



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER



ENVIRONMENTAL MANAGEMENT

0680/12

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 **14** printed pages and **2** blank pages.

- 1 Look at the photograph below of a bird eating a snail on mudflats. The snail eats algae and dead plants. Lugworms living in the mud also eat dead plants and are eaten by birds.



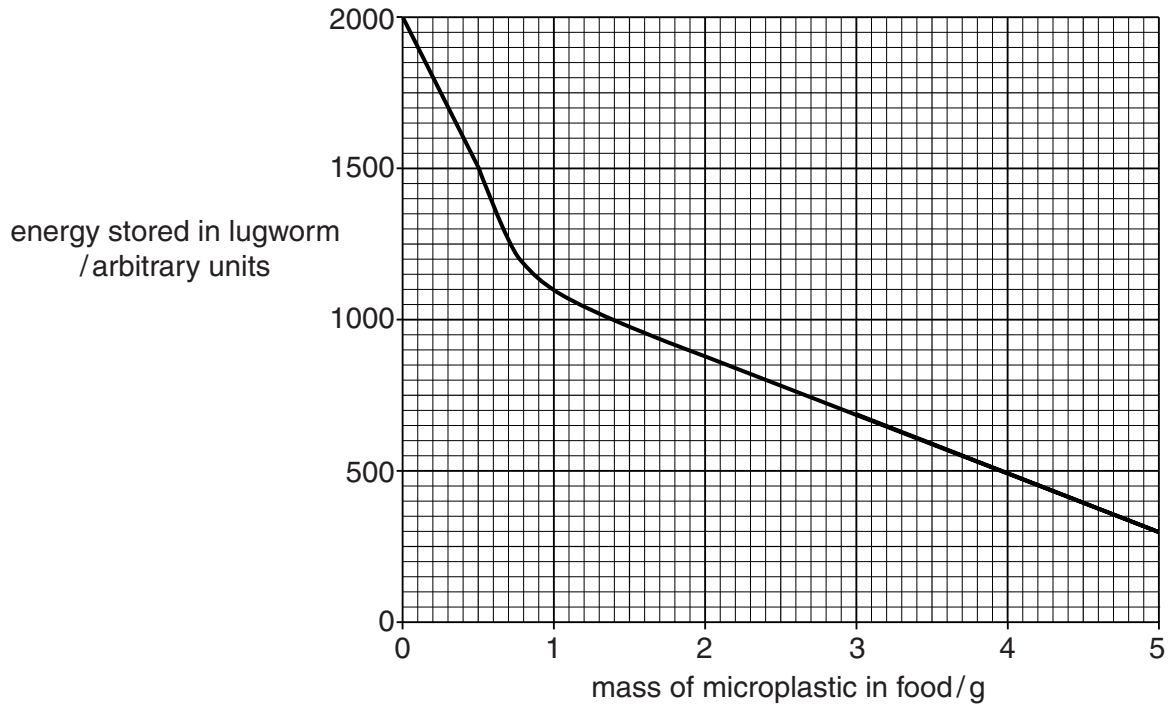
- (a) Draw a food web linking **all** the organisms named above in the space below. [4]

- (b) Lugworms add oxygen to mud by turning it over as they feed.

- (i) Name the process in living organisms which requires oxygen.

.....[1]

- (ii) Tiny particles of plastic (microplastic), from the breakdown of plastic products, are mistaken as food by lugworms. An experiment measured the energy stored in lugworms fed with food containing different masses of microplastic. The results are shown below.



Describe the relationship shown on the graph.

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

- (c) Sewage is a dangerous pollutant.

Describe the effects of adding raw sewage to lakes.

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

2 Look at the photograph below.



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

land use	letter
crop farming
industry
natural vegetation

(ii) In the photograph, natural vegetation has been cleared for farming and industry.

State **two** other reasons for clearing natural vegetation.

.....

.....

.....

..... [2]

(iii) Explain how clearing natural vegetation can cause soil erosion.

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.....
.....
.....[4]

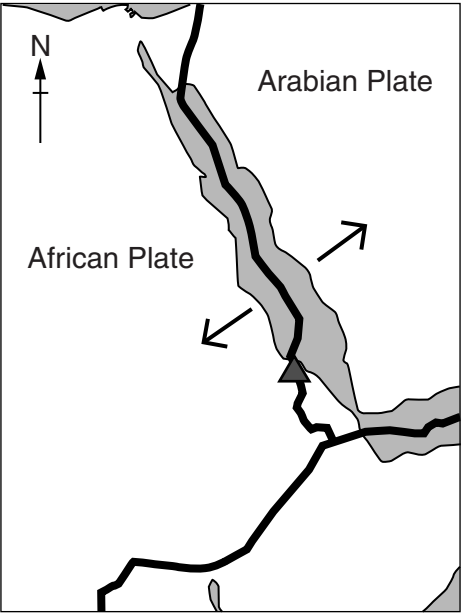
(b) Explain how community forestry can be used to manage forests sustainably.

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

3 Read the following newspaper report about a volcanic eruption in Eritrea.

Thousands of Ethiopians in Afar are facing food and water shortages a month after a volcano erupted in neighbouring Eritrea's Nabro region.

The volcano started erupting on 12 June 2011, sending ash over hundreds of kilometres. In the Biddu district of Ethiopia eight villages were covered by volcanic ash, killing 31 people. Another three people were reported killed with five more injured on 21 June. In total, 167 000 people were affected.



The map shows the African Plate on the left and the Arabian Plate on the right. A thick black line represents the plate boundary between them. A triangle symbol marks the location of Nabro volcano. Arrows indicate the direction of plate movement: the African Plate moves westward and the Arabian Plate moves eastward. A north arrow is located in the top left corner of the map.

Key
↙ plate movement
— plate boundary
▲ Nabro volcano

(a) (i) Calculate the percentage of those affected by this eruption who were killed.

Space for working.

..... % [2]

(ii) Suggest strategies that could be used to reduce the number of deaths after a volcanic eruption.

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

(iii) Explain why a volcano formed in the Nabro region.

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

(b) State **two** ways in which volcanoes are hazardous and may cause death.

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

4 Look at the table below showing information about two layers of the Earth's atmosphere.

gas	approximate composition of troposphere/%	approximate composition of stratosphere/%
nitrogen	77.73	78.09
oxygen	20.84	20.94
argon	0.93	0.93
water vapour	0.46	0.0005
carbon dioxide	0.039	0.039
ozone	0.000005	0.0003

(a) (i) State the names of the **two** gases which have the same percentage in both layers.

.....
[1]

(ii) Explain how **one** of the gases in the table protects living organisms from harmful solar radiation.

name of gas

explanation

.....

[3]

(iii) Describe how burning fossil fuels changes the composition of the atmosphere.

.....

[3]

(b) Would you be in favour of using biomass as a source of energy?

Circle your answer: **no** **yes**

Give reasons for your answer.

.....

.....

.....

.....

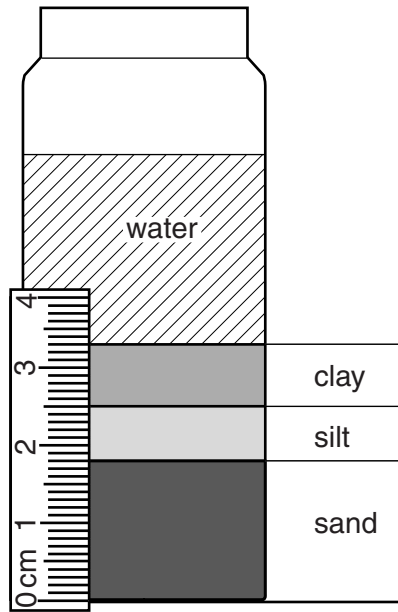
.....

.....

.....[3]

- 5 (a) Some dried soil was put into a jar of water, shaken up and allowed to settle. Over 24 hours it separated into layers of different particle sizes.

Look at the diagram below, which shows the jar after 24 hours and a scale.



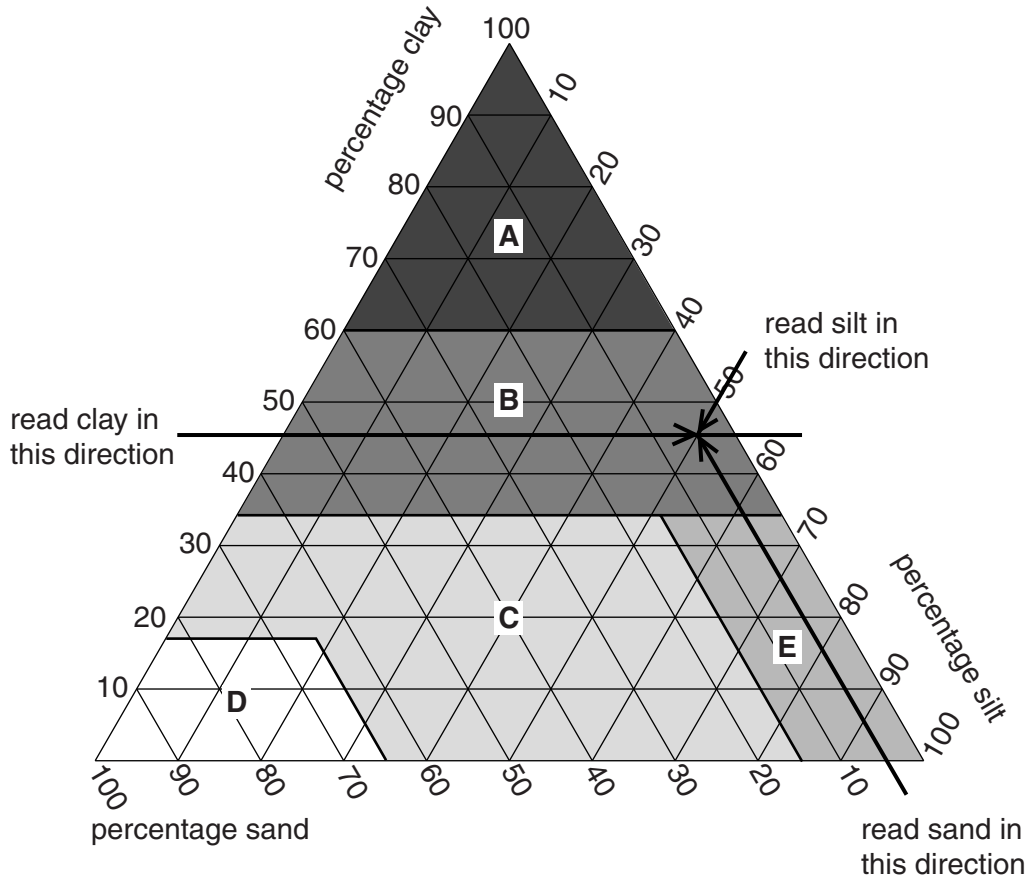
- (i) Use the scale above to calculate the percentage of clay, silt and sand in this soil.

Space for working.

clay %
 silt %
 sand %
 [3]

- (ii) Look at the diagram below, which shows a method for identifying soil type using the percentages of clay, silt and sand it contains.

For example a soil with 45% clay, 50% silt and 5% sand would be soil type **B**, as shown on the diagram.



Circle the correct soil type for the soil in the jar from your answers to part (i).

- soil type **A** soil type **B** soil type **C** soil type **D** soil type **E** [1]

(iii) Explain how dead plants and animals become part of the soil as organic matter (humus).

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

(b) Farmers often use pesticides to improve crop yield.

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

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

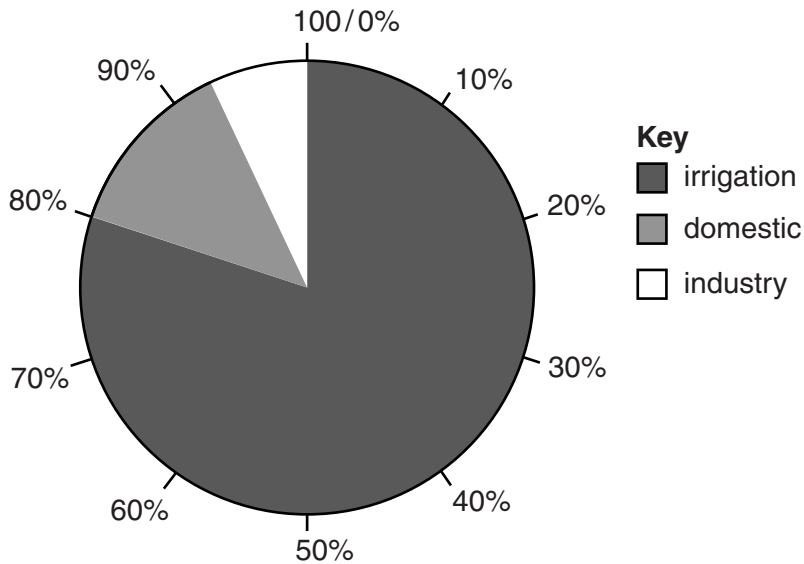
6 The Earth has 1 400 000 000 km³ of water, of which 97% is in the sea.

(a) (i) Calculate how many cubic kilometres of the Earth's water is fresh water.

Space for working.

..... km³ [3]

(ii) The pie graph below shows the ways in which water is used in a country with low rainfall.



State the percentage of water used for irrigation in this country.

..... % [1]

(iii) State and explain **one** problem for crop growth caused by too much irrigation.

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

(b) Suggest why both water quality and water quantity differ between countries.

quality

.....

.....

quantity

.....

.....[3]

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