Cambridge Assessment International Education

Cambridge International AS Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

1334539933

ENVIRONMENTAL MANAGEMENT **8291/13**

Paper 1 Principles of Environmental Management **May/June 2024**

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.

DC (WW) 342823

[Turn over

Section A

Answer **all** questions in this section.

1 **(a)** In 2020, the government of the USA stated that 10.5% of households were food insecure for at least part of the year.

Define the term food insecurity.

.....

.....

..... [2]

(b) Fig. 1.1 shows the percentage of households in the USA from 2005 to 2020 that experienced food insecurity.

Fig. 1.1

(i) Describe the change in food insecurity shown in Fig. 1.1.

.....

.....

.....

.....

.....

..... [3]

(ii) Suggest strategies the USA government introduced to cause the change in food insecurity shown in Fig. 1.1 between 2015 and 2019.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(c) The USA government sent out a questionnaire to determine the percentage of households that experienced food insecurity.

Part of the questionnaire is shown in Table 1.1.

Table 1.1

question		response
A	Do you ever miss a meal because there is not enough money for food?	
B	Do you eat a balanced meal every day?	
C	How often do you not eat for a whole day?	

(i) Explain why the responses to question **C** in the questionnaire are more difficult to analyse than the responses to questions **A** and **B**.

.....

..... [1]

(ii) Suggest **one** other question to collect data on food insecurity for a household.

.....

..... [1]

(d) Fig. 1.2 shows harvesting of a very large field of maize in the USA.

Fig. 1.2

Explain how this type of agriculture can affect food security.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 15]

2 **(a)** In the ocean around Antarctica, microscopic organisms called phytoplankton obtain their nutrition using photosynthesis. Phytoplankton are eaten by tiny animals called zooplankton. Zooplankton are eaten by squid, fish and seabirds. Seals eat squid and fish. Whales eat zooplankton, squid and fish.

(i) Construct a food web for this Antarctic ecosystem. Include all the named species in the food web.

[3]

(ii) Explain why whales obtain more energy from feeding on zooplankton than feeding on squid.

.....

.....

.....

.....

.....

..... [3]

(b) Phytoplankton photosynthesise.

(i) State the chemical equation for photosynthesis.

..... [2]

(ii) State **two** factors that limit the rate of photosynthesis in phytoplankton.

1 .....

2 .....

[2]

(c) Fig. 2.1 shows a scientist fitting a whale with a satellite tracking device.

Fig. 2.1

(i) Suggest why scientists fit whales with satellite tracking devices.

.....

..... [1]

(ii) Suggest **two** limitations of using satellite tracking devices.

1 .....

.....

2 .....

.....

[2]

(iii) Describe the role of the International Whaling Commission (IWC) in conserving whales.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 17]

3 Fig. 3.1 shows areas of high acid deposition in soils.

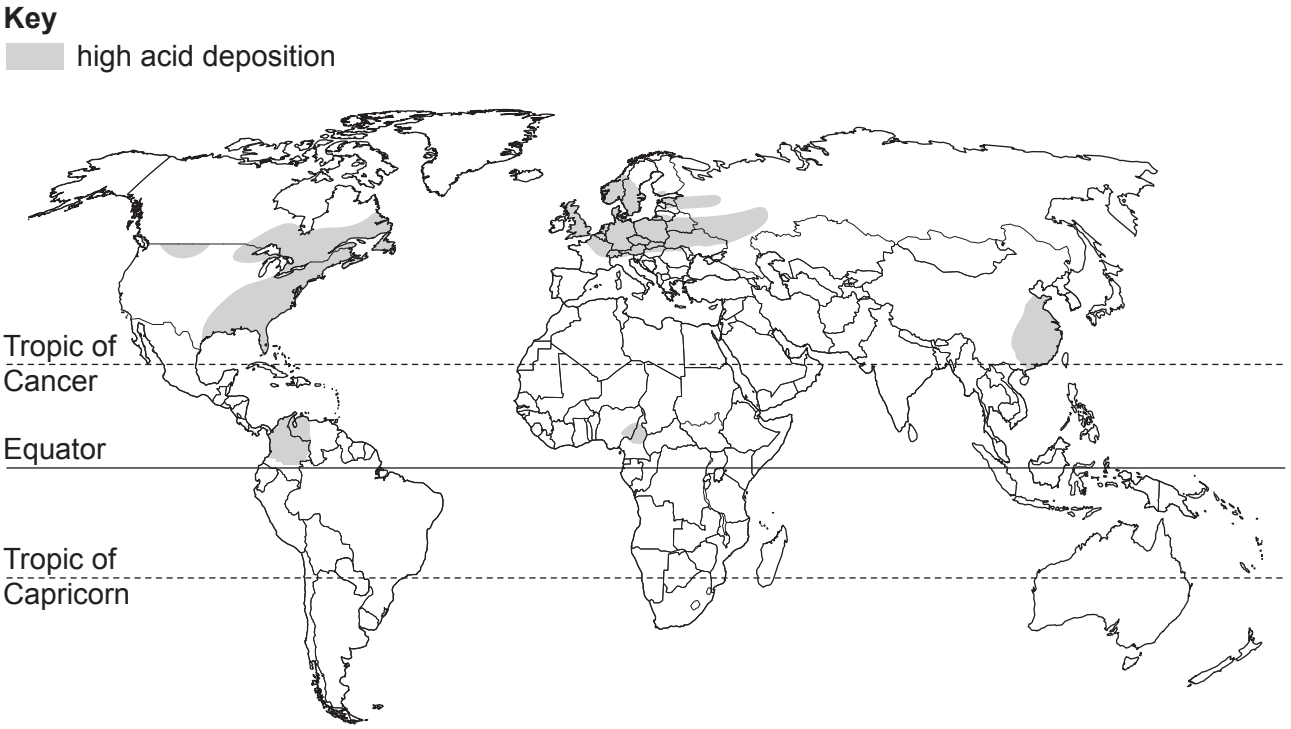

Fig. 3.1

(a) Describe the distribution of high acid deposition in soils shown in Fig. 3.1.

.....

.....

.....

.....

.....

..... [3]

(b) There are two types of acid deposition, wet and dry.

(i) Compare wet and dry acid deposition.

.....

.....

.....

.....

.....

..... [3]

(ii) Outline the formation of acid deposition.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(c) Fig. 3.2 shows the effect of acid deposition on a forest.

Fig. 3.2

(i) Identify **two** impacts of acid deposition on the forest shown in Fig. 3.2.

1 .....

.....

2 .....

.....

[2]

(ii) State **two** other impacts of acid deposition on the environment.

1 .....

.....

2 .....

.....

[2]

[Total: 14]

BLANK PAGE

4 **(a)** Fig. 4.1 shows homes with high energy security.

Fig. 4.1

(i) Identify **three** features of the homes shown in Fig. 4.1 that make them energy secure.

1 .....

2 .....

3 .....

[3]

(ii) Making homes energy efficient is one strategy for managing energy security.

Describe the benefits and limitations of this strategy for managing energy security.

benefits .....

.....

.....

.....

limitations .....

.....

.....

.....

[4]

(b) Fig. 4.2 shows the cost of natural gas in one country between 2018 and 2022.

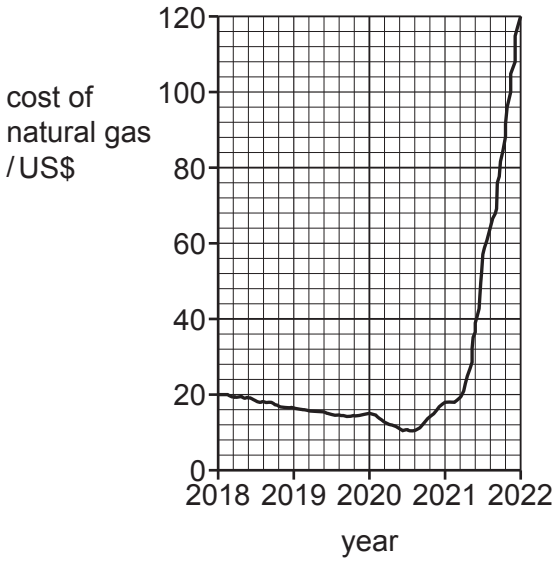

Fig. 4.2

(i) Calculate the percentage increase in the cost of natural gas between 2020 and 2022.

.....% [2]

(ii) Increasing energy costs are one cause of energy insecurity.

State **two** impacts of energy insecurity.

1 .....

.....

2 .....

.....

[2]

(iii) Explain how climate change causes energy insecurity.

.....

.....

.....

.....

.....

..... [3]

[Total: 14]

Section B

Answer **one** question from this section.

EITHER

5 'Creating protected areas is the most effective strategy for managing the impacts of human activities on tropical rainforests.'

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 the success of strategies for reducing the impacts of waste disposal.

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

[20]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[Turn over

[Turn over