Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MARINE SCIENCE **5180/02**

Paper 2 **October/November 2014**

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 ink.
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 **all** questions in this section.
Write your answers in the spaces provided.

Section B
Answer **all** questions in this section.
Write your answers in the spaces provided.

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 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 **11** printed pages and **1** blank page.

CAMBRIDGE International Examinations

[Turn over

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 Several species of organism, including prawns, freshwater fish and marine fish, are produced by aquaculture in Queensland, Australia.

Table 1.1 shows the total value, in millions of dollars ($m), of Queensland's aquaculture production for the years from 2005 to 2009.

Table 1.1

year	value of aquaculture production/$m
2005	72
2006	77
2007	80
2008	85
2009	103

(a) Plot a bar chart of the data in Table 1.1 on the grid provided opposite. [7]

(b) Describe the trend shown by the data in Table 1.1.

.....

..... [1]

(c) **(i)** Calculate the overall change in the value of aquaculture production from 2005 to 2009.

Show your working.

..... [2]

(ii) Suggest **two** reasons for this change.

1 .....

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2 .....

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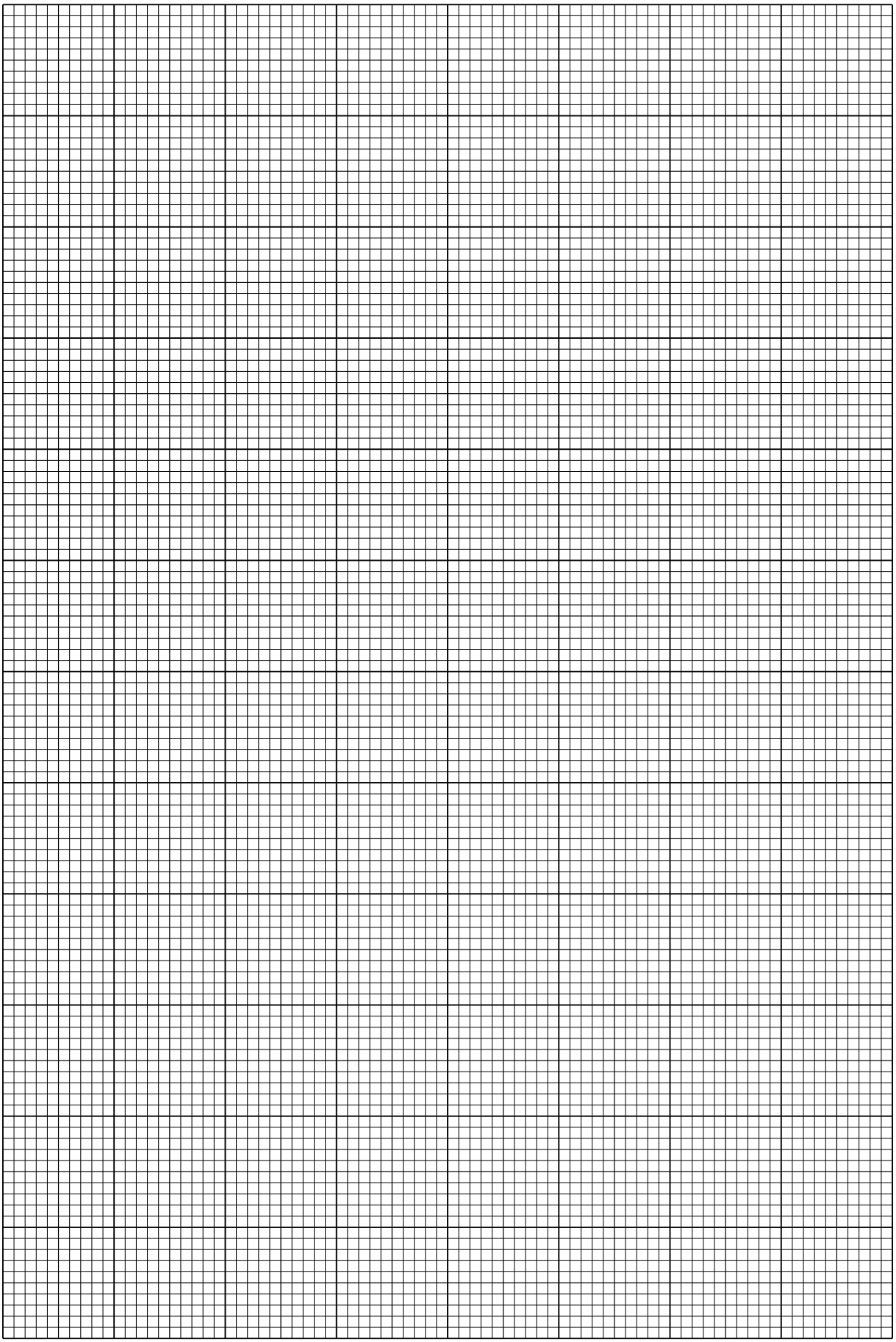
[2]



[Turn over

(d) Three species of prawns are produced by aquaculture in Queensland.

Suggest **three** advantages of producing prawns by aquaculture, compared with harvesting wild stocks of prawns.

1 .....

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2 .....

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3 .....

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[3]

[Total: 15]

Turn over for Question 2

2 Quotas are an important way in which fisheries practices are regulated.

Table 2.1 shows United Kingdom quotas for the years 2007 to 2011, for five species of fish caught in the North Sea.

Table 2.1

species of fish	Quota/tonnes of fish				
	2007	**2008**	**2009**	**2010**	**2011**
cod	7 773	8 628	11 216	13 067	10 445
haddock	36 466	31 672	27 507	22 698	22 260
whiting	11 297	9 336	8 426	7 391	8 933
monkfish	9 233	9 233	9 233	9 233	8 115
herring	50 279	50 279	27 185	24 223	29 832
Total	115 048	109 148	83 567	76 612	

(a) Use the information in Table 2.1 to find each of the following:

(i) the species of fish with the highest quota in 2007

..... [1]

(ii) the species of fish with the lowest quota in 2010

..... [1]

(iii) the year in which the quota for cod was the lowest

..... [1]

(iv) the total quota for all five species of fish for 2011.

..... tonnes [1]

(b) The quota for cod, expressed as a percentage of the total for 2007, is 6.8%.

(i) Calculate the quota of cod as a percentage of the total for 2010.

Show your working.

.....% [2]

(ii) Suggest an explanation for the difference in the percentages for 2007 and 2010.

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(c) Suggest how quotas help to maintain sustainable yields of these species of fish in the North Sea.

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(d) Suggest **three** ways, other than fishing quotas, in which fishing practices in the North Sea could be regulated.

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3 .....

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[3]

[Total: 15]

Section B

Answer **all** questions in this section.

Write your answers in the spaces provided.

3 **(a)** State **one** function of each of the following features of a bony fish:

(i) lateral line

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..... [1]

(ii) scales

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..... [1]

(iii) median fins.

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..... [1]

(b) Give an account of the internal features and their functions of a bony fish.

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.....[12]

[Total: 15]

4 **(a)** Inorganic nutrients, including nitrates and phosphates, are important for the growth of primary producers in marine ecosystems.

(i) With reference to an example, explain what is meant by the term *primary producer*.

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..... [3]

(ii) Explain why nitrates and phosphates are important for the growth of primary producers in marine ecosystems.

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(b) Explain the role of upwellings in replenishing nutrients in the upper layers of an ocean.

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(c) Describe the role of decomposers in nutrient recycling in marine ecosystems.

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..... [5]

[Total: 15]

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