



Cambridge International AS Level

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

ENVIRONMENTAL MANAGEMENT

8291/11

Paper 1 Principles of Environmental Management

October/November 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.

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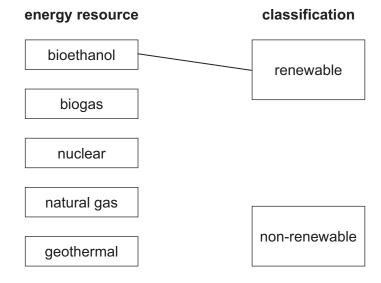


Section A

Answer all questions in this section.

- 1 (a) Energy resources can be classified as renewable or non-renewable.
 - (i) Complete the diagram by drawing a line to classify each of the energy resources.

One has been done for you.



(ii) Explain how an energy resource can be renewable but **not** sustainable.

[2]

(b) Fig. 1.1 shows the percentage of electricity generated from different energy resources in four countries in 2020.

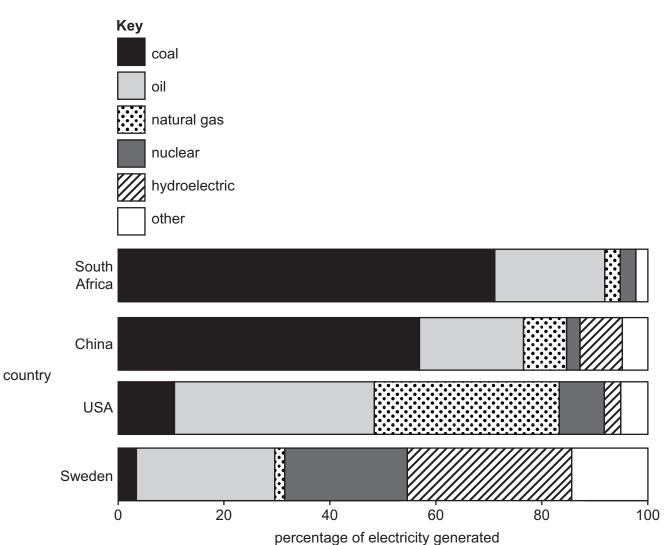


Fig. 1.1

Compare the percentage of electricity generated from different energy resources in the USA and China in 2020.
[3]

(iii)



(ii) A student says that South Africa is likely to experience energy insecurity in the future.

5

Use Fig. 1.1 to suggest why.	
State three impacts of energy insecurity.	
1	
2	
3	[3]

[Total: 13]

(a) Fig. 2.1 shows a geospatial map of a forest produced using images taken from a satellite.

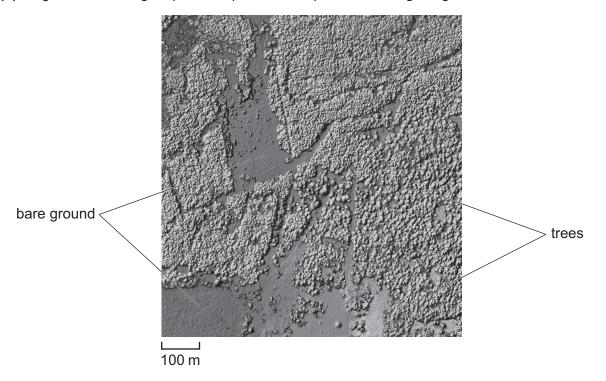


Fig. 2.1

(i)	Explain the term geospatial.	
		[2]
(ii)	Geospatial maps can be used to collect big data.	
	State one benefit and one limitation of big data.	
	benefit	
	limitation	
		[2]
(iii)	Geospatial maps can be used to study the water cycle.	
	Draw an X on the map in Fig. 2.1 to show a region of high surface run-off.	
	Explain your choice of region.	
		[4]



				7					
/)	Images from	geospatial	maps a	are used	to estimate	the numb	er of trees	in a	forest

	(,	magos from goodpattal maps are about to definitio the flambor of trood in a forest.	
		Describe one sampling method to estimate the number of trees in a forest.	
			[4]
(b)	Tree	es photosynthesise and respire.	
	Ехр	lain the effect of photosynthesis and respiration in trees on the carbon cycle.	
	pho	tosynthesis	
	resp	piration	
			••••
			[6]

[Total: 15]



(a) Fig. 3.1 shows a heron and aquatic plants in a wetland ecosystem.



Fig. 3.1

(i)	Define the term ecosystem.
	[2]
(ii)	Wetlands contain many species of aquatic plant.
	Describe how the aquatic plants in Fig. 3.1 compete with each other.

(ii)



(b) Wetlands produce approximately 30% of atmospheric methane.

Explain the role of atmospheric methane in climate change.
[4]
State two sources of atmospheric methane other than wetlands.
1
2
[2]

of atmospheric methane /ppb

Fig. 3.2 shows the mean concentration of atmospheric methane in parts per billion (ppb) between 1990 and 2020.

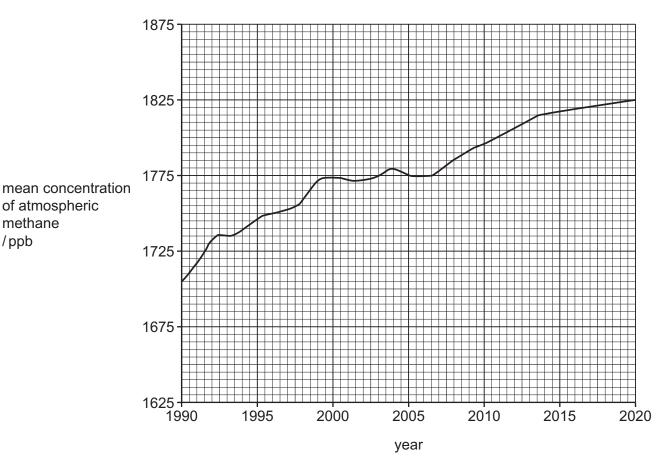


Fig. 3.2

Calculate the percentage increase in the mean concentration of atmospheric methane between 1990 and 2020.

Give your answer to three significant figures.

(ii)	Suggest why the percentage increase in (i) is an estimate and not an actual value.

[Total: 18]

..... % [3]

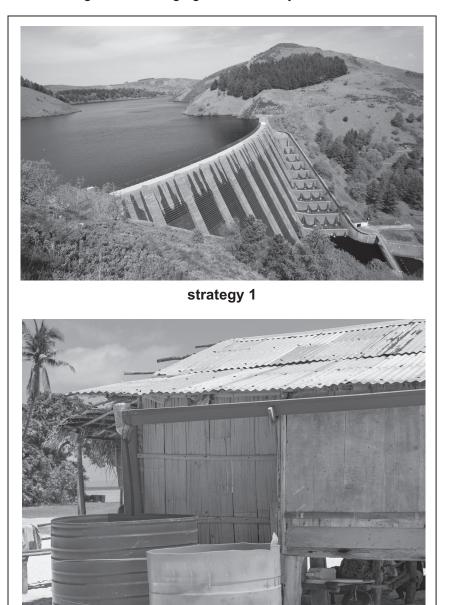


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Fig. 4.1 shows two strategies for managing water security.



12

Fig. 4.1

strategy 2

(a)	Define the term water security.	
		[2]
(b)	Name strategy 1 and strategy 2.	
	strategy 1	
	strategy 2	
		1.7



|--|--|

(c)	Suggest two ways that strategy 2 can be improved to increase water security.					
		 [2]				
(d)	Strategy 2 can lead to severe water insecurity if no other water is available.					
	Explain the impacts of severe water insecurity on subsistence agriculture.					
(e)	Describe the benefits and limitations of strategy 1 for managing water security.					
	benefits					
	limitations					
		[5]				

[Total: 14]



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Section B

Answer one question.

EITHER

5	'Plastics have a greater impact on ecosystems than other pollutants.'	
	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 national and international agreements for managing climate change.	
	Give reasons and include information from relevant examples to support your answer.	[20]

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