



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE
NAME

CENTRE
NUMBER

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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.



Section A

Answer **all** questions in this section

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- 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.

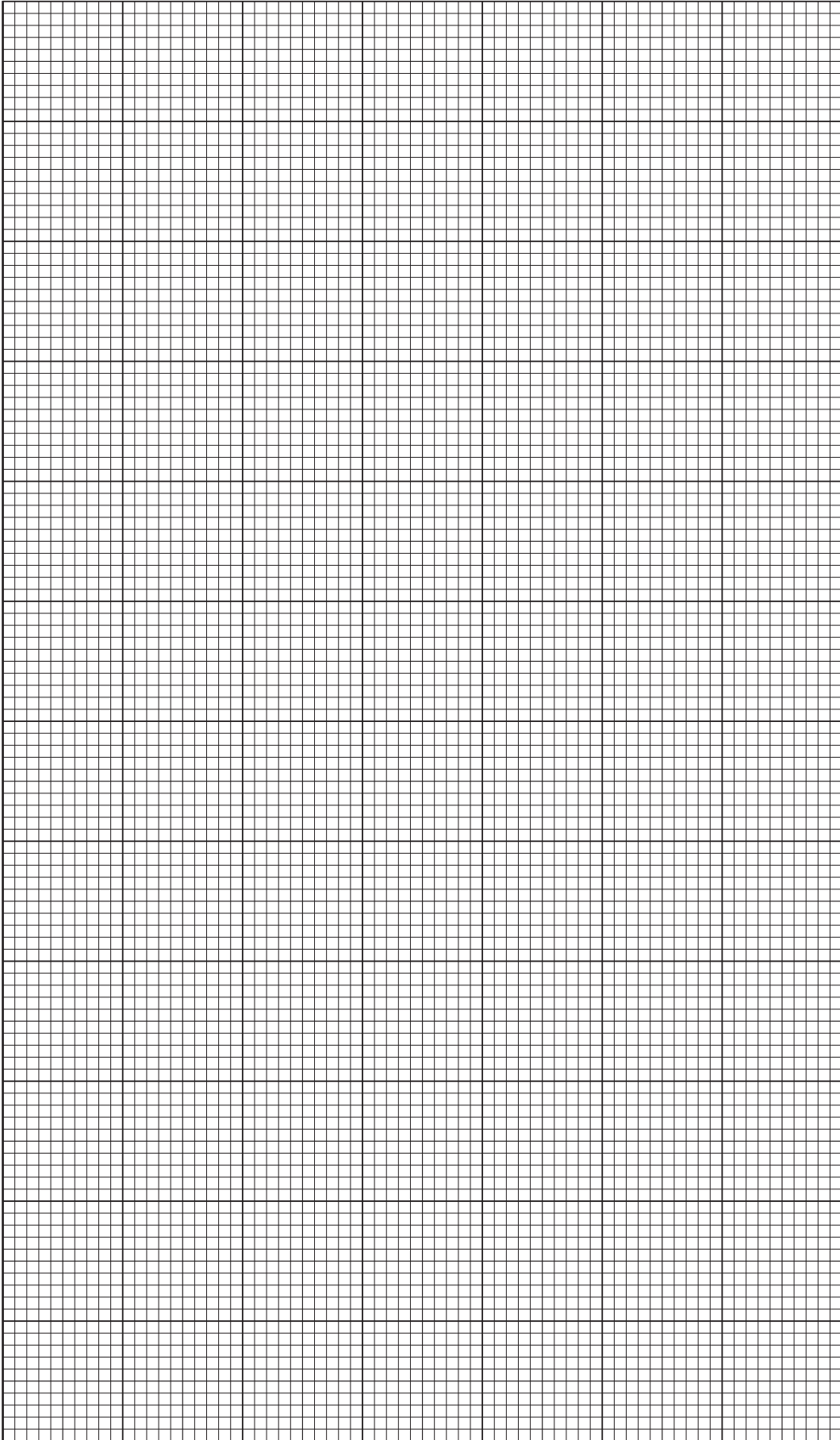
Table 1.1

| 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]



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(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

.....

2

.....

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 |

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

.....

2

..... [2]

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

.....

.....

.....

.....

..... [3]

[Total: 15]

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