Cambridge Assessment International Education

Cambridge O Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

8167870055

ENVIRONMENTAL MANAGEMENT **5014/12**

Paper 1 Theory **May/June 2022**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- 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.

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Section A

1 Rocks and minerals needed for building can be extracted from the ground by open-pit mining.

(a) State **one** environmental impact of open-pit mining.

..... [1]

(b) Describe how rock and mineral extraction can benefit the local community.

.....

.....

.....

..... [2]

(c) The photograph shows an area of land that was used for open-pit mining.

The land has been restored.

Use the photograph to describe how this land has been restored.

.....

.....

.....

..... [2]

[Total: 5]

2 **(a)** The photograph shows bycatch on a prawn-fishing boat.

Explain what the fisherman is doing with the bycatch in the photograph.

.....

.....

.....

..... [2]

(b) **(i)** Describe the environmental impacts of overfishing.

.....

.....

.....

..... [2]

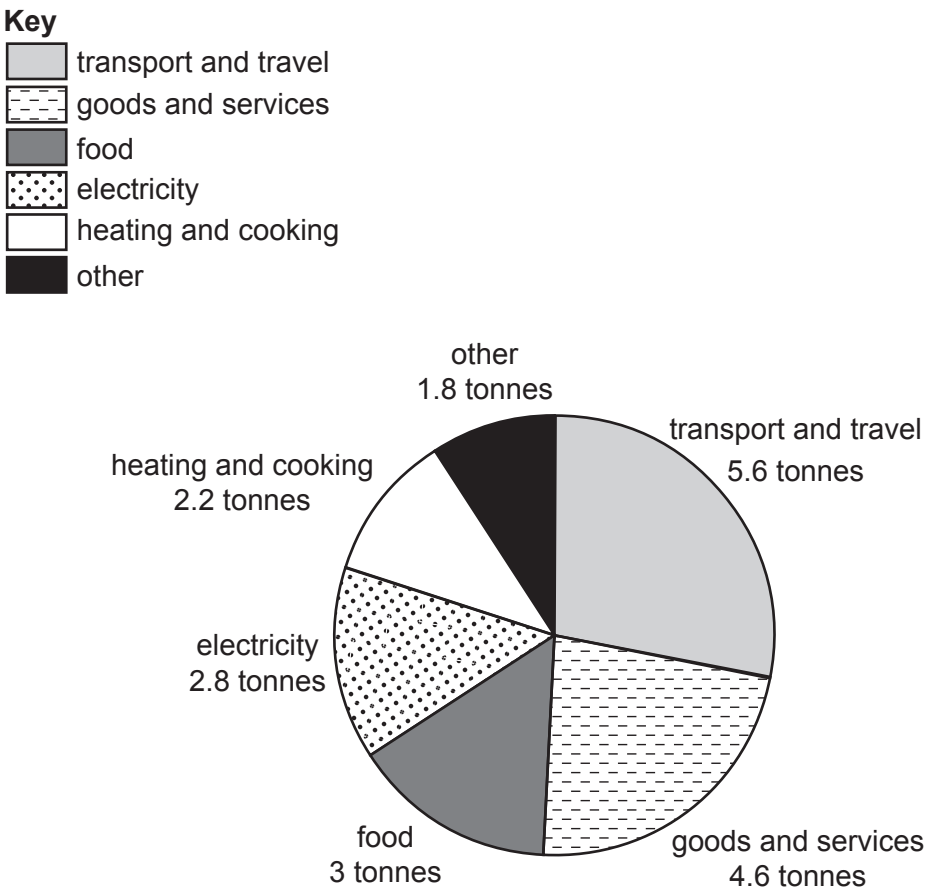
(ii) State **two** strategies that can be used to reduce overfishing.

1 .....

2 .....
[2]

[Total: 6]

3 **(a)** The pie chart shows the annual carbon footprint for the average U.S. citizen by sector.



(i) State which sector makes the largest contribution to the annual carbon footprint.

..... [1]

(ii) Calculate the total annual carbon footprint in tonnes for the average U.S. citizen.

..... tonnes [1]

(iii) Calculate the percentage contribution of the electricity sector.

..... % [1]

(b) Suggest strategies that individuals can use to reduce their carbon footprints.

.....

.....

.....

..... [2]

[Total: 5]

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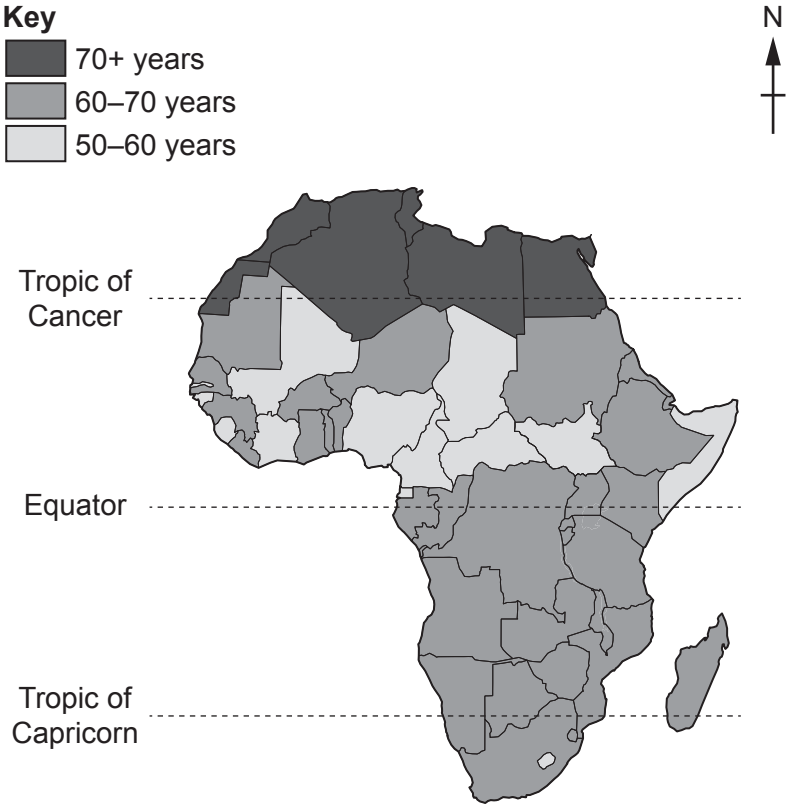
4 The map of Africa shows average life expectancy by country.



(a) Describe the distribution of average life expectancy in Africa.

.....

.....

.....

..... [2]

(b) Suggest why average life expectancy might change in the future.

.....

.....

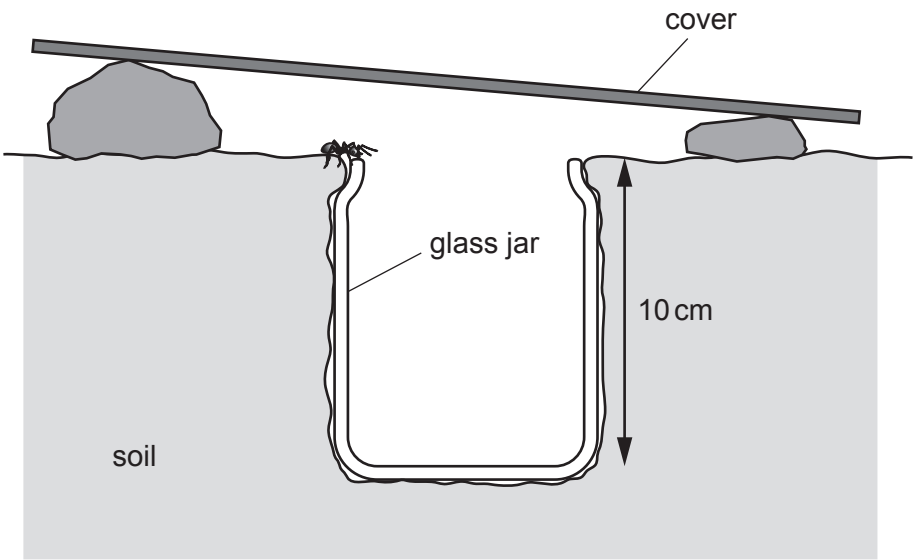
.....

..... [2]

[Total: 4]

Section B

5 The diagram shows a pitfall trap.



(a) **(i)** Describe how the pitfall trap shown in the diagram is used to sample organisms.

.....

.....

.....

.....

.....

..... [3]

(ii) Suggest **two** limitations of using this pitfall trap to sample organisms.

1 .....

.....

2 .....

.....

[2]

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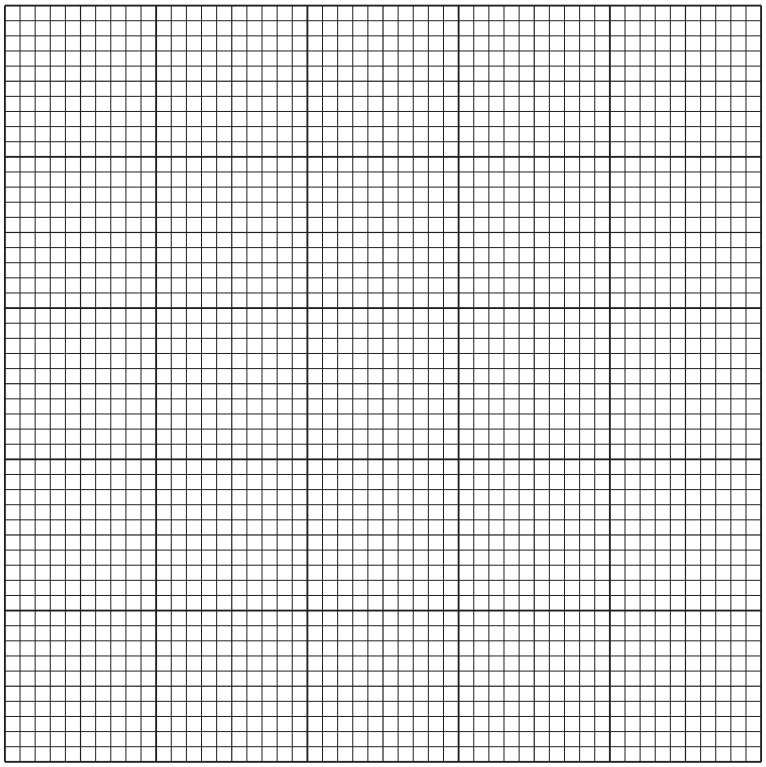
(b) The table shows organisms caught in five pitfall traps.

The table is **not** complete.

organisms	number of organisms					
	trap 1	**trap 2**	**trap 3**	**trap 4**	**trap 5**	**total**
ants	18	8	12	9	14	.....
beetles	1	4	0	2	0	7
centipedes	1	2	2	1	3	9
grasshoppers	0	1	1	0	1	3
spiders	2	3	4	3	3	15

(i) Complete the table to show the **total** number of ants. [1]

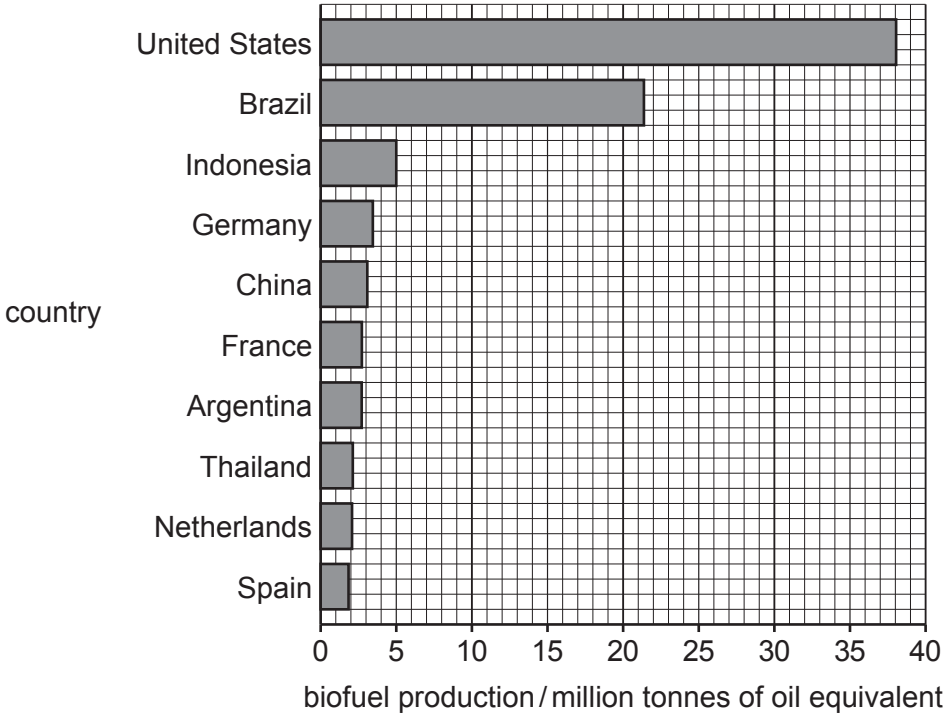
(ii) On the grid, plot a bar chart to show the number of each organism in **trap 2**.



[4]

[Total: 10]

6 **(a)** The bar chart shows the leading countries for biofuel production in 2018 (in million tonnes of oil equivalent).



(i) Use the bar chart to determine the biofuel production for Indonesia.

..... million tonnes of oil equivalent [1]

(ii) Suggest **two** advantages of using biofuel as an energy resource.

1 .....

.....

2 .....

.....
[2]

(iii) Suggest **one** disadvantage of using biofuel as an energy resource.

.....

..... [1]

(iv) It is predicted that the U.S. will use approximately 36 billion gallons of biofuels and 140 billion gallons of gasoline for transport in 2022.

Suggest whether biofuels are a realistic replacement for gasoline in transport. Give reasons for your answer.

.....

.....

.....

.....

.....

..... [3]

(b) A student reads an internet article on electric vehicles.

> Worldwide, the use of electric vehicles has increased rapidly.
>
> In 2013, there were approximately 250 000 electric cars in the world.
>
> In 2018, there were more than 5.1 million electric cars in the world. The number of electric two-wheelers was 260 million, and there were 460 000 electric buses. In freight transport, there were 250 000 light-commercial vehicles (LCVs) and 1000 electric trucks.

(i) Present the data from the article in a suitable table to show the number of each type of electric vehicle in 2018.

[3]

(ii) Suggest why there has been a rapid increase in the worldwide use of electric vehicles.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 14]

7 **(a)** Agriculture can be divided into three main types: arable, mixed and pastoral.

(i) Complete the table using the words shown to match the descriptions to the types of agriculture.

arable **mixed** **pastoral**

description	type of agriculture
The farm grows crops.	.....
The farm raises animals.	.....
The farm grows crops and raises animals.	.....

[1]

(ii) Describe the difference between a commercial farm and a subsistence farm.

.....

..... [1]

(b) State **two** problems caused by mismanagement of irrigation.

1 .....

2 .....

[2]

(c) Describe how crop rotation and selective breeding of plants can be used to increase agricultural yield.

crop rotation .....

.....

.....

.....

selective breeding .....

.....

.....

.....

[4]

(d) The factsheet contains information about the prickly pear cactus in Australia.

The prickly pear cactus

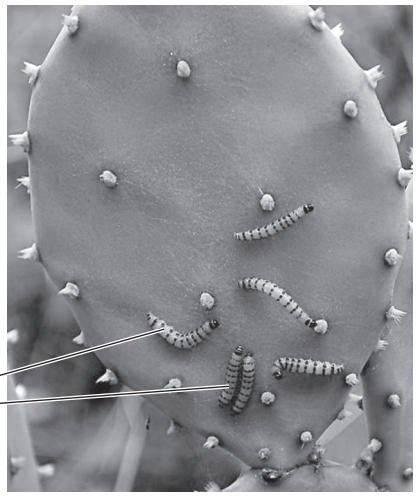
The prickly pear cactus is native to the Americas.

When it was brought to Australia, it spread rapidly, covering millions of hectares of farmland.

Farmers unsuccessfully tried several methods of controlling the cactus.

Eventually, the ‘cactus moth’ from South America was introduced.

The larvae of this moth ate the cacti and successfully reduced the cacti population.



(i) Suggest why the prickly pear cactus spread so rapidly in Australia.

.....

.....

.....

..... [2]

(ii) Suggest the impact of the prickly pear cactus on the farmlands of Australia.

.....

.....

.....

..... [2]

(iii) State the type of control used successfully by the farmers.

..... [1]

[Total: 13]

8 The photograph shows a location after a storm surge.

(a) Flooding is one impact of the storm surge.

(i) Describe **one** other impact of the storm surge that can be seen in the photograph.

.....

..... [1]

(ii) Suggest strategies to reduce the impacts of the flooding at this location.

.....

.....

.....

.....

.....

..... [3]

(b) Tropical cyclones produce storm surges and flooding.

(i) State **two** other causes of flooding.

1 .....

2 .....
[2]

(ii) Suggest why climate change may increase the impacts of tropical cyclones.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 10]

9 **(a)** In 2020, over 2 billion people did **not** have access to safe drinking water.

By 2050, the world population is predicted to increase by 2 billion people.

Suggest why an increase in world population will affect access to safe drinking water.

.....

.....

.....

.....

.....

..... [3]

(b) Water samples are taken at three locations along a river.

The table shows the concentrations of some ions in the river water at each location.

ion	**concentration of ion / mg per litre**		
	location 1	location 2	location 3
iron	0.4	0.6	0.5
nitrate	5.4	5.8	33.0
phosphate	0.2	0.4	1.2
potassium	2.6	3.0	11.8
zinc	0.1	0.2	0.1

(i) State the location of the sample with the lowest concentration of iron.

..... [1]

(ii) Calculate the range in concentration for potassium.

..... mg per litre [1]

(iii) At one of the locations, the river flows through a farm that uses fertiliser.

State which location. Explain your answer.

location .....

explanation .....

.....

.....
[2]

(c) A student says:

Building a dam is the best way to provide a constant water supply.

To what extent do you agree with this statement? Give reasons for your answer.

.....

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..... [6]

[Total: 13]

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