Cambridge Assessment International Education
Cambridge Ordinary Level

CANDIDATE NAME	

CENTRE NUMBER							CANDIDATE NUMBER				

MARINE SCIENCE **5180/02**

Paper 2 **October/November 2019**

1 hour 30 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Section A
Answer **both** questions in this section.
Write your answers in the spaces provided on the Question Paper.

Section B
Answer **both** questions in this section.
Write your answers in the spaces provided on the Question Paper.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **10** printed pages and **2** blank pages.

Cambridge Assessment
International Education

[Turn over

Section A

Answer **both** questions in this section.

Write your answers in the spaces provided.

1 Seafood is an important food source for humans.

Table 1.1 shows nutritional information about different seafoods.

The values in Table 1.1 are given for one serving size of 84 g. The recommended daily allowance (RDA) is the amount of each nutrient that is recommended in a healthy diet.

Table 1.1

seafood species	mass / g	energy / kJ	mass of carbohydrate / g	mass of lipid / g	mass of protein / g	vitamin A / % RDA	calcium / % RDA
blue crab	84	420	0	1.0	20	0	10
salmon	84	840	0	10.0	24	4	2
shrimp	84	420	0	1.5	21	4	6
tilapia	84	460	0	2.5	22	0	0
tuna	84	540	0	1.5	26	2	2
clam	84	460	6	1.5	17	10	8

(a) (i) State which seafood has the highest calcium content in an 84 g serving.

.... [1]

(ii) State the highest and lowest masses of protein found in 84 g servings of the different seafood.

Include the units.

highest ....

lowest ....

[2]

(iii) Calculate the mass of protein, in grams, found in one kilogram of salmon.

.... g

[3]

(iv) The vitamin A content is listed as a percentage of the RDA that adults should eat.

The RDA for an adult is 0.9 mg.

Calculate the mass of vitamin A found in 84 g of tuna.

.... mg
[2]

(v) Suggest **one** essential component of a balanced diet that is **not** included in Table 1.1.

.... [1]

(b) Use the information in Table 1.1 to explain why salmon has the highest energy content in an 84 g serving.

....

....

....

.... [2]

(c) Protein contains nitrogen.

Outline how nitrogen is made available to producers at the surface after the death of marine organisms in the ocean.

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.... [4]

[Total: 15]

2 Fig. 2.1 shows the change in the catch of anchovies and pilchards between 1955 and 2000 in Chile and Peru.
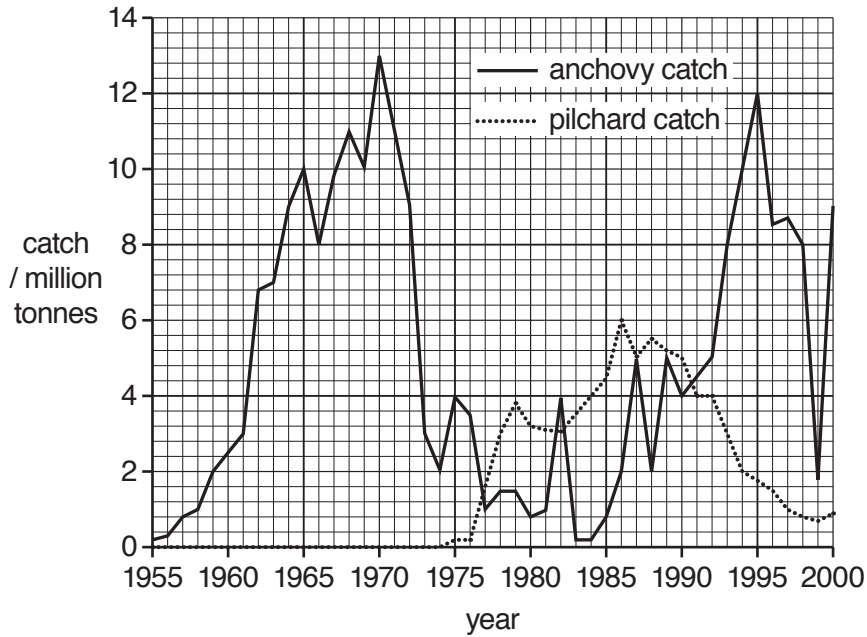
Fig. 2.1

(a) (i) State which year had the highest catch of **anchovies**.

.... [1]

(ii) Use Fig. 2.1 to state the catch of **anchovies** in 1974.

.... million tonnes
[1]

(b) Strong El Niño events occurred in 1972, 1982 and 1998.

(i) Outline the features of El Niño.

....

....

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....

....

.... [3]

(ii) Describe the effects of the El Niño events on the catch of **anchovies**.

....

.... [1]

(iii) Suggest reasons for the effects of El Niño on the catch of **anchovies**.

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.... [3]

(c) (i) Use the data in Fig. 2.1 to describe the trends in the catch of **pilchards** between 1970 and 2000.

....

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.... [2]

(ii) Suggest reasons for the changes in the catch of **pilchards** between 1970 and 2000.

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.... [4]
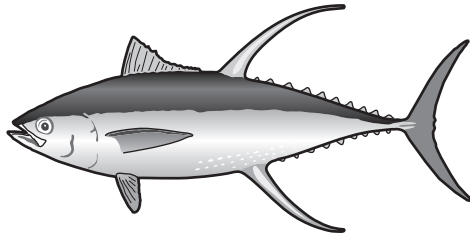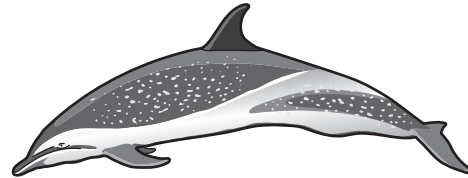
[Total: 15]

Section B

Answer **both** questions in this section.

Write your answers in the spaces provided.

3 Fig. 3.1 shows a yellowfin tuna, *Thunnus albacares* and a spotted dolphin, *Stenella attenuata*. These two species often swim together in the same shoals and they are thought to have a symbiotic relationship. Both species are predators of other species.

yellowfin tuna   spotted dolphin

not to scale

Fig. 3.1

(a) (i) Define the term *predator*.

....

....

....

.... [2]

(ii) Suggest why the yellowfin tuna and spotted dolphin often swim together in shoals.

....

....

....

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....

.... [3]

(b) Complete Table 3.1 to show the classification of the yellowfin tuna, *Thunnus albacares*.

Table 3.1

classification group	yellowfin tuna
Kingdom	Animalia
Phylum	Chordata
....	Actinopterygii
Order	Perciformes
Genus	....
Species	....

[2]

(c) Yellowfin tuna are bony fish.

Describe the functions of the internal structures of a bony fish.

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.... [8]

[Total: 15]

4 (a) State **two** aims of management in the fisheries industry.

1 ....

2 ....

[2]

(b) (i) Describe the benefits of artificial reefs.

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.... [5]

(ii) Discuss the impacts of pollution on marine ecosystems.

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.... [8]

[Total: 15]

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