



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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ENVIRONMENTAL MANAGEMENT

0680/13

Paper 1

May/June 2013

1 hour 30 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.

Electronic calculators may be used.

DO NOT WRITE IN ANY BARCODES.

Answer **all** 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.

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

This document consists of **15** printed pages and **1** blank page.



1 (a) An ecosystem consists of all the living (**biotic**) and non-living (**abiotic**) things (components) in an area and their **interactions**.

(i) Arrange the following ecosystem components and interactions under the headings in the table.

- soil**
 - climate**
 - animals**
 - competition**
-
- plants**
 - producers**
 - consumers**
 - predation**

| biotic component | abiotic component | interaction |
|-------------------------|--------------------------|--------------------|
| | | |

[3]

(ii) Humans are part of ecosystems, for example hunter-gatherers, nomadic pastoralists and crop farmers.

Which of these three groups do you think has the greatest impact on the environment? Explain your choice.

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..... [3]

(b) In developed countries such as the UK there is much concern about the loss of woodland and of the decline of insects such as bees.

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Explain why these concerns exist.

woodland

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

bees

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..... [4]

[Total: 10]

- 3 (a) Crop farming can only take place in areas where certain conditions occur. The crop is a plant, therefore it has certain requirements. Fill in the gaps in the passage below summarising the requirements of a crop for growth.

Use words from the list below. Words may be used once, more than once or not at all.

heat carbon dioxide nitrate
water light salinity

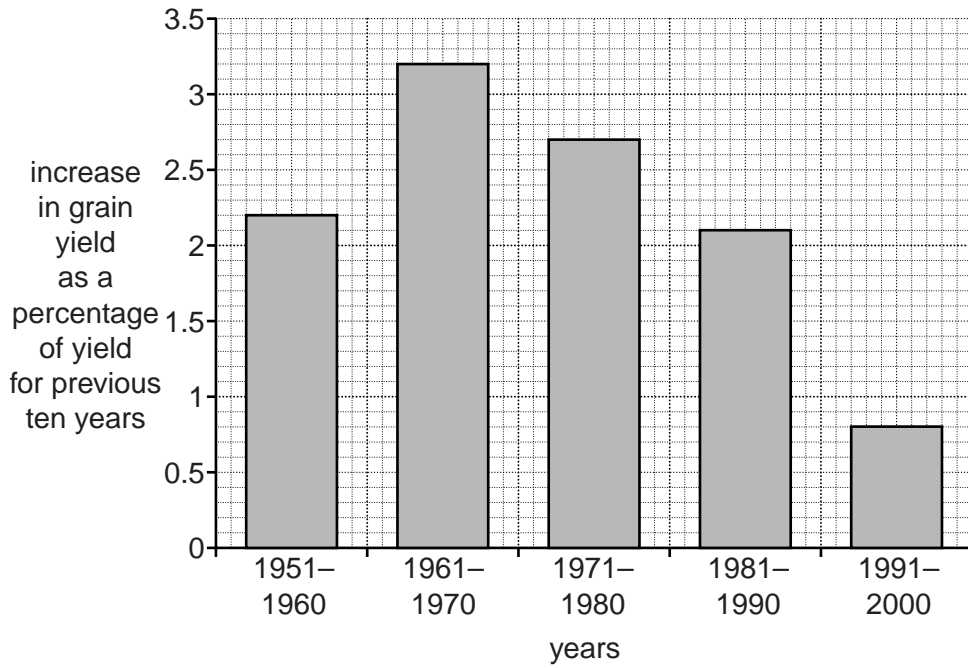
- (i) In order to make sugars, plants need from the soil and from the atmosphere. The energy for the process is provided by from the sun. The temperature of the area must also be suitable for growth.

To convert these sugars into other materials, such as proteins and chlorophyll, the plants also need various nutrients such as , also obtained from the soil. [2]

- (ii) Which is the main factor in part (i) that limits crop growth in desert,
tundra? [2]

(b) The graph shows the changes in the improvement in world grain yields over the last half century.

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(i) Describe and explain the changes in the improvement in grain yields shown by the graph.

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..... [4]

(ii) Despite overall improvements in crop yields, the average yield of crops on many small farms in developing countries is still low. Explain why yields remain low.

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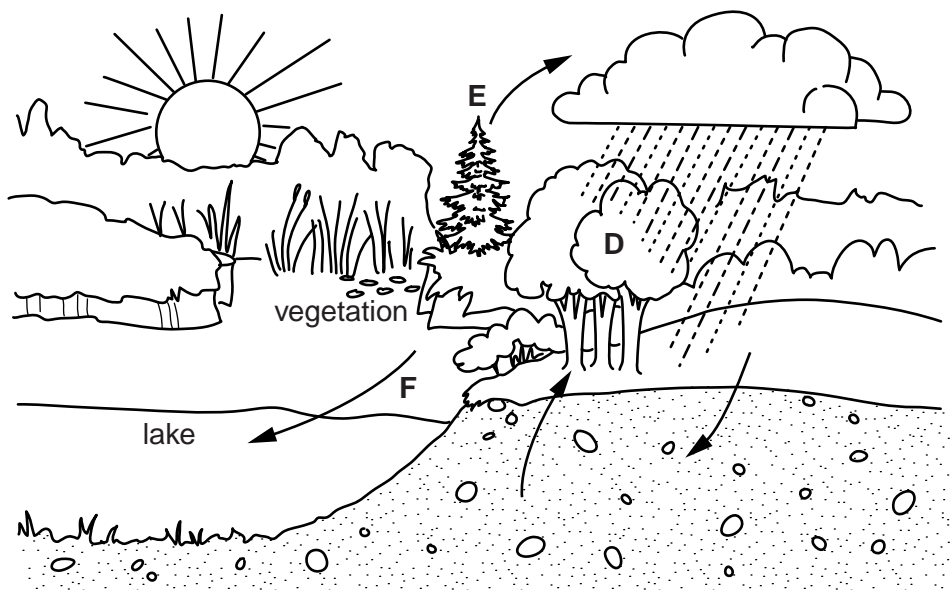
.....

..... [2]

[Total: 10]

4 (a) The diagram shows parts of the water cycle. Some processes are labelled.

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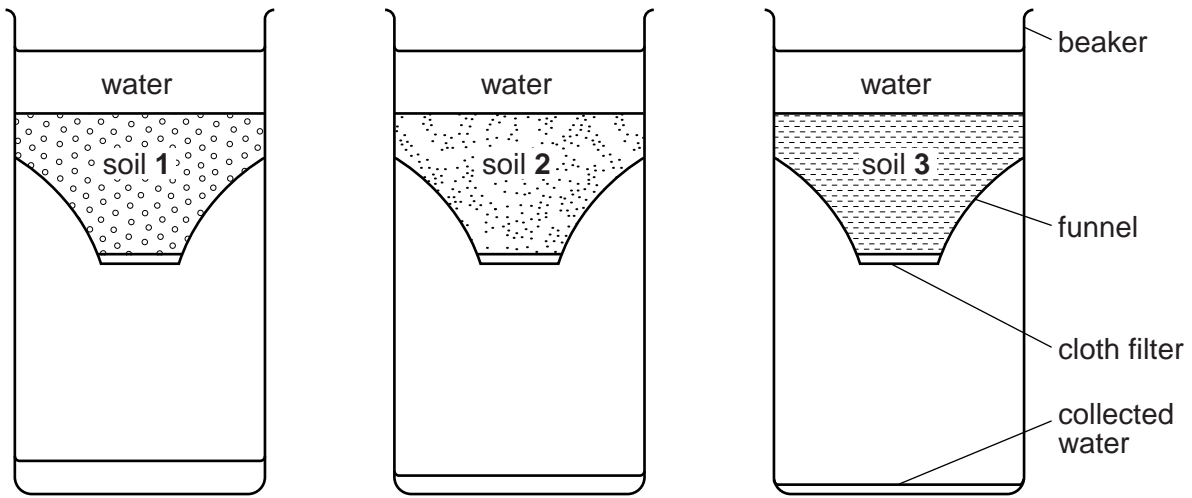
The table shows ways in which the removal of vegetation, can affect some of the water cycle processes.

| letter | name of process | change on removal of vegetation | reasons for change |
|--------|-----------------|---------------------------------|-----------------------------|
| D | interception | decreases | foliage blocks falling rain |
| E | | | |
| F | | | |

Complete the table by filling in the gaps, using your own knowledge and the water cycle diagram. The first line has been done for you. [3]

(b) Some of the properties of soils important for plant growth can be measured in the laboratory. The following apparatus was set up. The soils were already saturated.

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(i) Which soil property is being measured?

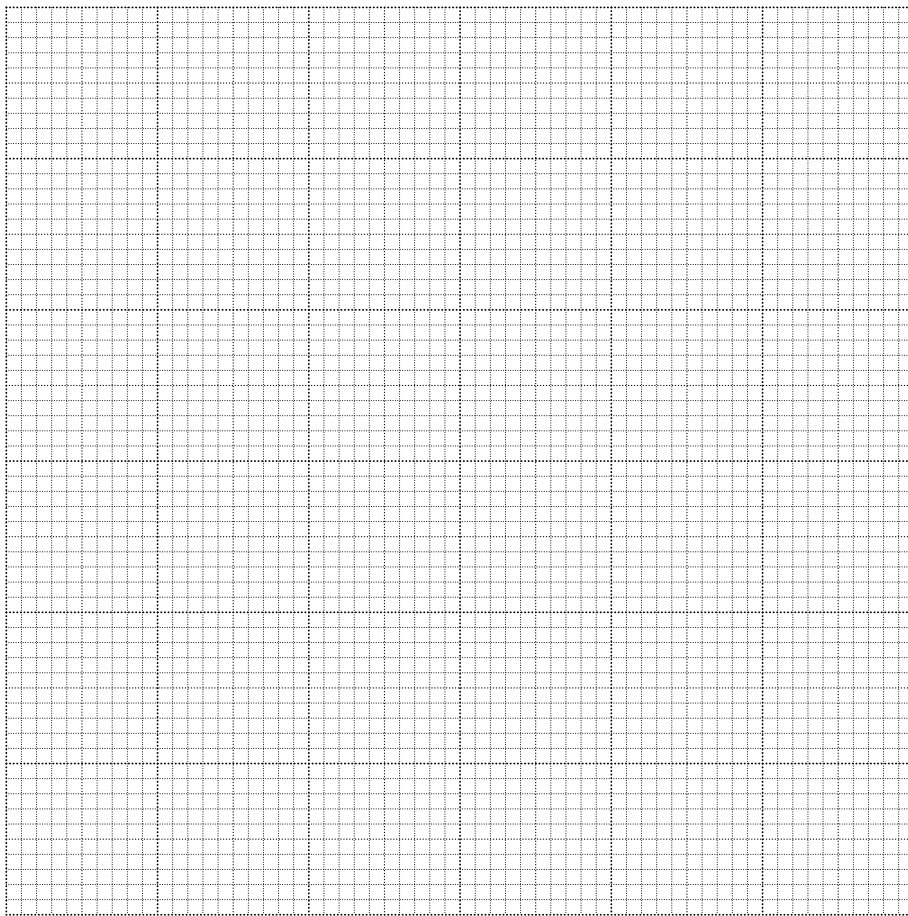
.....[1]

The following data were obtained from the experiment above.

| soil type | height of water collected after one hr / cm |
|-----------|---|
| 1 | 5.0 |
| 2 | 1.5 |
| 3 | 0.6 |

(ii) Plot the data as a graph on the grid below and label the axes.

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[2]

(iii) Explain why a soil with equal amounts of sand, silt and clay is better for farming than a soil that is mostly sand or mostly clay.

Soil that has equal amounts of sand, silt and clay compared with:

soil that is mostly sand

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soil that is mostly clay

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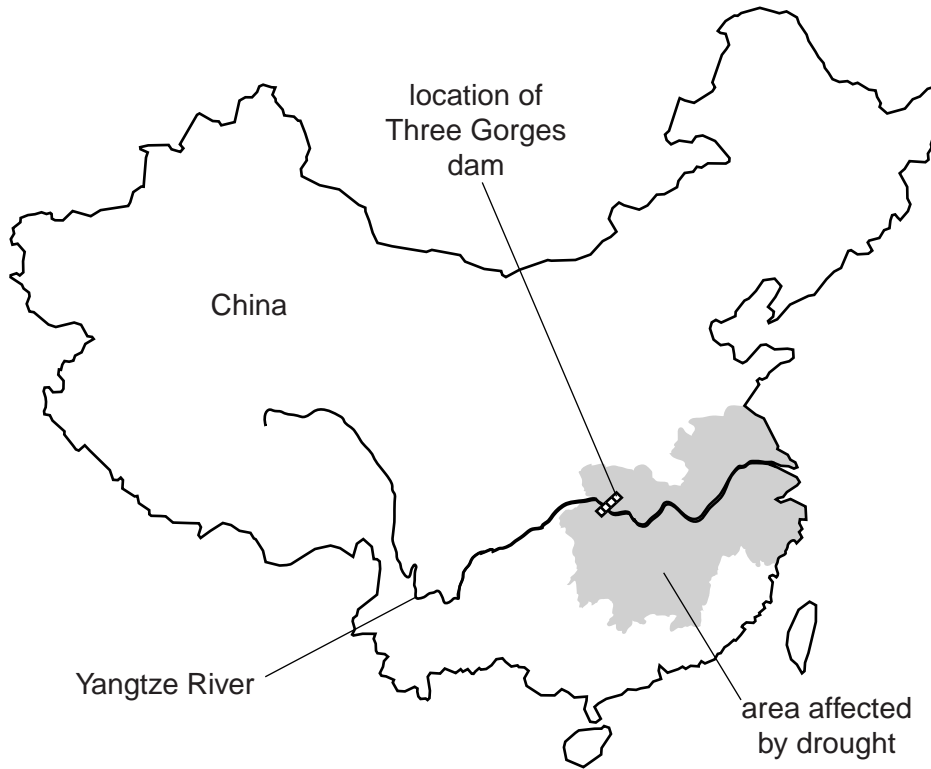
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[4]

[Total: 10]

- 5 (a) The map below shows the location of the Three Gorges dam on the Yangtze River in China.

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- (i) This dam is the biggest in the world. State **two** reasons why very large dams such as this are built.

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..... [2]

- (ii) Building large dams may cause problems for people living in the area. Describe these problems.

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..... [3]

(iii) The dam was completed in 2006 and since then a severe drought has affected the area shaded on the map. Some farmers in this area blame the dam for the drought. Are they right or wrong? Give your views on this.

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..... [3]

(b) More recently, the same areas of China have experienced severe flooding. Suggest reasons for this flooding.

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..... [2]

[Total: 10]

(b) The table below shows the average costs of generating electricity at power stations using gas, oil and coal and nuclear power stations in a selection of developing countries.

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| | average cost of electricity from power stations using gas, oil and coal \$ per MWh | average cost of electricity from nuclear power stations \$ per MWh |
|--------------|---|--|
| construction | 6.5 | 8.9 |
| operation | 3.4 | 2.6 |
| fuel | 22.0 | 5.3 |

Taking into account these costs, and other factors, state what arguments there might be for and against **A** a power station using coal, oil or gas and **B** a nuclear power station.

A

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B

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.....[4]

[Total: 10]

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