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# Cambridge IGCSE™

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*8007209417*

**ENVIRONMENTAL MANAGEMENT** **0680/12**

Paper 1 Theory **February/March 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.

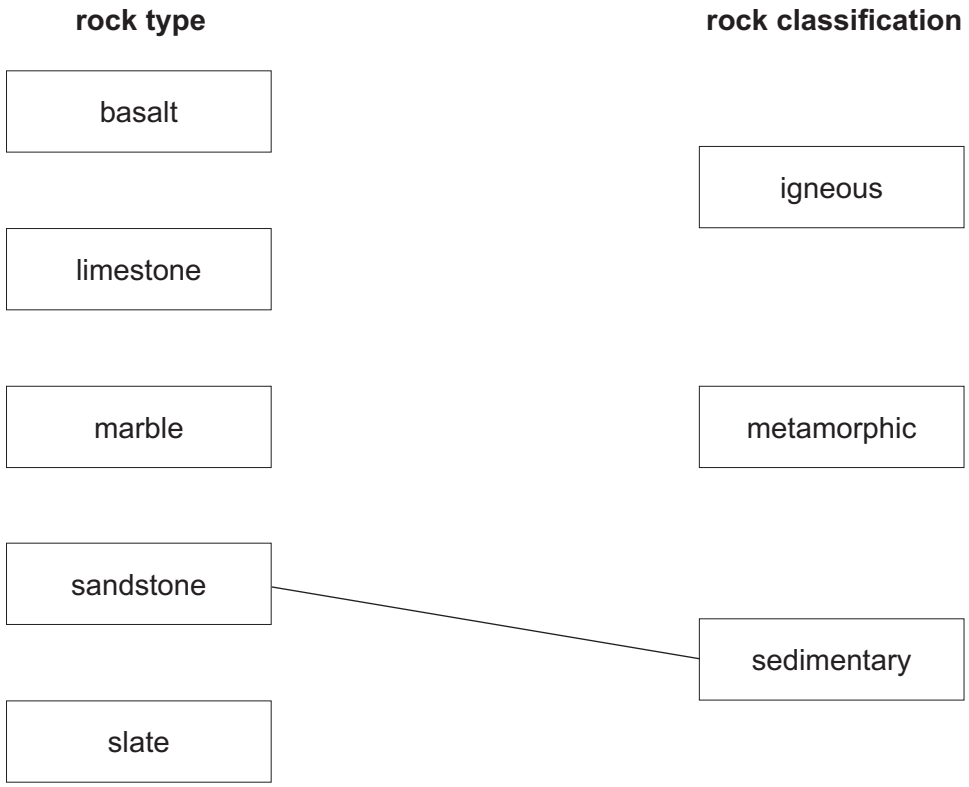
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**[Turn over**

## Section A

**1** **(a)** Draw **one** line from each rock type to the correct rock classification.

One rock type has been done for you.




[4]

**(b)** Suggest why sedimentary rocks can contain fossils.

.....

..... [1]

**(c)** Give reasons why the geology of an area affects the decision to extract rocks from the ground.

.....

.....

.....

..... [2]

**(d)** Strip mining is an example of surface mining.

State **one** other example of surface mining.

..... [1]

[Total: 8]

**2** Fishing is a major industry.

**(a) (i)** Suggest **two** reasons why some fish are described as bycatch.

1 .....

.....

2 .....

.....

[2]

**(ii)** A report stated that 72 billion kg of fish caught each year are bycatch. This is 40% of the total annual fish catch.

Calculate the total annual fish catch.

total annual fish catch ..... kg [1]

**(b)** Explain the negative impacts that net type and mesh size can have on fish stocks.

net type .....

.....

.....

.....

mesh size .....

.....

.....

.....

[4]

[Total: 7]

**3** **(a)** In many countries, buildings need to be heated to make them comfortable to live in.

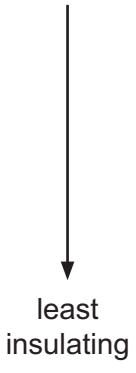
To reduce heat transfer to the surroundings, buildings are made using **insulating** materials.

The U-value is a measure of how quickly a building material transfers heat. A building material with a low U-value transfers heat slowly and is **more** insulating.

The table shows U-values for different building materials.

| building material | U-value |
|---|---|
| brick wall | 2.00 |
| double-glazed window | 2.20 |
| single-glazed window | 5.10 |
| triple-glazed window | 0.80 |
| wooden door | 3.00 |

Rank the building materials in order starting with the **most** insulating.
One has been completed for you.




| rank | building material |
|---|---|
| 1 | ..... |
| 2 | ..... |
| 3 | ..... |
| 4 | wooden door |
| 5 | ..... |

[2]

**(b)** Insulation is one strategy for reducing energy consumption in buildings.

Suggest **three** other strategies for reducing energy consumption in buildings.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 5]

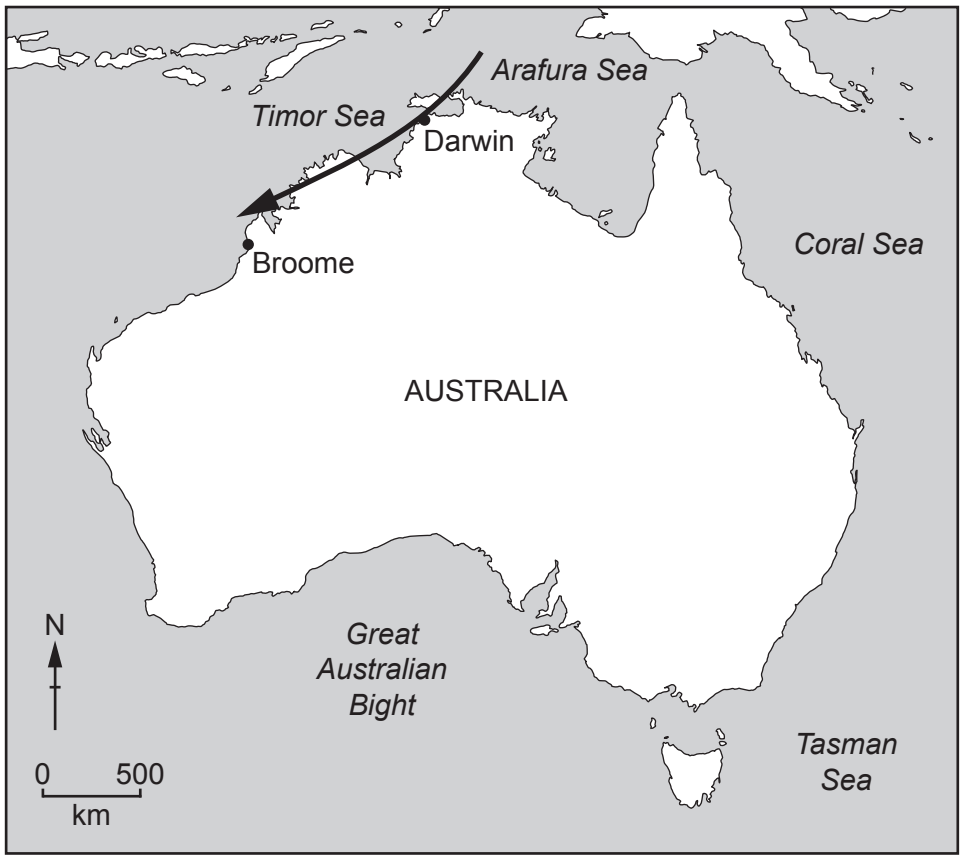
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## Section B

**4** In March 2018, Cyclone Marcus affected part of Australia.

The route of this major tropical cyclone is shown on the map.




**(a)** Describe the route of Cyclone Marcus using the map.

.....

.....

.....

.....

.....

..... [3]

**(b)** State the conditions required for a tropical cyclone to form.

.....

.....

.....

.....

.....

..... [3]

**(c)** Cyclone Marcus was the most powerful tropical cyclone to affect the area in over 40 years. However, it caused no deaths.

Suggest **two** impacts of Cyclone Marcus.

1 .....

.....

2 .....

.....

[2]

**(d)** Cyclone Marcus caused no deaths. A weaker tropical cyclone in Myanmar in 2008 caused over 135 000 deaths.

Suggest reasons for the difference in the number of deaths between these two tropical cyclones.

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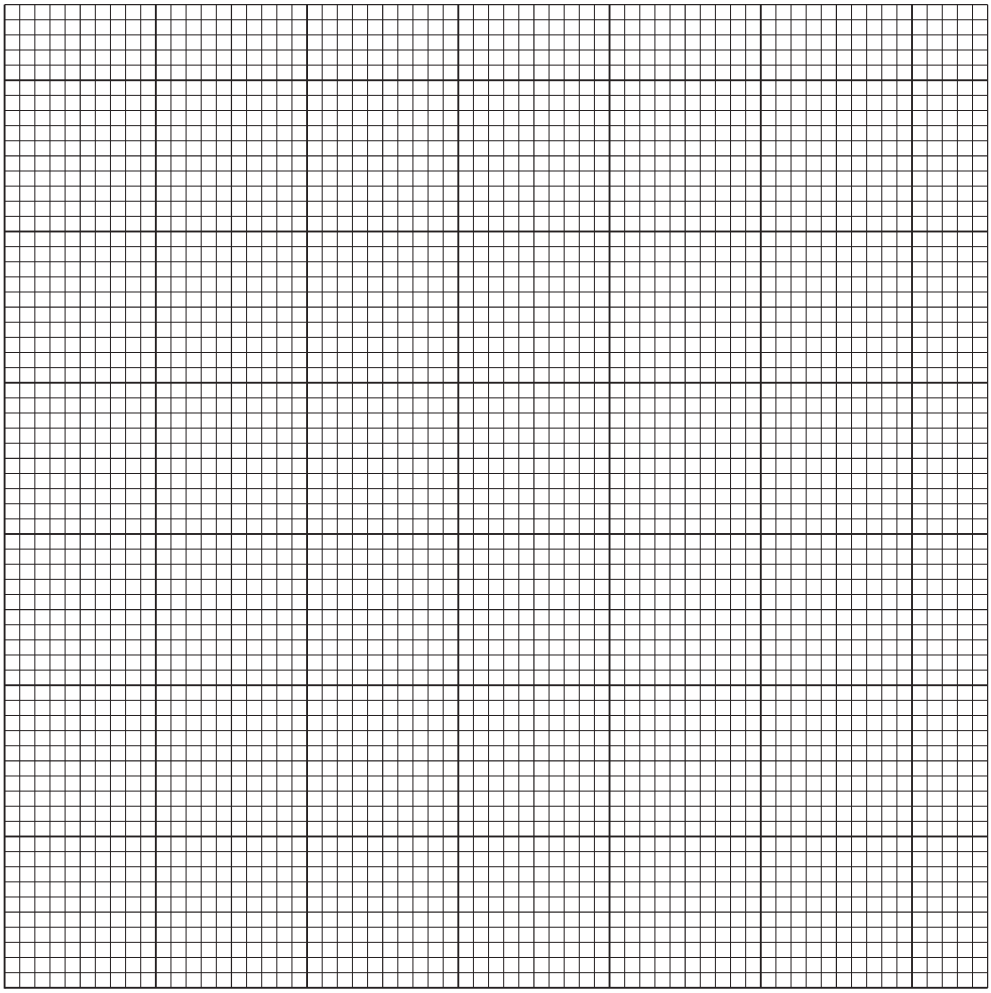
..... [4]

[Total: 12]

**5** The table shows engine emissions data for medium-sized cars from one manufacturer between 1965 and 2017.

| year of manufacture | hydrocarbon emissions / g per km | carbon monoxide (CO) emissions / g per km | oxides of nitrogen (NOx) emissions / g per km |
|---|---|---|---|
| 1965 | 14.16 | 140.1 | 5.8 |
| 1975 | 1.45 | 14.5 | 3.2 |
| 2003 | 0.01 | 2.3 | 0.2 |
| 2017 | 0.01 | 2.2 | 0.1 |

**(a) (i)** Plot a bar chart for the oxides of nitrogen (NOx) emissions.



[4]

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**(ii)** Use the table to estimate the percentage decrease in carbon monoxide (CO) emissions for medium-sized cars manufactured in 2017 compared with 1965.

Circle **one** correct answer.

**64%** **70%** **85%** **98%**

[1]

**(iii)** The rate of reduction of engine emissions for medium-sized cars has decreased in recent years.

Suggest why.

.....

..... [1]

**(b)** Some scientists think that reducing car engine emissions is not enough to reduce the level of air pollution in cities.

Describe **other** strategies to reduce the level of air pollution caused by cars in a city.

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.....

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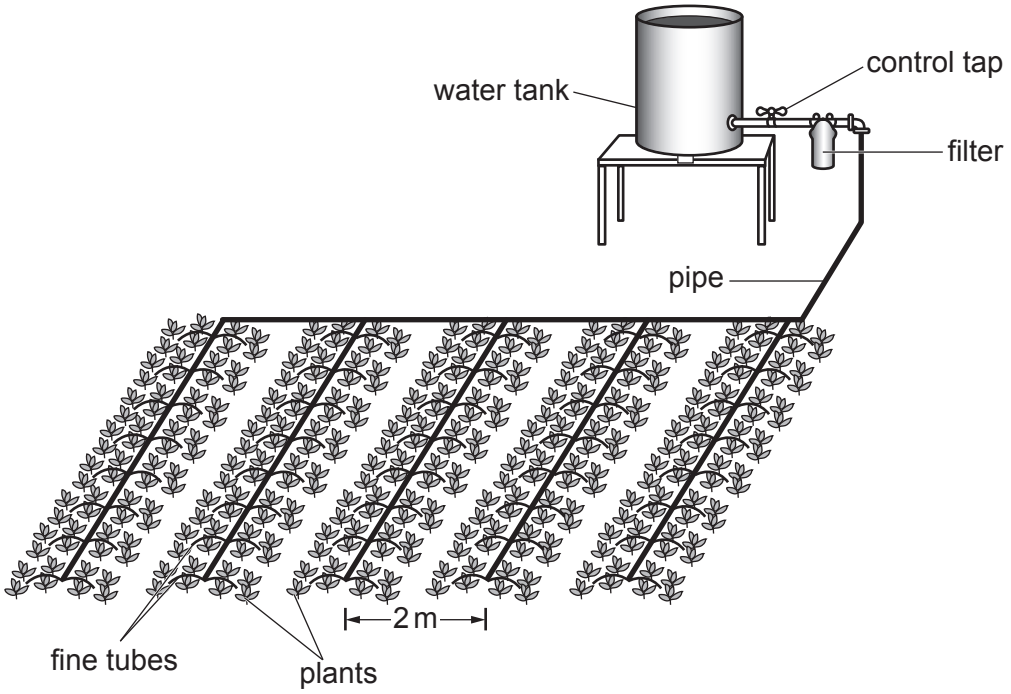
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..... [3]

[Total: 9]

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**6** The diagram shows a trickle drip irrigation system.




**(a) (i)** Describe the function of the components shown in the diagram.

control tap .....

.....

filter .....

.....

fine tubes .....

.....

[3]

**(ii)** Explain benefits of using trickle drip irrigation.

.....

.....

.....

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.....

..... [4]

**(b)** Managing water supply is one way of increasing crop yield.

Describe other ways of increasing crop yield.

.....

.....

.....

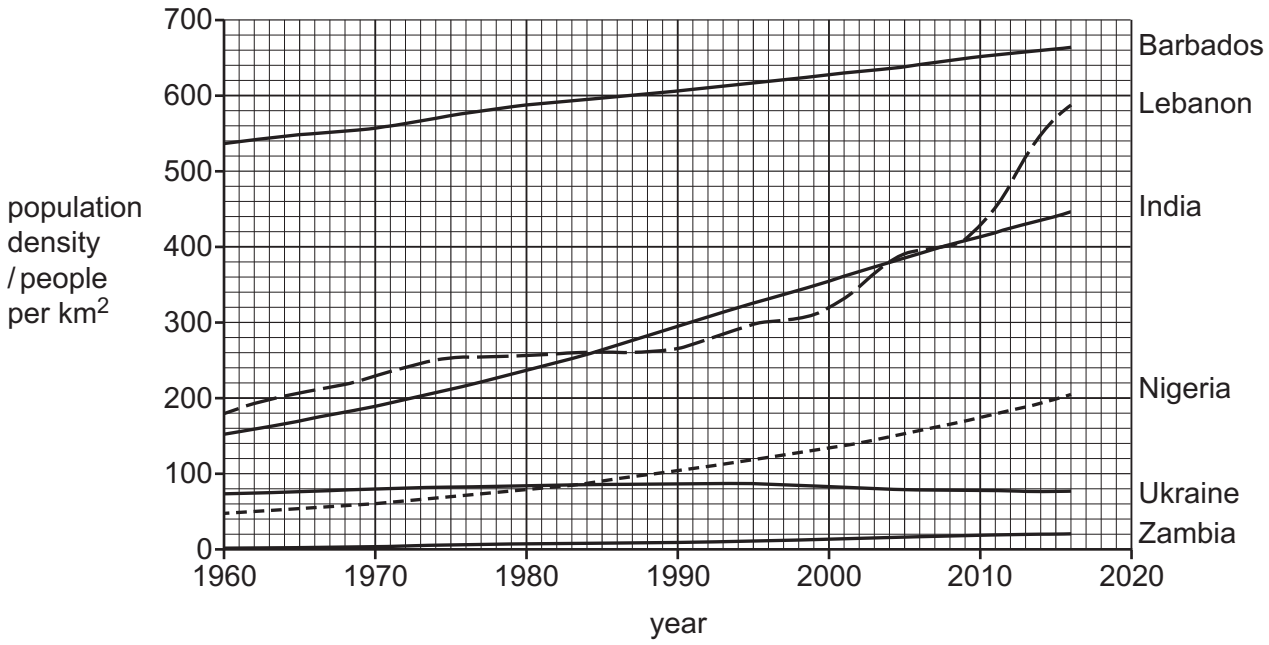
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..... [3]

[Total: 10]

**7** The graph shows the change in population density in six countries between 1960 and 2016.




**(a) (i)** State the name of the country that has:

- the greatest population density in 2016

  .....

- the greatest increase in population density between 1960 and 2016.

  .....

[2]

**(ii)** Determine the change in population density in India between 1960 and 2016.

..... [1]

**(iii)** Suggest reasons for the changes in population density in Ukraine between 1990 and 2016.

.....

.....

.....

..... [2]

**(b)** Bulgaria is a country in Europe. Bulgaria has a decreasing population.

Suggest how a decreasing population can benefit the natural environment of Bulgaria.

.....

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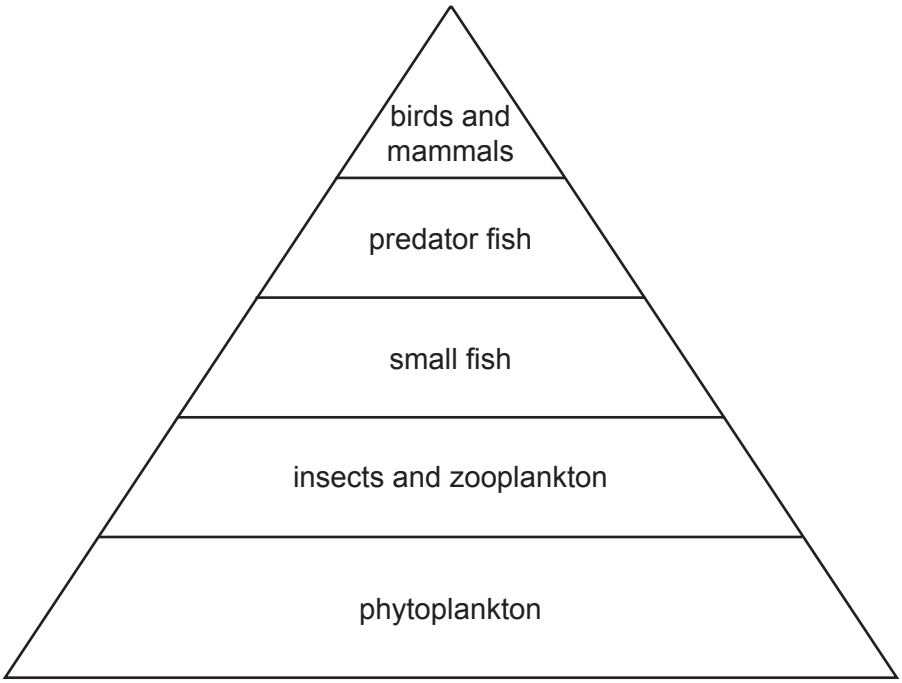
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..... [5]

[Total: 10]

**8** The diagram shows a pyramid of numbers for an aquatic ecosystem.




**(a) (i)** Use the diagram to identify:

a producer .....

a primary consumer. .....

[2]

**(ii)** Explain why the number of organisms decreases as the trophic level increases.

.....

.....

.....

..... [2]

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**(b)** A local newspaper printed a safety announcement.

> **Important safety announcement**
>
> Scientific tests have found some predator fish from a local lake contain high concentrations of the toxic substance, mercury.
>
> People are advised to reduce their consumption of these fish and find other sources of food.
>
> The local lake water has been tested. Low levels of mercury were found in the water. The water meets current safety standards for concentrations of mercury.

Explain why the predator fish contain high concentrations of mercury.

.....

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.....

..... [4]

**(c)** The local lake was also sampled for four other toxic substances.

The table shows the concentration of the toxic substances in the lake water at different sample points around the lake.

| | concentration of toxic substance | | | |
|---|---|---|---|---|
| **sample point** | **chromium / arbitrary units** | **nickel / arbitrary units** | **cadmium / arbitrary units** | **lead / arbitrary units** |
| A | 2.5 | 5.6 | 4.9 | 7.2 |
| B | 2.1 | 6.4 | 3.2 | 5.2 |
| C | 1.1 | 1.2 | 1.1 | 2.3 |
| D | 1.2 | 1.4 | 1.0 | 1.1 |
| E | 0.2 | 1.3 | 1.0 | 0.9 |
| F | 0.3 | 1.0 | 1.0 | 0.7 |
| average concentration | 1.2 | 2.8 | 2.0 | ..... |

**(i)** **Complete the table** to calculate the average concentration for lead in the lake. [1]

**(ii)** Identify the sample point and toxic substance with the **lowest** concentration.

sample point ..... toxic substance ..... [1]

**(iii)** Identify the sample point and toxic substance with the **highest** concentration.

sample point ..... toxic substance ..... [1]

**(iv)** Scientists are concerned that toxic substances are leaching into the lake.

Suggest how the information in the table supports this conclusion.

.....

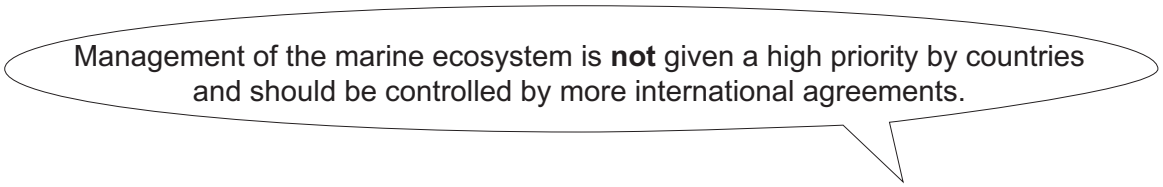
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..... [2]

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**(d)** A student says:




To what extent do you agree with this statement? Explain your answer.

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..... [6]

[Total: 19]

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