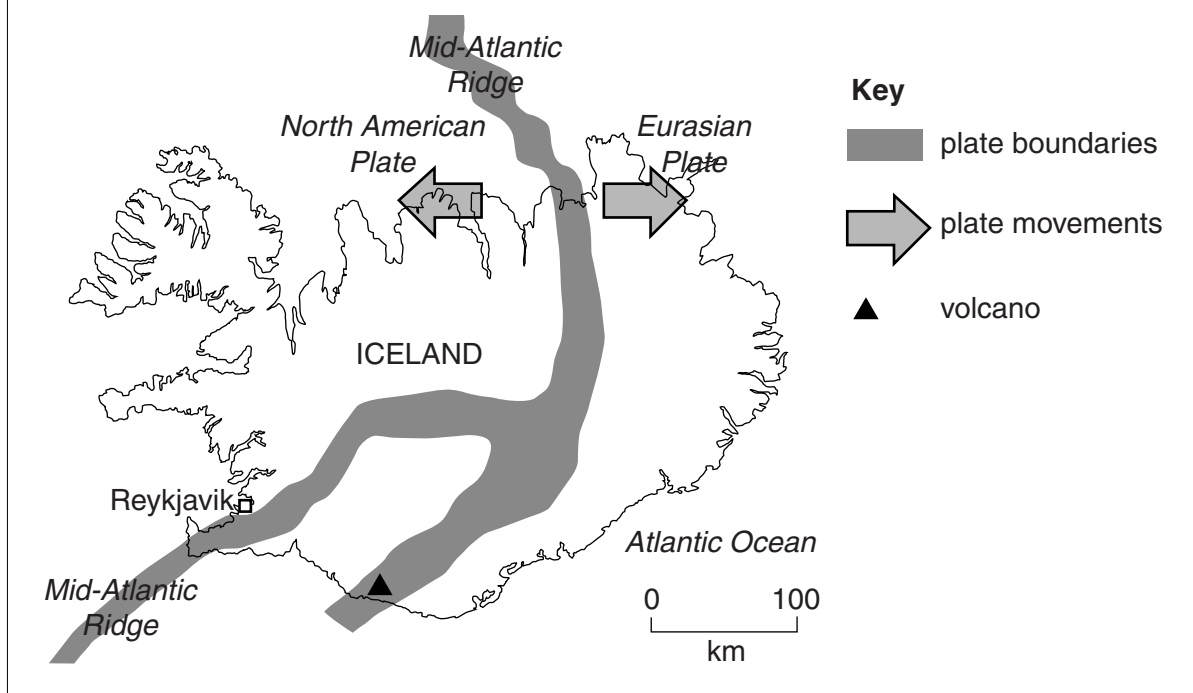
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.....[2]

- 2 Read the following report about the eruption of a volcano in Iceland in 2010.

The main eruption occurred on 19 April. An ash cloud rose 11 000 m into the air. The ash was spread by winds from Iceland towards north-west Europe.

This ash cloud caused 107 000 flights to be cancelled over eight days, 48 percent of total European air traffic.

The cost to airlines was more than 200 million USD a day. Less fuel was needed and so 1.9 million barrels of oil were not sold. Oil was 75 USD per barrel. It was estimated that London lost 170 million USD of tourist income.



- (a) (i) Calculate how many dollars the airlines lost over this period.

Space for working.

..... USD [1]

- (ii) Calculate how many dollars were lost in sales of oil during this period.

Space for working.

..... USD [2]

(iii) Suggest **one** reason why the losses stated in the newspaper article were an underestimate of total economic losses.

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

(iv) Suggest why **no** people were killed in this volcanic eruption.

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

(v) Explain why there are many volcanoes in Iceland.

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

(b) Worldwide, 16.7 percent of the energy used to generate electricity is from renewable sources. In Iceland the percentage is much higher. Suggest why.

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

- 3 Look at the photograph below of a ptarmigan eating plants. The bird eats alpine bistort, grasses, saxifrage and polar willow. Arctic foxes, gulls and skuas eat ptarmigans.



- (a) Draw a food web linking **all** the organisms named above in the space below.

[4]

- (b) Read the following report about a population of Arctic foxes.

The number of Arctic foxes on Mednyi Island, off Eastern Russia, has fallen from over 1000 in the 1970s to less than 100 today. Mednyi is a small island and the foxes can only feed on sea birds and dead seals, both near the top of food chains. In Iceland, they can feed on herbivorous animals such as voles.

Samples of fox fur were taken in Mednyi Island and Iceland. They were analysed for mercury content. The results are shown below.

| location | mercury content in fur /mg per kg |
|---------------|--------------------------------------|
| Mednyi Island | 30.0 |
| Iceland | 3.5 |

- (i) Calculate how many times greater the mercury content is in the fur of foxes from Mednyi Island than it is in the fur of those from Iceland.

Space for working.

..... times [1]

- (ii) Suggest why the concentration of mercury in the fur of foxes from Mednyi Island is different from that in the fur of foxes from Iceland.

.....

 [3]

- (c) Oil is a dangerous pollutant.

Describe the effects of oil spills in the oceans.

.....

 [2]

- 4 (a) (i) The table below shows some features of two soil types. Complete the table using the following words, each may be used once, more than once or not at all. [3]

| property or feature | easy | hard | poor | very good |
|----------------------------|-----------|-------|------------|-----------|
| | soil type | | | |
| | sandy | | clay | |
| particle size | large | | very small | |
| mineral (nutrient) content | low | | high | |
| water holding | poor | | | |
| ease of digging | | | | |
| aeration | | | | |

- (ii) If you decided to add a column for 'silty soil' where would you place it to fit the order of particle size? Circle the correct position. [1]

before
sandy

between
sandy and clay

after
clay

- (b) State **three** ways in which soil organisms are important.

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.....[3]

- (c) Soils of certain types are poor in mineral nutrients such as nitrate, phosphate and potassium. Farmers often add these by using fertilisers.

Explain how the overuse of inorganic fertilisers may damage the environment around a farm.

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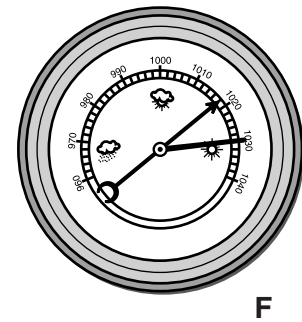
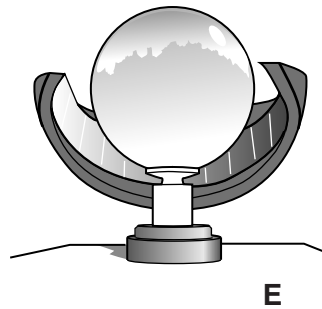
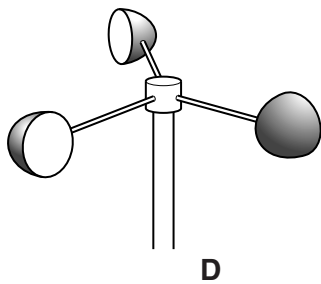
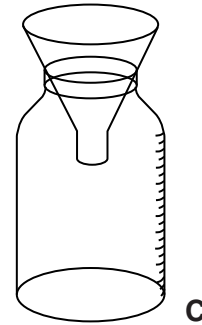
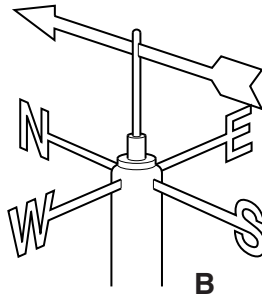
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.....[3]

5 (a) (i) What is meant by the term *weather*?

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[1]

(ii) Look at the pictures below of instruments for measuring elements of weather.

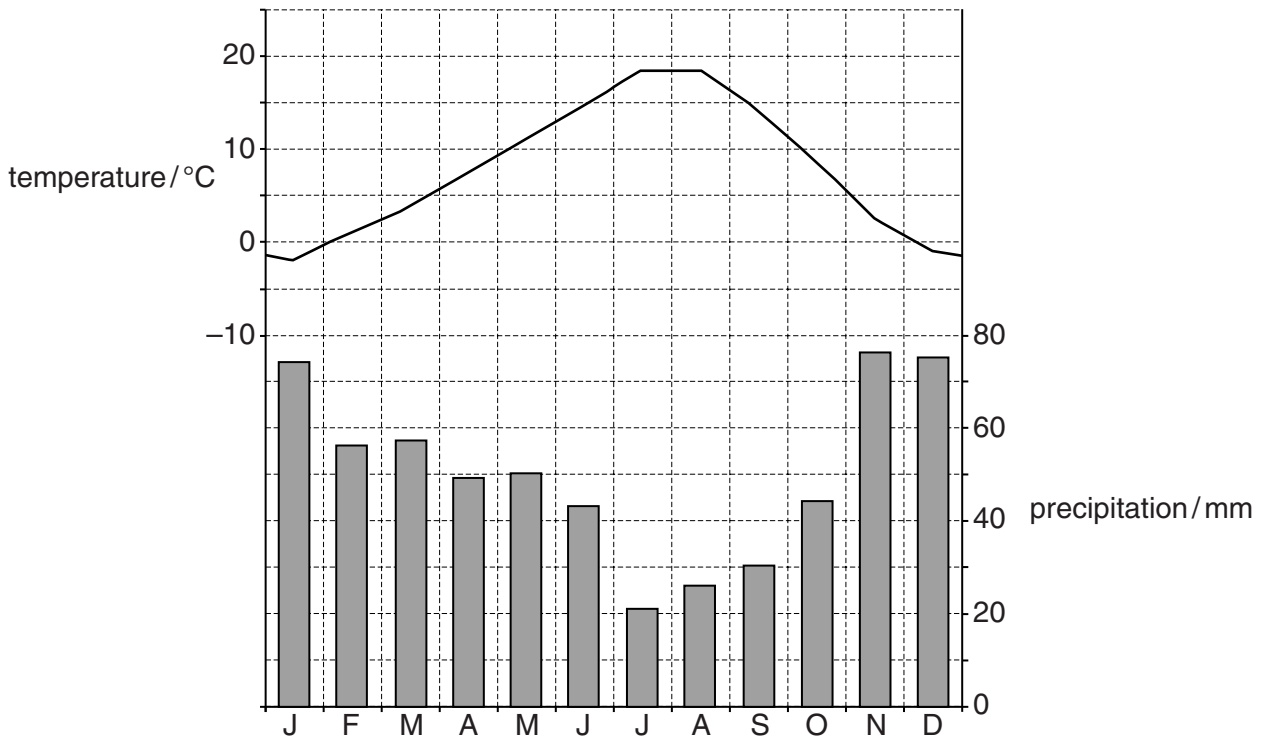


Complete the table by adding the correct letter from the pictures.

[3]

| element of weather | letter of instrument |
|--------------------------|----------------------|
| temperature | |
| precipitation | |
| wind speed | |
| wind direction | |
| atmospheric pressure | |
| hours of bright sunshine | |

(iii) Data from two of these instruments were used to produce a climate graph, which is shown below.



Describe the climate shown on the graph.

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.....[3]

(iv) Circle the type of climate shown by the graph. [1]

cool temperate interior

equatorial

savanna

tundra

(b) Describe how deforestation could contribute to climate change.

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.....[2]

- 6 There are 42 million km³ of fresh water on the Earth. This is three percent of all water. The rest of the water is in the oceans.

(a) (i) Calculate the volume of water in the oceans.

Space for working.

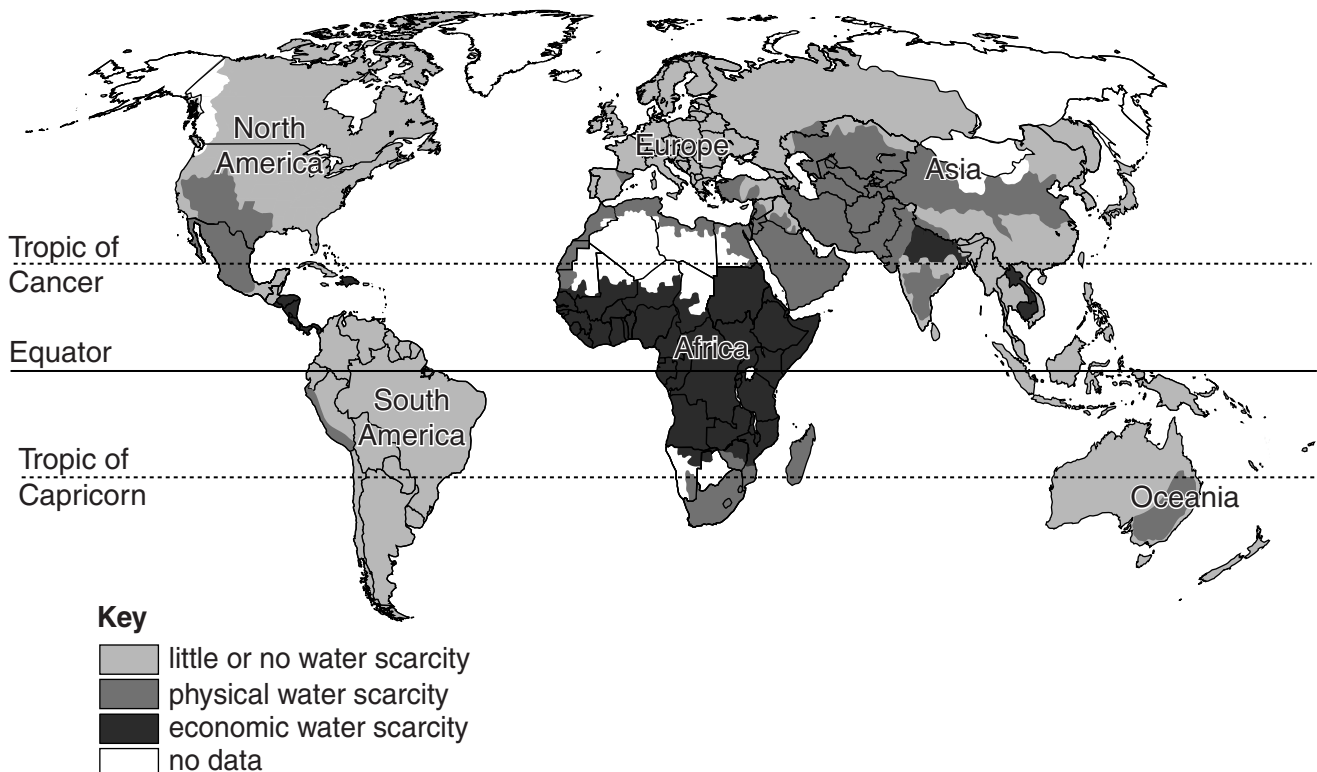
..... km³ [2]

Although there is a large volume of fresh water on Earth, many people do not have enough for their needs. A lack of enough fresh water to meet people's needs is called water scarcity.

Physical scarcity means there is not enough water available for the population.

Economic scarcity means there is enough water but little money to make this water available for use.

The distribution of water scarcity is shown on the map below.



(ii) Describe the distribution of areas of physical water scarcity shown on the map.

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.....[2]

(iii) Suggest reasons why there is a large area of Africa with economic water scarcity.

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.....[3]

(b) Some people have enough water but it is not good quality.

Describe ways in which water quality may be poor.

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.....[3]

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