CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER			

MARINE SCIENCE **5180/02**

Paper 2 **For Examination from 2014**

SPECIMEN PAPER

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 the work you hand in.

Write in dark blue or black pen.

You may use a pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Section A

Answer **all** questions.

Section B

Answer **both** questions in this section.

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.

For Examiner's Use	
1	
2	
3	
4	
Total	

This document consists of **11** printed pages and **1** blank page.

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Section A

Answer **all** questions in this section

1 Surveys have been carried out to study the stocks of fish in the North Sea, off the coast of Britain. In one recent survey, a trawl net was used to catch fish. Some of the results of this survey are shown in Table 1.1.

Table 1.1

species of fish	catch rate (number of fish caught per hour)
Lemon sole	107
Witch	48
Plaice	35
Cod	19
Haddock	5

[Data adapted from: *Fisheries Science Partnership – Final Report August 2005*]

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

(b) Calculate the mean catch rate for these five species of fish.
Show your working.

Answer .... [2]

[Turn over
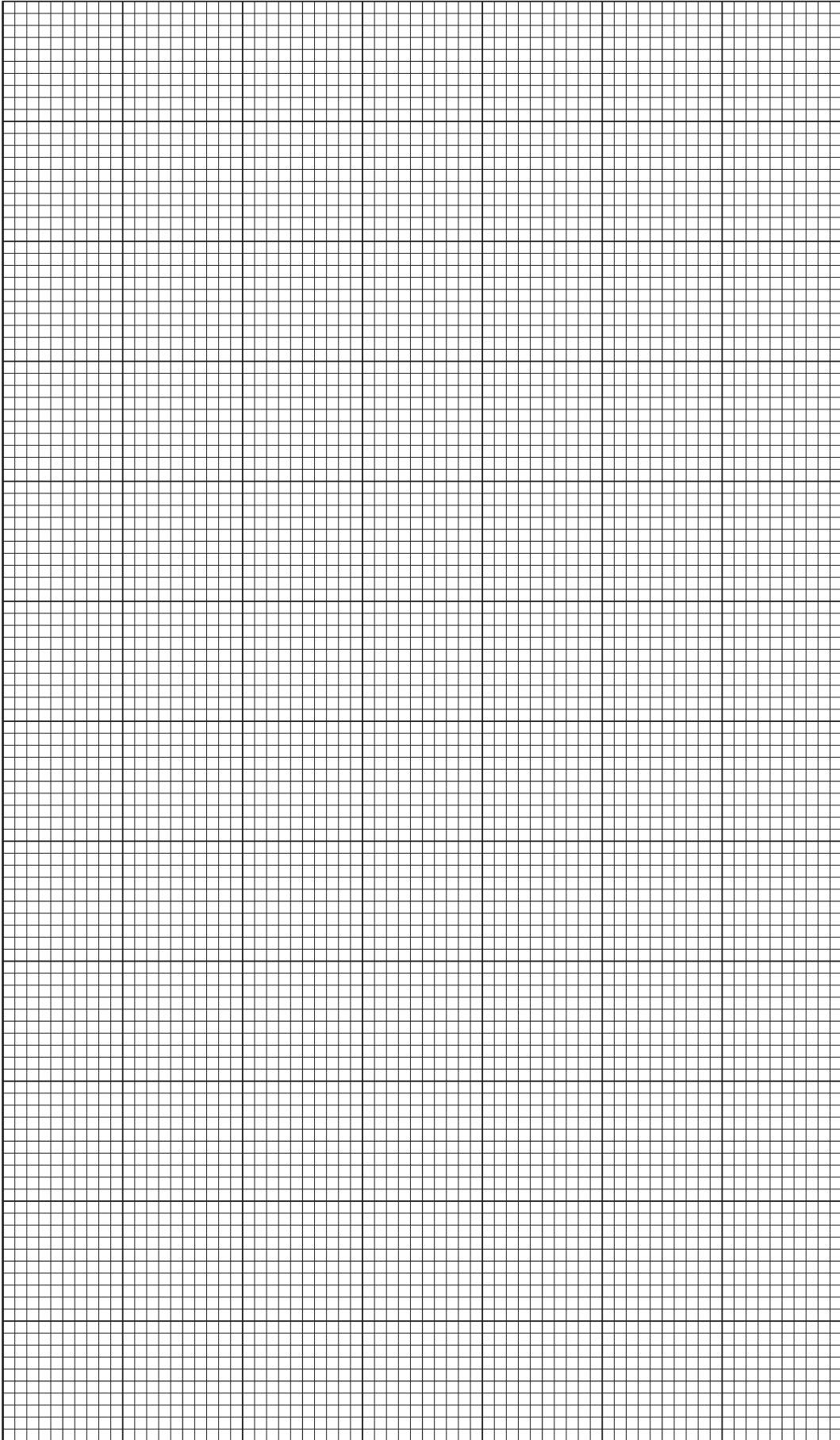
(c) Using the information in Table 1.1, name each of the following.

  (i) The species of fish with the lowest catch rate.

  .... [1]

  (ii) The species of fish with the highest catch rate.

  .... [1]

(d) Suggest **two** reasons for the differences in catch rate.

  1 ....

  ....

  2 ....

  .... [2]

(e) Suggest **two** environmental disadvantages of using a trawl net.

  1 ....

  ....

  2 ....

  .... [2]

[Total: 15]

2 Many different materials are used for the construction of artificial reefs, including concrete blocks, steel pipes and car tyres.

(a) Suggest **three** reasons for the construction of artificial reefs.

1 ....

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2 ....

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3 ....

.... [3]

(b) Old and damaged materials are often used to construct artificial reefs. Table 2.1 shows some products and the types of materials from which they are made that were used to construct 15 artificial reefs in the Indian Ocean.

Table 2.1

reef number	type of product and construction material from which it is made
1	Stone pipes and concrete blocks
2	Steel pipes
3	Steel tower
4	Stone pipes and concrete blocks
5	Stone rubble and steel pipes
6	Concrete blocks
7	Steel balls and steel pipes
8	Stone pipes and rubble
9	Iron and steel railway engine
10	Concrete telephone poles
11	Stone pipes
12	Steel pipes
13	Concrete boxes
14	Concrete blocks
15	Steel girders

 [Turn over

Using the information in Table 2.1, name each of the following.

(i) The **two** types of material that were used most often.

1 ....

2 .... [2]

(ii) **One** type of material that was used rarely.

.... [1]

(c) Many artificial reefs have been constructed in the seas surrounding the United States. Some of these reefs have been constructed using old military hardware, such as tanks.

Table 2.2 gives information about the use of such materials to construct artificial reefs by ten States, from 1994 to 2003.

Table 2.2

State	military hardware used to construct artificial reefs		
	main battle tank	armoured personnel carrier	Sheridan tank
Louisiana	0	40	0
Alabama	106	0	0
Florida	82	0	0
Georgia	55	0	0
South Carolina	18	190	0
Virginia	0	8	18
Maryland	2	24	20
Delaware	2	25	19
New Jersey	26	44	48
New York	0	8	18
Total		339	123

(i) Suggest **two** reasons why old military hardware is a suitable material for the construction of artificial reefs.

1 ....

....

2 ....

.... [2]

(ii) Calculate the total number of main battle tanks used by all ten States.

Answer .... [1]

(iii) Using the information in Table 2.2, name the State responsible for the construction of most reefs from military hardware.

.... [1]

(iv) Sheridan tanks are made from aluminium with foam between layers of aluminium.

Suggest **two** reasons why Sheridan tanks were used least often for the construction of artificial reefs.

1 ....

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2 ....

.... [2]

(v) Suggest why the engines were removed from the tanks before they were sunk to create the artificial reefs.

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.... [3]

[Total: 15]

Section B

Answer **both** questions in this section

3 **(a)** Name four food groups and explain the importance of each group in a healthy diet.

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.... [8]

(b) Explain why fish muscle can contribute to a balanced diet.

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.... [7]

[Total: 15]

4   Crabs, crayfish and lobsters are examples of decapod crustaceans.

   (a) Give an account of the external features of a decapod crustacean.

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   .... [8]

(b) Describe the reproduction and growth of a decapod crustacean.

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.... [7]

[Total: 15]

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