Cambridge Assessment International Education

Cambridge International AS Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

2983813610

ENVIRONMENTAL MANAGEMENT **8291/12**

Paper 1 Principles of Environmental Management **October/November 2025**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Section A: answer **all** questions.
- Section B: answer **one** question.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.

Section A

Answer **all** questions in this section.

1 **(a)** Fig. 1.1 shows conifer trees in a forest ecosystem.

Fig. 1.1

(i) Define the term ecosystem.

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.....

..... [2]

(ii) Fig. 1.1 shows two types of competition.

Name and describe the **two** types of competition shown in Fig. 1.1.

name .....

description .....

.....

name .....

description .....

.....

[4]

(b) (i) Ecosystems have biotic and abiotic components.

Draw **five** lines to link each component with its examples.

component	example
biotic	decomposer
abiotic	grazing
	light
	predation
	temperature

[2]

(ii) Plants compete for light.

Explain how low levels of light limit the growth of plants.

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..... [4]

(iii) Suggest **two** ways the conifer forest in Fig. 1.1 could be managed to reduce the competition for light.

1 .....

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2 .....

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[2]

(c) Mismanagement of forests can cause fragmentation.

Describe fragmentation and explain its impacts.

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..... [3]

[Total: 17]

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2 **(a)** Fig. 2.1 shows the effect of pH on the percentage germination of seeds from two crops, wheat and radish.

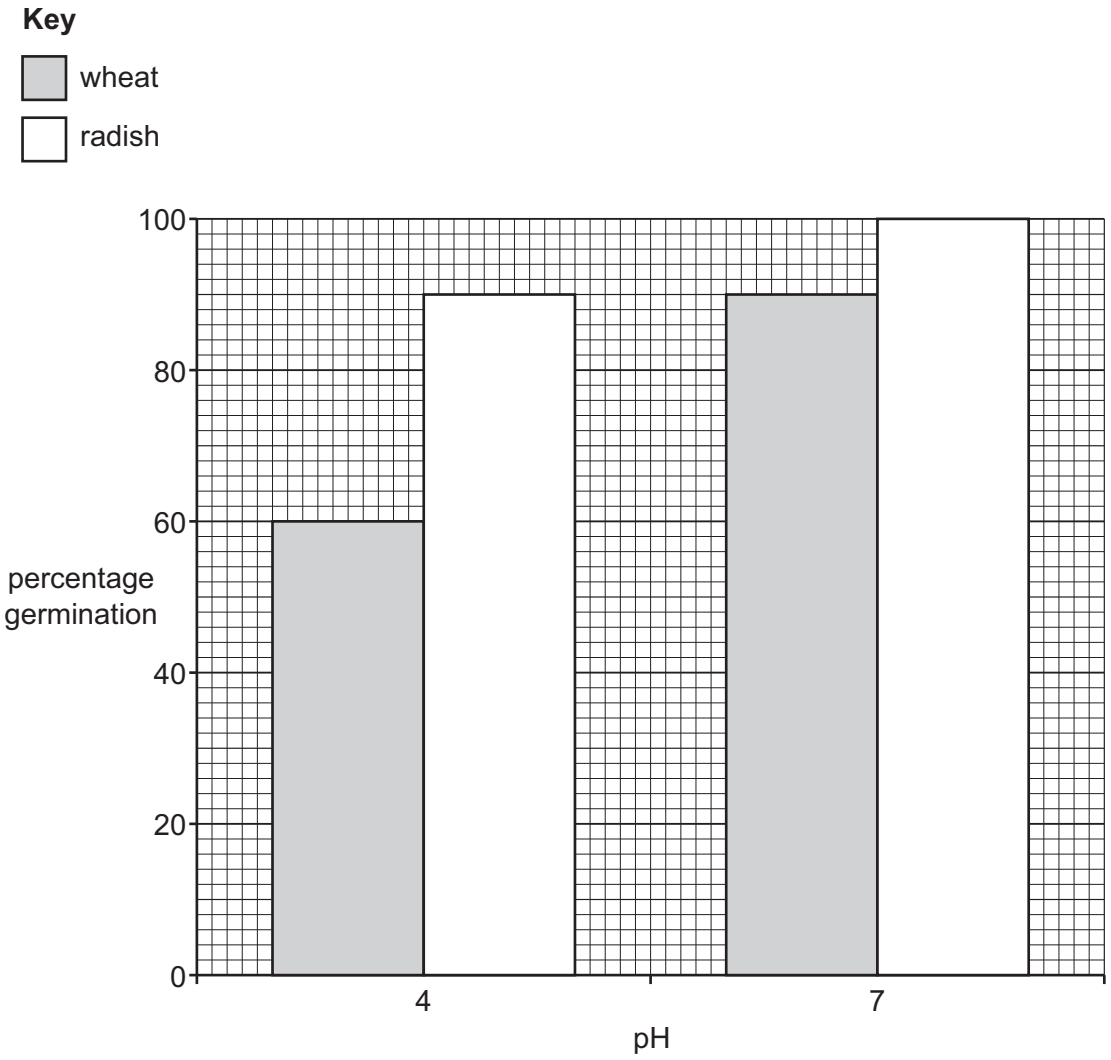

Fig. 2.1

(i) Compare the percentage germination at pH 4 and pH 7 shown in Fig. 2.1.

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..... [3]

(ii) Wet acid deposition has a pH < 5.6.

Suggest how wet acid deposition affects the crop yield of wheat.

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..... [2]

(b) Wet acid deposition falls as snow, rain, hail and fog.

Describe the formation of wet acid deposition from nitrogen.

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..... [4]

(c) One strategy for managing wet acid deposition is the polluter pays principle.

(i) Suggest **one** benefit and **one** limitation of the polluter pays principle.

benefit .....

.....

limitation .....

.....

[2]

(ii) State **two** other ways of managing acid deposition.

1 .....

.....

2 .....

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[2]

[Total: 13]

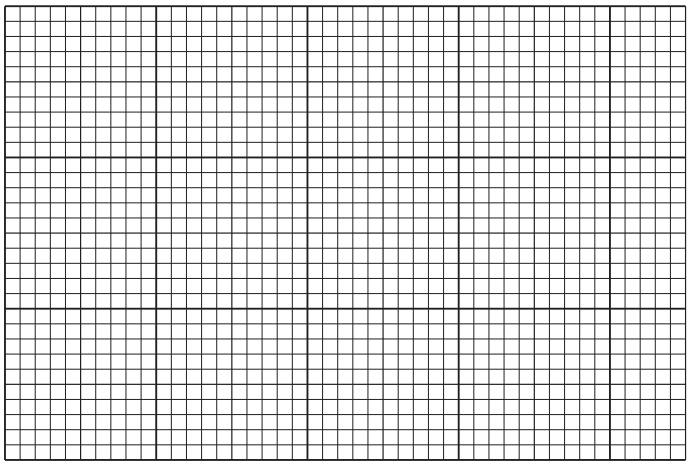
3 **(a)** Table 3.1 shows the global production of biodegradable plastics between 2019 and 2023.

Table 3.1

year	global production of biodegradable plastics / million tonnes per year
2019	1.03
2020	1.20
2021	1.35
2022	1.50
2023	1.60

(i) Plot a line graph to show the global production of biodegradable plastics shown in Table 3.1.

Join each data point with a straight line.



[4]

(ii) Scientists predict that the global production of biodegradable plastics in 2027 will be 3.56 million tonnes.

Calculate the mean annual change in global production of biodegradable plastics in the 4-year period from 2023 to 2027.

..... million tonnes [2]

(b) Fig. 3.1 shows a factory in a forest ecosystem. The factory composts biodegradable plastics, food waste and plant matter.

Fig. 3.1

(i) Suggest **four** negative impacts that this factory has on this forest ecosystem.

1 .....

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2 .....

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3 .....

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4 .....

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[4]

(ii) Describe **two** benefits of composting as a method of waste disposal.

1 .....

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2 .....

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[2]

(iii) Food waste is used as animal feed.

Suggest **two** limitations of using waste food as animal feed.

1 .....

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2 .....

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[2]

[Total: 14]

4 Fig. 4.1 shows a kagu bird.

Fig. 4.1

(a) Kagu are flightless birds that live in forests on one small island in the Pacific Ocean.

A survey found that the population of kagu was less than one thousand.

(i) Identify the evidence in Fig. 4.1 that shows this kagu was recorded in a capture-mark-recapture survey.

..... [1]

(ii) Suggest **three** threats to the kagu population.

1 .....

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2 .....

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3 .....

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[3]

(b) Explain how nature reserves can conserve kagu.

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..... [3]

(c) The kagu is listed in the Convention of International Trade in Endangered Species, CITES.

(i) Describe the role of CITES in conserving endangered species.

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..... [2]

(ii) Suggest reasons why CITES has **not** stopped the trade in endangered species.

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..... [3]

(d) Scientists are conserving the kagu using captive breeding.

Describe benefits and limitations of captive breeding as a strategy for conserving biodiversity.

benefits .....

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limitations .....

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[4]

[Total: 16]

Section B

Answer **one** question.

EITHER

5 'Using technology is the most effective method for data collection and analysis.'

To what extent do you agree with this statement?

Give reasons and include information from relevant examples to support your answer. [20]

OR

6 Evaluate hydroelectric dams as a strategy for managing global energy security.

Give reasons and include information from relevant examples to support your answer. [20]