Cambridge
O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

6310268049

ENVIRONMENTAL MANAGEMENT **5014/11**

Paper 1 Theory **October/November 2019**

1 hour 45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name in the spaces at the top of this page.
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 **15** printed pages and **1** blank page.

Cambridge Assessment International Education

[Turn over

Section A

1 Many minerals are in short supply and new mineral deposits need to be found.

(a) One method of exploration for finding new mineral deposits is using photographs taken from the air.

Suggest how photographs taken from the air might help to locate mineral deposits.

.....

.....

.....

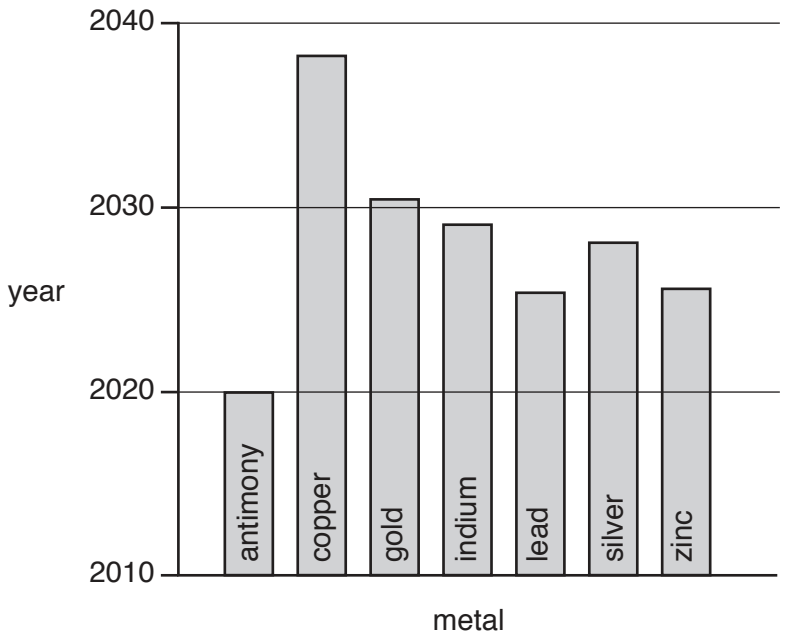
..... [2]

(b) Describe **one** other method of exploration for finding new mineral deposits.

.....

..... [1]

(c) The bar chart shows estimates of when some metals are predicted to run out. The estimates were made in 2010.



(i) Identify which metal is predicted to run out first.

..... [1]

(ii) Identify the metal(s) that are predicted to still be available after 2030.

..... [1]

[Total: 5]

2 **(a)** An ecosystem consists of abiotic and biotic components.

Complete the ecosystem table, using the following words.

bacteria **fungi** **insects** **light**

oxygen **plants** **soil pH** **temperature**

ecosystem	
abiotic components	**biotic components**

[3]

(b) Describe how changes in the availability of water may affect plant growth in an ecosystem.

.....

.....

.....

.....

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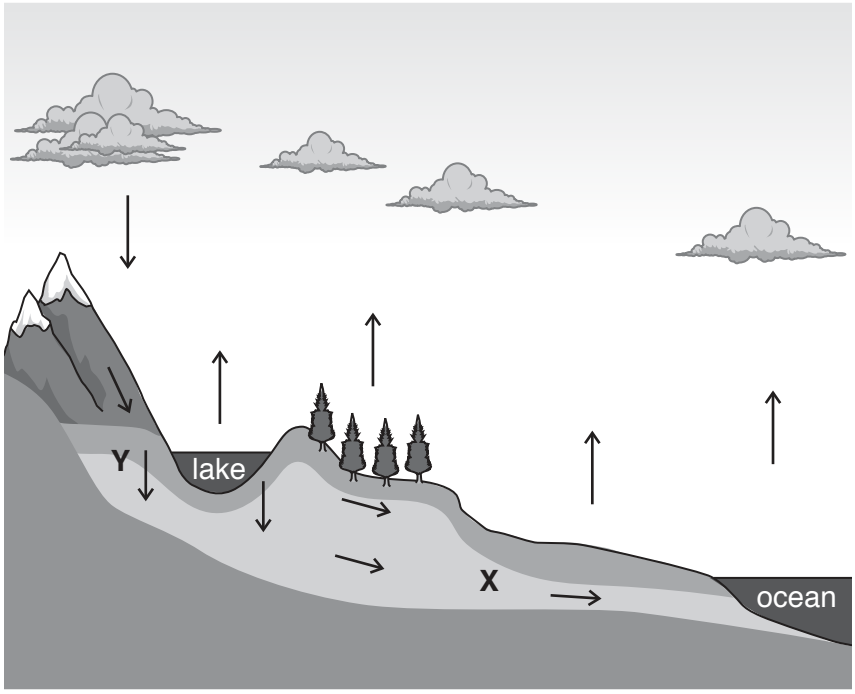
..... [3]

[Total: 6]

3 The diagram shows part of the water cycle.



(a) **(i)** State the water store shown at **X**.

..... [1]

(ii) State the process shown at **Y**.

..... [1]

(b) Name **two** different types of precipitation.

1 .....

2 .....

[2]

[Total: 4]

4 Atmospheric pollution may be harmful to humans.

One example of atmospheric pollution is smog.

(a) Explain how smog is formed.

.....

.....

.....

.....

.....

..... [3]

(b) State **two** ways smog is harmful to human health.

1 .....

.....

2 .....

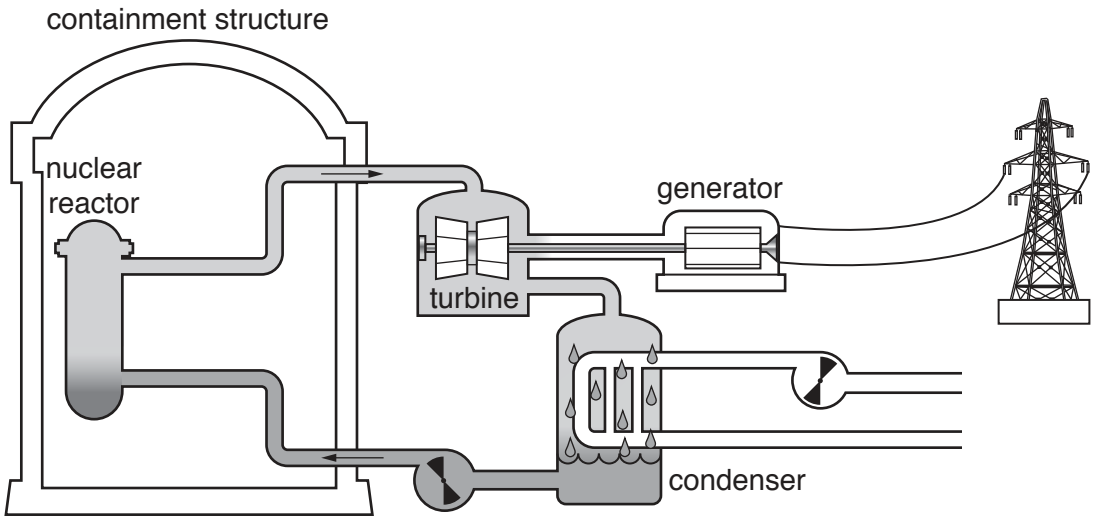
.....

[2]

[Total: 5]

Section B

5 The diagram shows some of the processes used to generate electricity in a nuclear power station.



(a) Use the diagram to describe how electricity is generated within a nuclear power station.

.....

.....

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.....

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.....

..... [4]

(b) Describe **three** reasons why using nuclear power to generate electricity is better for the environment than using coal.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(c) Describe ways a country can reduce its energy demand without damaging its economy.

.....

.....

.....

.....

.....

..... [3]

(d) Building a nuclear power station is expensive. The table shows the percentage costs for building a new nuclear power station.

costs		percentage costs
equipment costs	steam supply system	12
	generating equipment	12
	mechanical equipment	16
	instrumentation and control system	8
other costs	building materials	12
	labour	.....
	design	10
	fuel	3
	total	100

(i) Complete the table by calculating the percentage cost for labour. [1]

(ii) The power station is predicted to cost 14 billion USD to build.

Calculate the total equipment costs for building the power station.

..... USD [2]

(iii) A nuclear power station creates radioactive waste. The management of this waste is expensive and difficult.

The most dangerous waste costs 93 000 USD per m^3 to manage. It is estimated that the power station will produce 12 m^3 of the most dangerous waste each year.

Calculate the estimated cost of managing this waste per year.

..... USD [1]

[Total: 14]

6 The table shows official data on the world fish catch from 2006 to 2014.

year	2006	2007	2008	2009	2010	2011	2012	2013	2014
wild fish catch / million tonnes	90.0	90.3	89.7	89.6	88.6	90.4	89.9	88.8	90.4
farmed fish catch / million tonnes	47.3	49.9	52.9	55.7	59.9	63.6	67.1	71.5	75.9
total fish catch / million tonnes	137.3	140.2	142.6	145.3	148.5	154.0	.....	160.3	166.3

(a) (i) Complete the table by calculating the total fish catch in 2012. [1]

(ii) Compare the trends in fish catch from 2006 to 2014.

.....

.....

.....

.....

.....

..... [3]

(iii) Suggest **two** reasons for the changes in the farmed fish catch between 2006 and 2014.

1 .....

.....

2 .....

.....

[2]

(b) Other than fish farming, describe ways fish stocks in the ocean can be maintained.

.....

.....

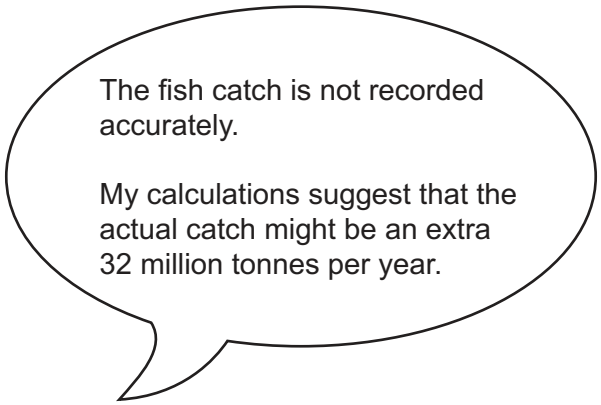
.....

.....

.....

..... [3]

(c) A scientist disagrees with the official data provided about the world fish catch.



Suggest **three** reasons why the actual fish catch might be greater than the official data in the table.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 12]

7 The article is from a newspaper reporting on local flooding in Malawi, a country in Africa.

Floods in Karonga District, Malawi

Four people died and three people are still missing after flooding on 4th April 2017. Officials say that 5520 households were affected and about 1075 hectares of crops were damaged.

The Vice President of Malawi visited the area and assured the people that the government will do everything it can to support them. Experts predict the long term effects of this flood will result in more deaths.

A road bridge was washed away in the floods, causing major traffic problems and affecting delivery of emergency supplies.

Similar floods occurred in the north of the country in April 2016. At least 12 people died and 9000 were left homeless. Earlier in 2017, floods hit the Malawi capital after a river burst its banks following six hours of heavy rain.

(a) Complete the table using information from the article about the flood on 4th April 2017.

number of people killed	.....
number of households affected	.....
area of crops damaged	.....

[3]

(b) Explain why experts predict that the number of deaths will increase in the long term.

.....

.....

.....

.....

.....

..... [3]

(c) The government of Malawi are developing a plan to reduce the impact of future floods.

Describe **three** ways the impact of flooding can be reduced.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

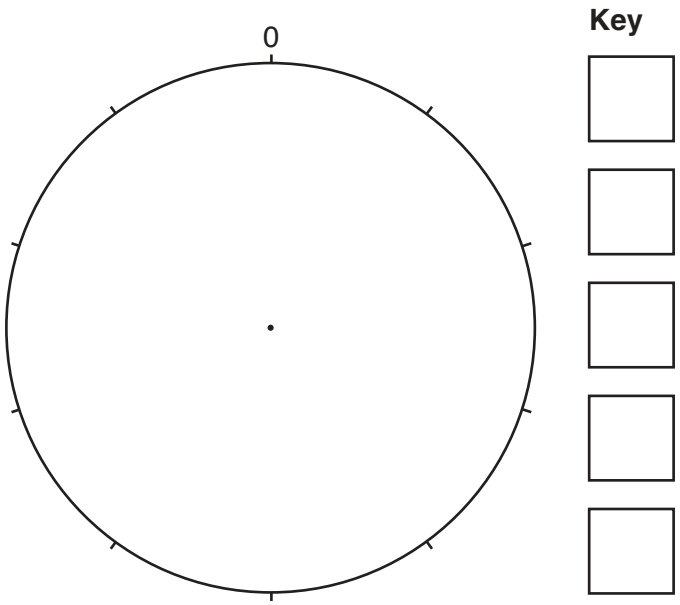
[Total: 9]

8 The table contains data on phosphate fertiliser use with different crop types.

crop type	percentage world phosphate fertiliser use
grains	44
oil seeds	18
fruit and vegetables	8
sugar and cotton	4
other crops	26

(a) Complete the pie chart and the key to show the data in the table.

Phosphate fertiliser use with different crop types



[4]

(b) There has been an increase in the use of phosphate fertilisers in the last 20 years.

Give **two** reasons for this increase.

1 .....

.....

2 .....

.....

[2]

(c) The fact sheet presents an argument for not eating meat for environmental reasons.

Fact sheet

Not eating meat is the future of food production.

It takes 7 kg of grain to produce 1 kg of beef. This gives a ratio of 7:1 for beef.

The ratio for chicken is 2:1.

Producing meat also uses a large quantity of water; 15 415 litres for 1 kg of beef.

Meat production also releases CO_2; 27 kg of CO_2 for 1 kg of beef.

It is more efficient to obtain food from plants rather than animals; 1 kg of lentils releases only 0.9 kg of CO_2.

(i) Calculate the difference in carbon dioxide released by the production of 1 kg of beef compared with 1 kg of lentils.

..... kg [1]

(ii) Suggest why the production of chicken is less expensive than the production of beef.

.....

..... [1]

(iii) One animal in a herd of beef cattle produces 375 kg of beef.

Calculate the volume of water needed to produce this mass of beef.

..... litres [1]

(iv) Suggest **two** reasons why some farmers continue to raise livestock rather than grow crops, even if it is more efficient to grow crops.

1 .....

.....

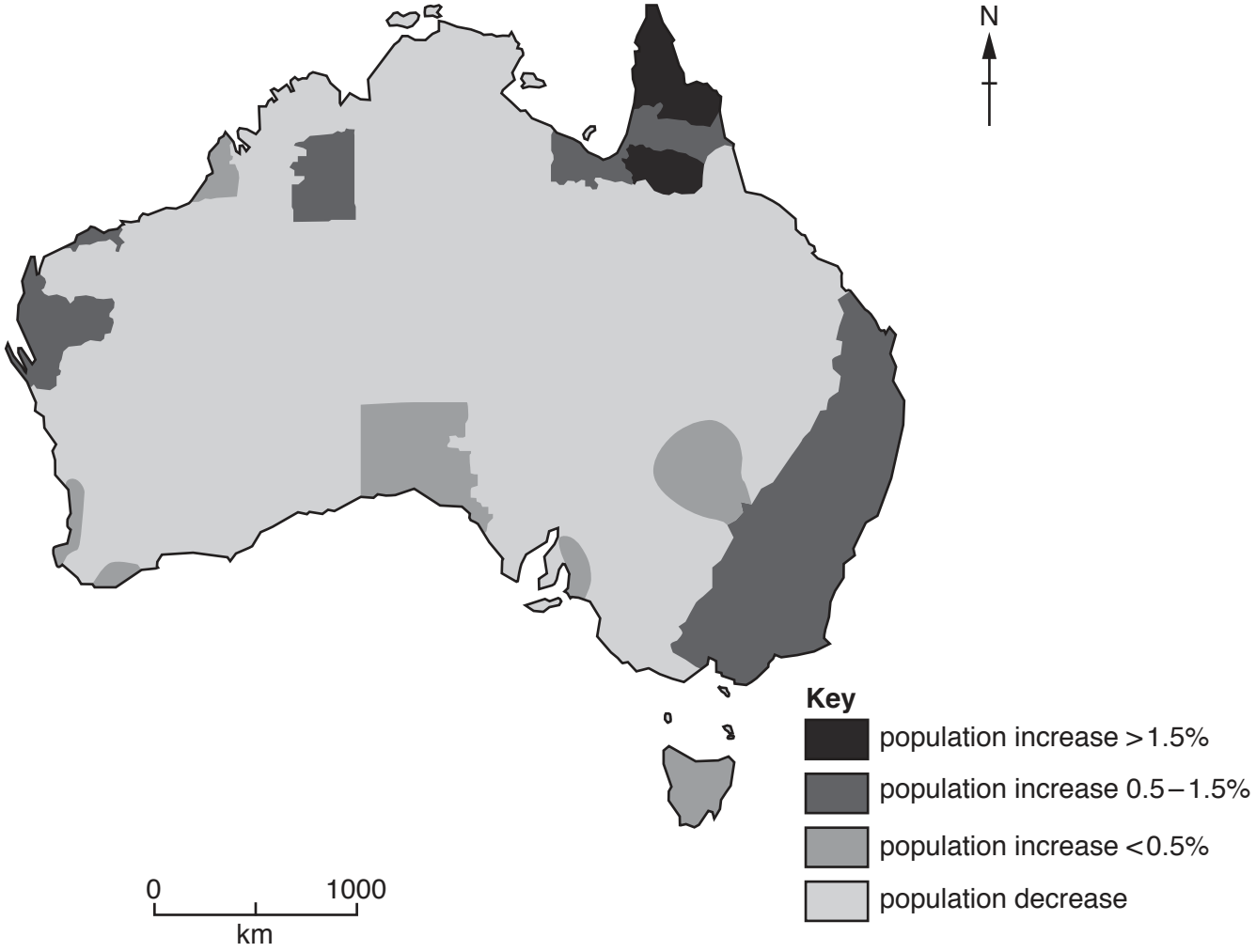
2 .....

.....

[2]

[Total: 11]

9 **(a)** The map shows changes to the population in Australia between 2015 and 2016.



(i) Describe the changes to the population in Australia between 2015 and 2016.

.....

.....

.....

.....

.....

..... [3]

(ii) Suggest reasons for the changes to the population in Australia between 2015 and 2016.

.....

.....

.....

..... [2]

(b) State **three** ways a country can manage the growth of its population.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(c) 'A growing population is good for the environment and the economy of a country.'

How far do you agree with this statement? Give reasons for your answer.

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..... [6]

[Total: 14]

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