



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**MARINE SCIENCE**

**5180/03**

Paper 3

**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.

Answer **all** questions.

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	
5	
<b>Total</b>	

This document consists of **12** printed pages and **2** blank pages.





1 Fig. 1.1 shows a rainbow trout (*Oncorhynchus* sp.).



Fig. 1.1

(a) In the box below, make an accurate drawing, magnified  $\times 1.5$ , of the specimen shown in Fig. 1.1. [4]

(b) (i) On your drawing, label **five** visible, external features. [5]

(ii) The actual length of this specimen is 30 cm. On your drawing, include a scale to show the actual length of the specimen. [1]

(c) Rainbow trout are bony fish. State two features, visible in Fig. 1.1, which are characteristic of bony fish.

1 .....

2 ..... [2]

[Total: 12]

- 2 (a) Fig. 2.1 shows five fish labelled A, B, C, D and E. They are not all shown to the same scale.

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Use the key on the opposite page to identify the fish A to E. Write the letter of each fish in the box next to its scientific name.

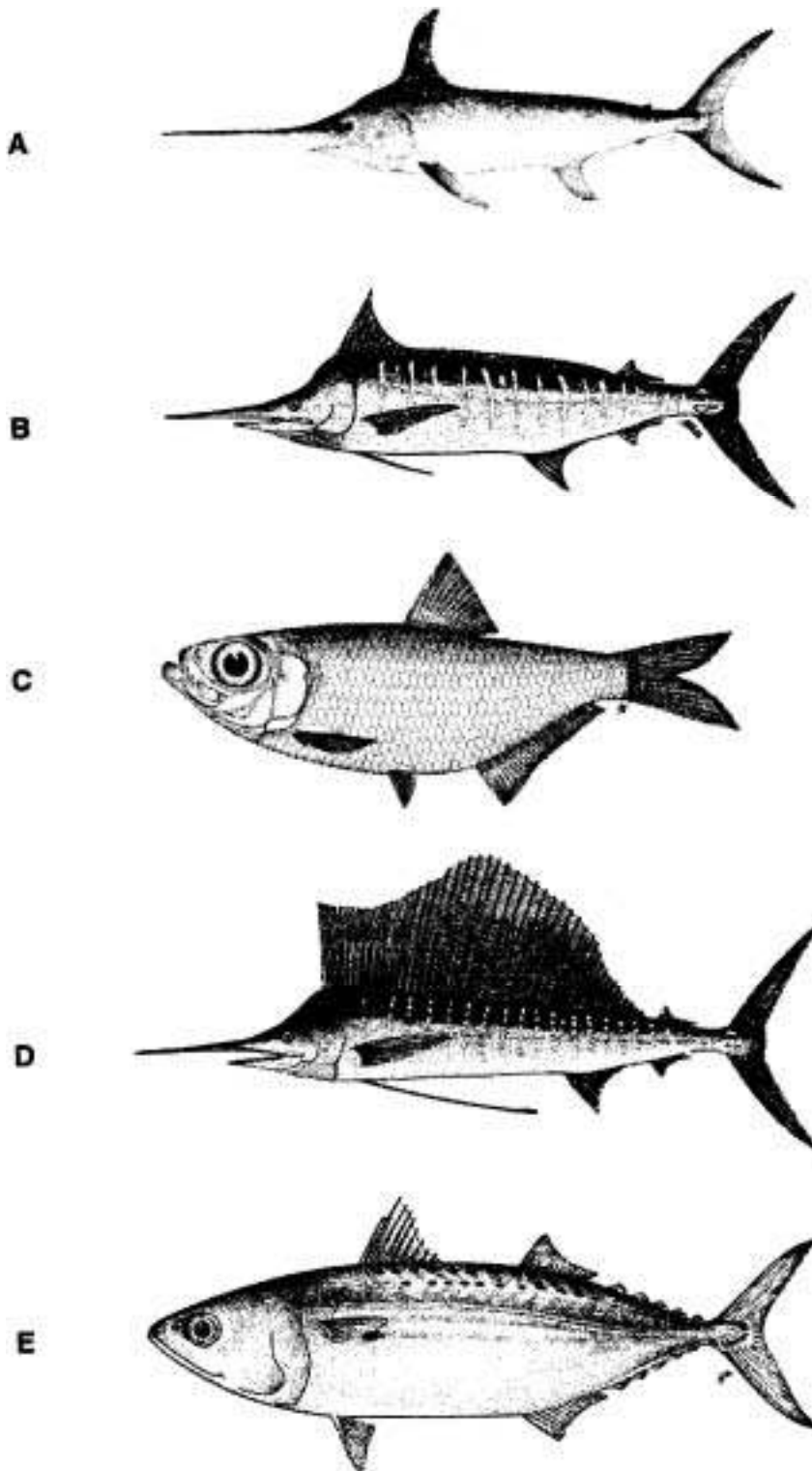


Fig. 2.1

**Key**

- 1 Upper jaw extended beyond lower jaw 2  
 Upper jaw not extended beyond lower jaw 4

- 2 Dorsal fin like a sail *Istiophorus platypterus*   
 Dorsal fin not like a sail 3

- 3 Pelvic fins absent *Xiphias gladius*   
 Pelvic fins present *Makaira nigricans*

- 4 Finlets present *Rastrelliger kanagurta*   
 Finlets absent *Pellona ditchela*

[5]

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- (b) Fig. 2.2 shows two specimens of marine organisms which both belong to the same phylum.

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Sea urchin



Starfish

**Fig. 2.2**

Complete the table below to show **three** visible differences between these two organisms.

sea urchin	starfish

[3]

(c) Fig. 2.3 shows a mollusc shell.



**Fig. 2.3**

(i) Measure and record the length of the shell in Fig. 2.3.

..... [1]

(ii) The actual length of this shell is 14 cm. Calculate the scale (magnification) of the shell in Fig. 2.3.

Show your working.

Answer ..... [2]

**[Total: 11]**

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3 Explain how you find out whether coconut milk contains each of the following food substances.

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(a) Starch

.....  
.....  
.....  
.....  
..... [2]

(b) Protein

.....  
.....  
.....  
.....  
..... [2]

(c) Non-reducing sugar

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.....  
..... [6]

**[Total: 10]**

- 4 A student carried out an investigation into the relationship between the length and mass of a sample of 8 fish. He measured the fork length and mass of each fish. His record of results is shown in Fig. 4.1.

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fish 1 = 19.3 cm, 18.0 g	fish 2 = 11.7 cm, 27.5 g	fish 3 = 13.7 cm, 28.0 g
fish 4 = 6.2 cm, 5.5 g	fish 5 = 7.6 cm, 12.5 g	fish 6 = 8.0 cm, 7.5 g
fish 7 = 7.0 cm, 12.0 g	fish 8 = 7.2 cm, 5.0 g	

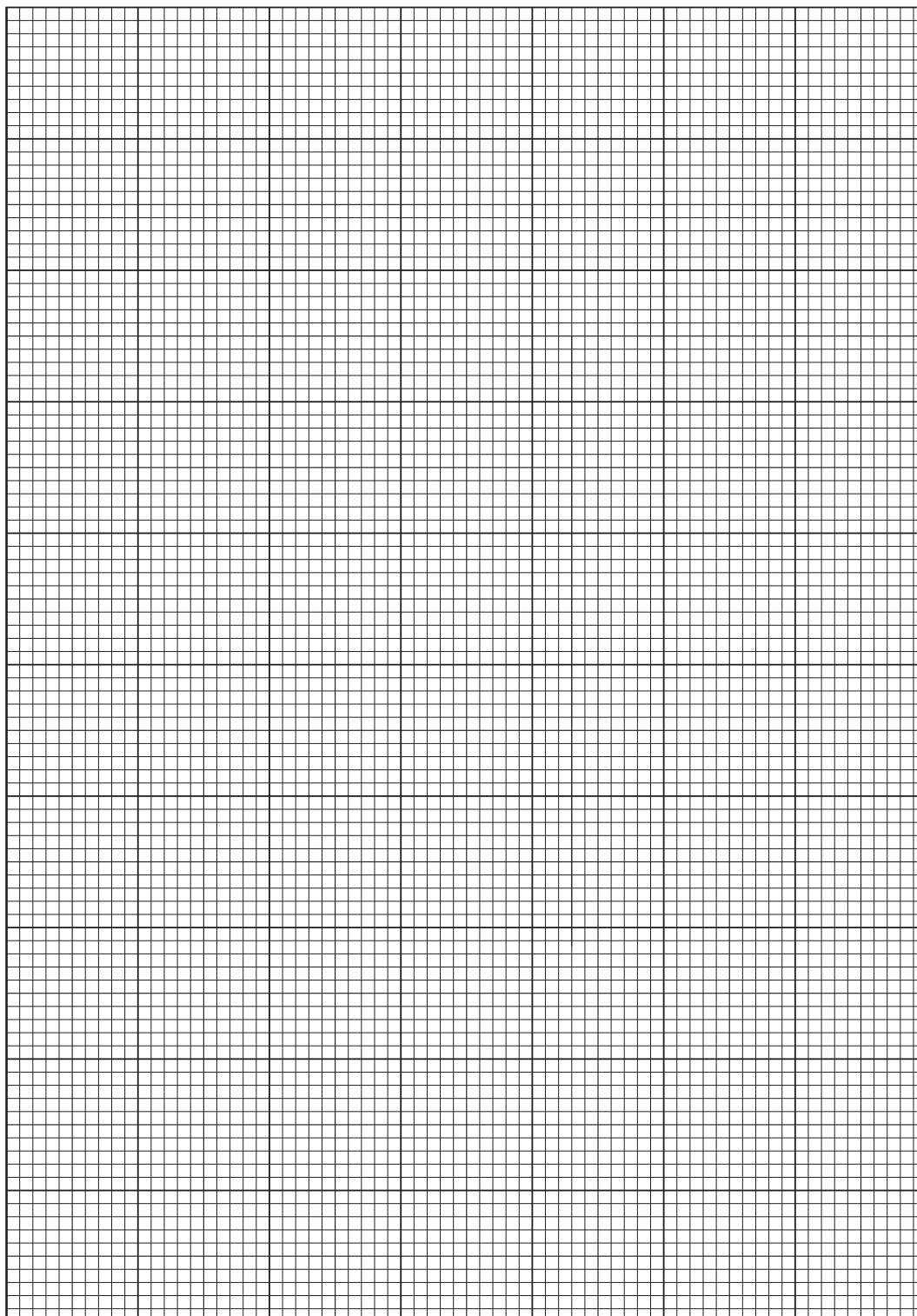
**Fig. 4.1**

- (a) In the space below, prepare a suitable table of these results.

[3]

(b) Plot a graph of these results to show the relationship between length and mass.

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[4]

(c) What conclusion can be drawn from these results?

.....  
.....

[1]

[Total 8]

- 5 Ghost crabs are common on sandy beaches of many countries. Ghost crabs live in burrows in the sand, which can be seen as small holes on the surface of the sand.

A student noticed that there seemed to be more ghost crab burrows higher up on a beach than there were further down, close to the sea.

She formed the following hypothesis:

The numbers of ghost crabs increases as the distance away from the water's edge increases.

Design an investigation which you could carry out to test this hypothesis.

Your answer should be given under the following headings.

- Method, including any apparatus required.
- Presentation and interpretation of results.
- Limitations of your method and suggestions for further work to extend the study.



