Cambridge Assessment International Education

Cambridge O Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

1115344940

MARINE SCIENCE **5180/03**

Paper 3 Practical Assessment Paper **October/November 2022**

1 hour 30 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages. Any blank pages are indicated.

1 Fig. 1.1 shows an image of a red snapper.

Fig. 1.1

(a) (i) In the space below make a large, accurate drawing of the specimen in Fig. 1.1.

Do **not** draw all the scales.

[4]

(ii) Label the following features on your drawing:

- operculum
- lateral line
- a named median fin.

[3]

(b) (i) The actual measured total length of the fish is 36.2 cm.

Add a scale line to your drawing. [2]

(ii) Measure and record the length of the image of the red snapper in Fig. 1.1.

..... cm [1]

(iii) Calculate the magnification of the image in Fig. 1.1 using the formula

$$\textit{magnification} = \frac{\textit{image size}}{\textit{actual size}}.$$

Show your working.

..... [2]

[Total: 12]

2 Fig. 2.1 shows two different species of marine organism, **A** and **B**. They are not drawn to scale.

A **B**

Fig. 2.1

(a) **(i)** Name the phylum both organisms belong to.

..... [1]

(ii) State the class each organism belongs to.

organism **A** .....

organism **B** .....

[2]

(b) Table 2.1 refers to features of organism **A** and organism **B**.

If the feature is present place a tick (✓) in the box. If the feature is absent place a cross (✗) in the box.

Table 2.1

feature	**organism A**	**organism B**
external shell		
eyes		
foot		
suckers		
antennae present on head		

[5]

[Total: 8]

3 **(a)** A student investigates how sediment particle size distribution changes along a shore.

Describe a suitable method to investigate the sediment particle sizes from the shore.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(b) Shells are collected from two areas of this shore.

Describe a practical method to find the mean density of the shells from each area.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

[Total: 10]

4 A student investigates the distribution of four species of marine organisms at two different locations, **P** and **Q**.

Here is the page from their notebook.

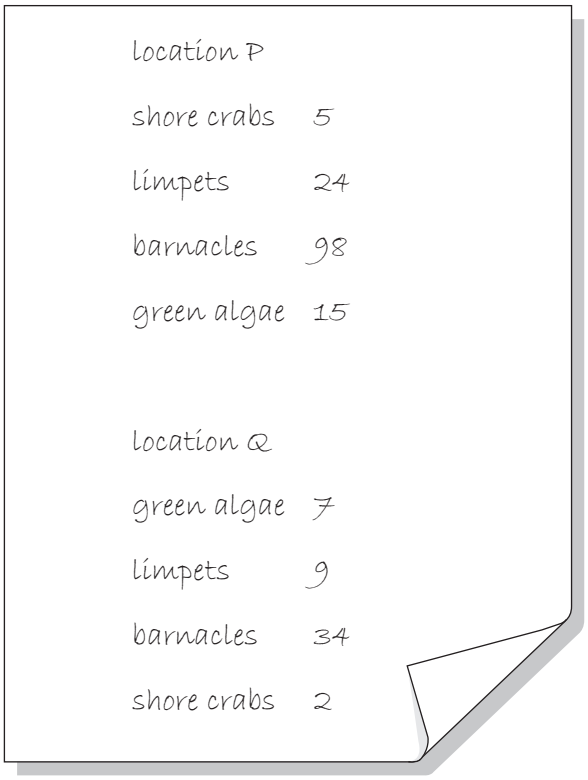
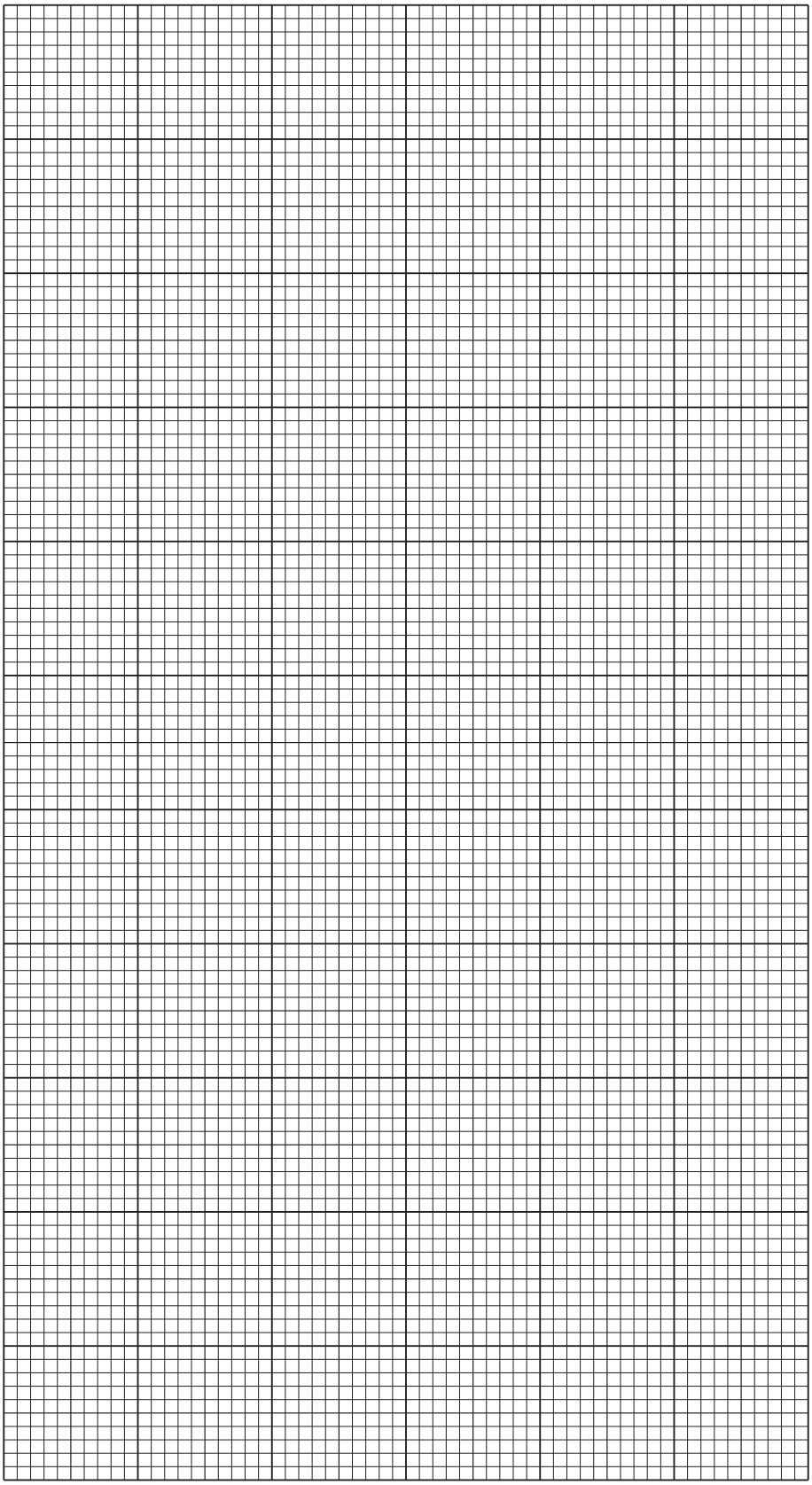


Fig. 4.1

(a) Draw a table of results for the data shown in Fig. 4.1.

[4]

(b) Plot a bar graph of this data.



[5]

(c) Describe the difference in biodiversity between the two locations.

.....

.....

.....

..... [2]

[Total: 11]

5 A student notices that the mean length of mussels changes along a mussel bed. Part of the mussel bed is shown in Fig. 5.1. A single mussel is shown in Fig. 5.2.

The student makes the following hypothesis:

Faster current speed will increase the mean length of mussels growing in a mussel bed.

Fig. 5.1

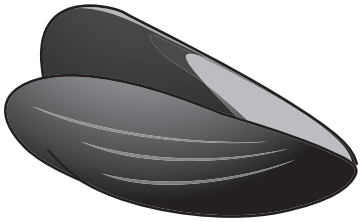


Fig. 5.2

(a) Design and describe an investigation which you could carry out to test this hypothesis. Use the headings given to structure your answer.

- Method, including all the equipment needed and a safety precaution
- Presentation and analysis of the results

Method, including all the equipment needed and a safety precaution

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Presentation and analysis of the results

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[14]

(b) Describe the limitations of your method and suggest improvements. Suggest further work to extend the investigation.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

[Total: 19]

BLANK PAGE