



# Cambridge International AS Level

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## ENVIRONMENTAL MANAGEMENT

8291/01

Paper 1 Principles of Environmental Management

For examination from 2022

SPECIMEN PAPER

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

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### 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

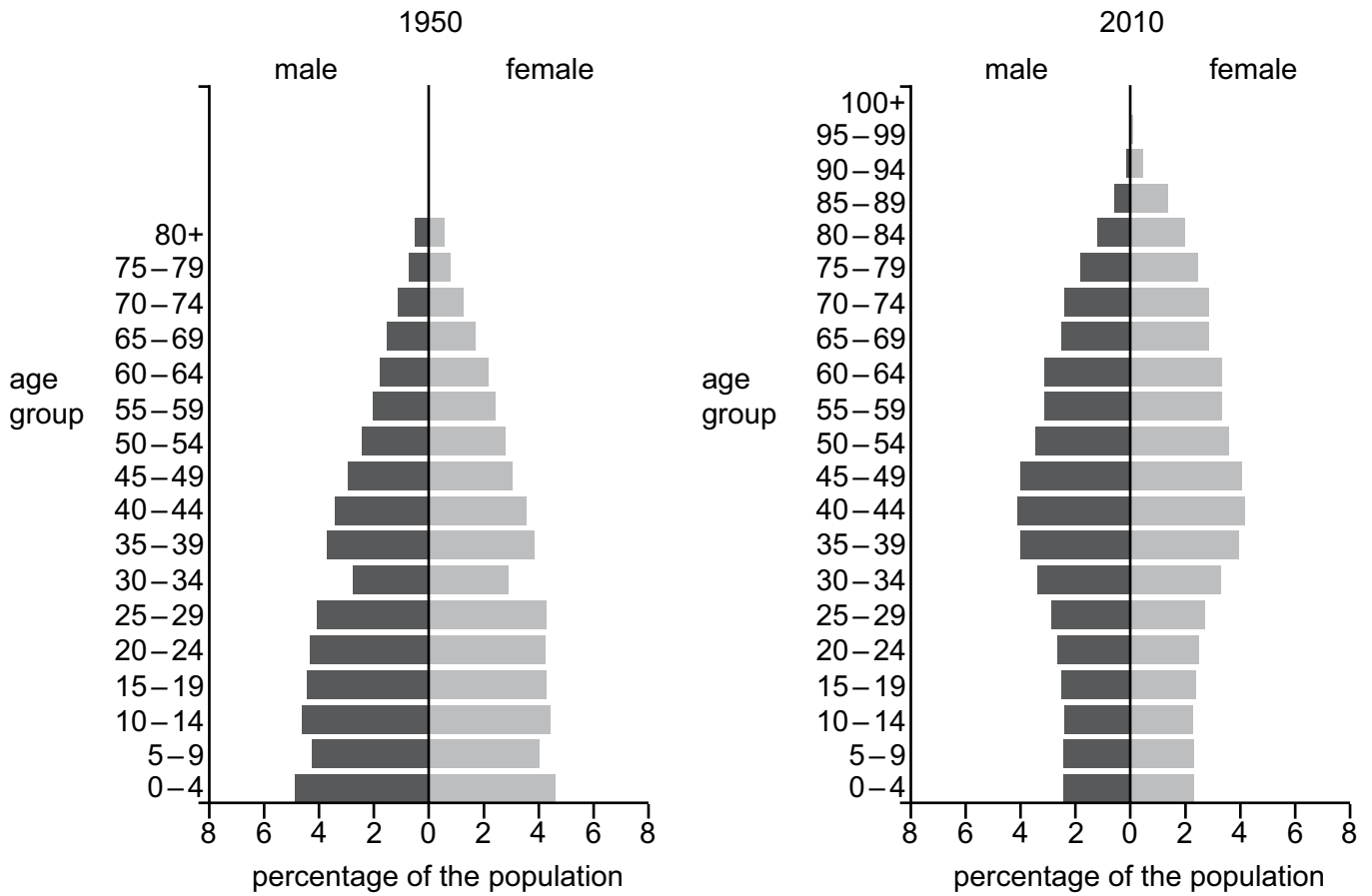
- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

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(b) Fig. 1.1 shows two population pyramids representing the percentage of the population in different age groups in Italy in 1950 and 2010.



**Fig. 1.1**

(i) Describe the changes in population distribution using data from Fig. 1.1.

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..... [2]

(ii) Describe the impacts that the changes in (i) could cause.

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..... [3]

[Total: 13]



(b) Fig. 2.2 shows how some companies in Europe plan the management of their food waste.

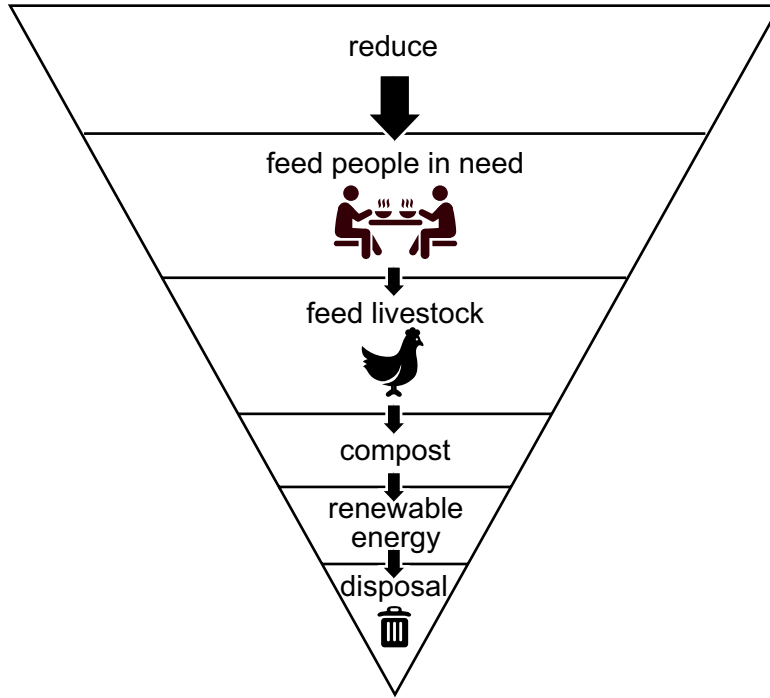


Fig. 2.2

One benefit of this food waste management strategy is that it provides food for people in need.

Explain **two** other benefits of this management strategy.

1 .....

.....

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2 .....

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..... [4]

(c) Food wastage is one reason why there is a global shortage of food.

State **two** other reasons.

1 .....

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2 .....

..... [2]

[Total: 10]

3 (a) (i) Countries need long-term and short-term energy security.

Define:

long-term energy security .....

.....

short-term energy security .....

..... [2]

(ii) Energy insecurity impacts low-income economy countries (LICs).

Outline **four** of these impacts.

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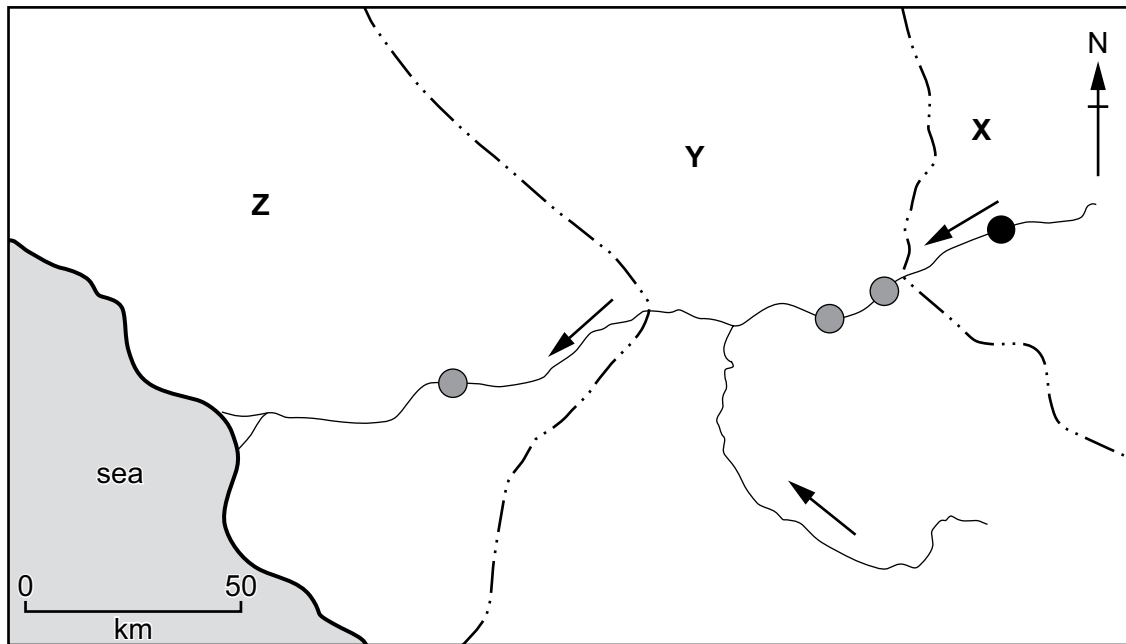
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..... [4]

(b) Fig. 3.1 shows the location of hydroelectric projects in country Y and country Z.

A new dam is planned in country X to meet the increasing energy demands of the country. Country X is a low-income economy country (LIC). Currently, only 22% of the population of country X has access to electricity.



**Key**

- planned dam
- existing dam
- ~~~~~ river
- ~~~~~ coast
- ...- international boundary
- flow direction of river
- X/Y/Z country

**Fig. 3.1**





4 (a) Fig. 4.1 is a food web that shows some feeding relationships in a rainforest.

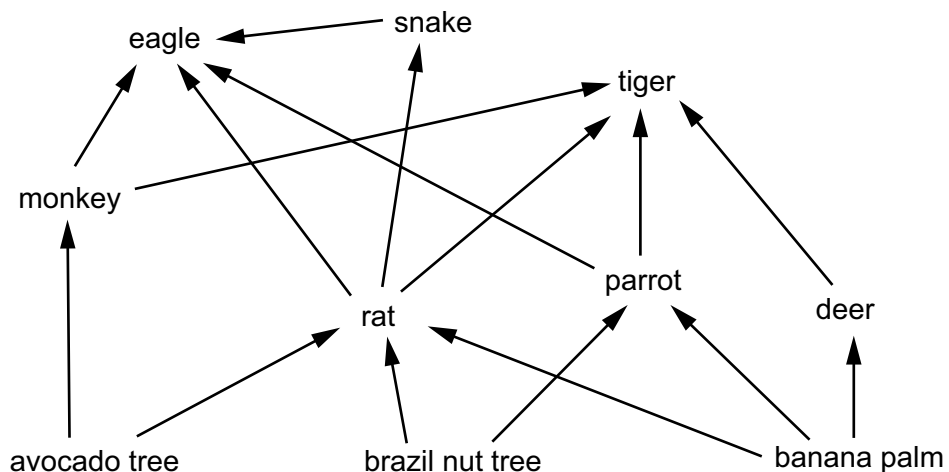
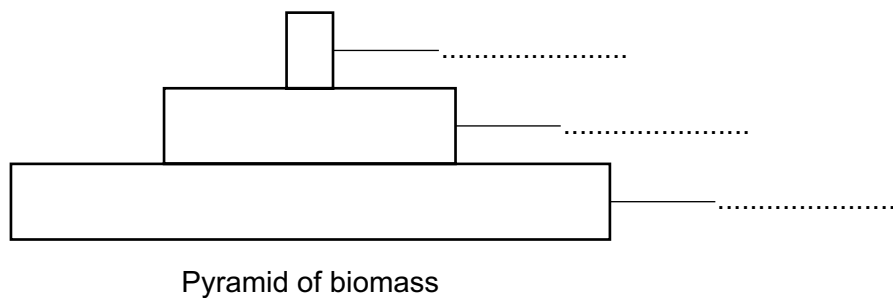


Fig. 4.1

(i) Label the pyramid of biomass using an organism from each trophic level in a food chain within this food web.



[2]

(ii) Explain the shape of the pyramid of biomass shown in (a)(i).

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..... [3]

(b) Table 4.1 shows data on productivity.

**Table 4.1**

<b>type of land</b>	<b>average annual net primary productivity / g m<sup>-2</sup></b>
tropical rainforest	2200
agricultural	650

(i) Tropical rainforest is an example of an ecosystem.

Define ecosystem productivity.

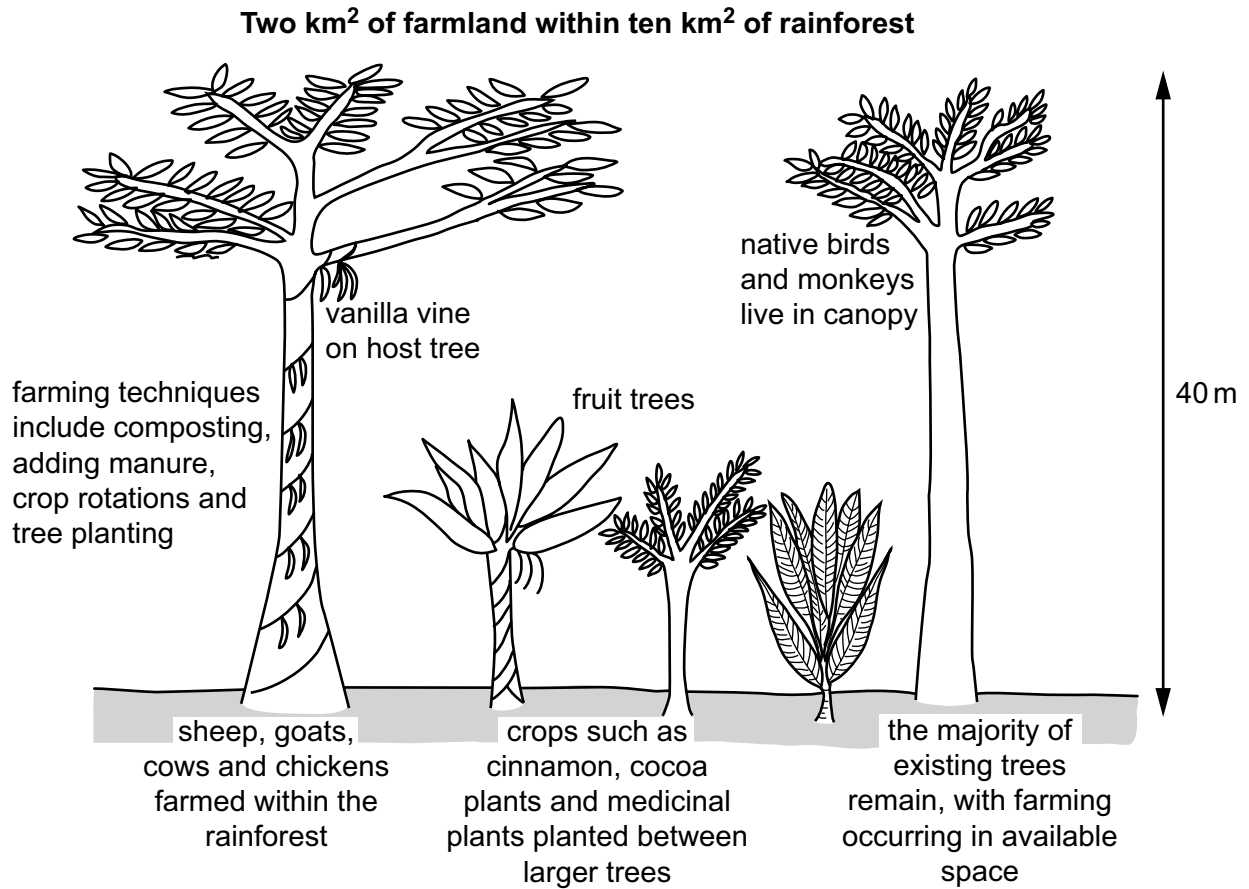
.....  
 ..... [1]

(ii) Suggest **one** reason why the productivity of the agricultural land is much smaller than the tropical rainforest.

.....  
 ..... [1]

(c) A student visits a farm within an area of tropical rainforest. The farm grows a variety of plants.

Fig. 4.2 shows the student's annotated sketch of the farm.



**Fig. 4.2**



5 Ozone (O<sub>3</sub>) is a gas found in the stratosphere. Ozone depletion is caused by chlorofluorocarbons (CFCs).

(a) Outline how ozone depletion occurs.

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..... [4]

(b) In the 1970s, scientists Rowland and Molina proposed this main hypothesis:

‘CFCs will cause significant ozone depletion.’

Explain why this hypothesis was **not** initially accepted by the scientific community.

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..... [1]

(c) State **two** impacts of ozone depletion.

1 .....

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2 .....

..... [2]

(d) The use of CFCs has been banned in many countries. Some alternative substances to CFCs are greenhouse gases.

Outline **two** possible problems when new laws on managing atmospheric pollution are introduced.

1 .....

2 .....

[2]

[Total: 9]















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