Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

7550070745

MARINE SCIENCE **5180/03**

Paper 3 Practical Assessment Paper **October/November 2018**

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 pen.
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.

Answer **all** questions.
Write your answers in the spaces provided on the Question Paper.

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 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.

This document consists of **15** printed pages and **1** blank page.

CAMBRIDGE International Examinations

Answer **all** the questions in the spaces provided.

1 Fig. 1.1 shows a whitetip reef shark, *Triaenodon obesus*, found near coral reefs.

Fig. 1.1

(a) In the space below, make an accurate drawing of the specimen, to the same scale as Fig. 1.1.

[4]

(b) Label the following on your drawing:

- the first dorsal fin
- a gill slit
- a pelvic fin.

[3]

(c) The actual length of the fish in Fig. 1.1 is 109 cm.

(i) On your drawing, include a suitable scale line to show the actual length of the specimen. [1]

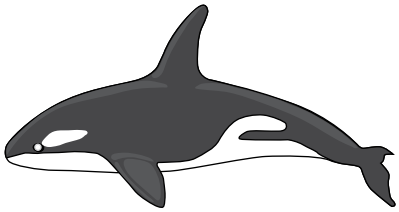
(ii) Calculate the magnification of the specimen shown in Fig. 1.1 to two decimal places.

Show your working.

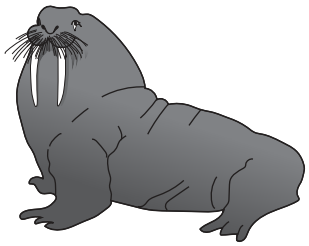
X .....
[2]

[Total: 10]

2 **(a)** Fig. 2.1 shows six marine mammals. The images are not drawn to the same scale.



A



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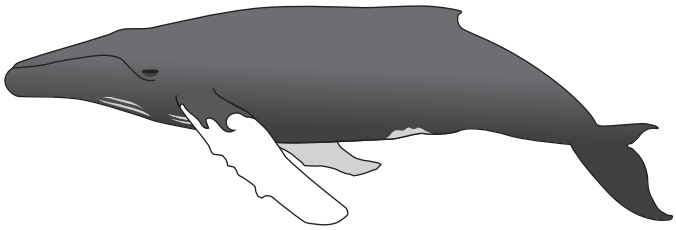

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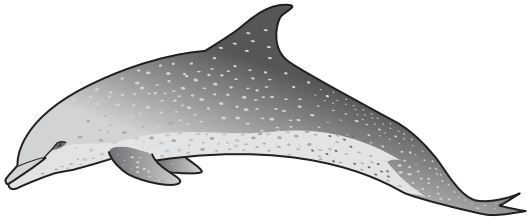

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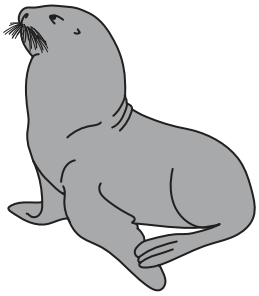

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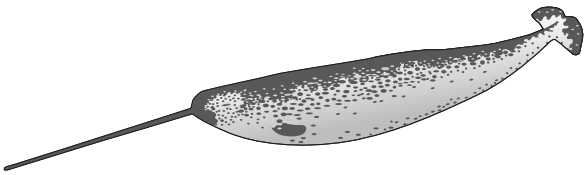

F

Fig. 2.1

Use the dichotomous key below to identify each of the marine mammals shown in Fig. 2.1. For each mammal, write the letter next to the description.

1) Mammal has hairs around their nose. .....go to 3)

   Mammal does not have hairs around their nose. .....go to 2)

2) Mammal has spots all over their body. .....go to 4)

   Mammal does not have spots all over their body. .....go to 5)

			animal letter
3)	Mammal has paired long tusks.	*Odobenus rosmarus*	.....
	Mammal does not have paired long tusks.	*Eumetopias jubatus*	.....
4)	Mammal has a single long tusk.	*Monodon monoceros*	.....
	Mammal does not have a single long tusk.	*Stenella frontalis*	.....
5)	Mammal has a white patch behind their eye.	*Orcinus orca*	.....
	Mammal does not have a white patch behind their eye.	*Megaptera novaeangliae*	.....

[4]

[Turn over

(b) Fishing boats can be built using wood, fibreglass or aluminium. Table 2.1 shows the results table for an investigation into the densities of these materials.

Table 2.1

material	mass /g	volume /cm^3	density (mass ÷ volume)
aluminium	76	.....	.....
fibreglass (GRP)	.....	20	.....
coconut wood	.....	36	0.7

(i) State the unit of density. ..... [1]

(ii) Fig. 2.2 shows the mass of the sample of fibreglass and coconut wood.

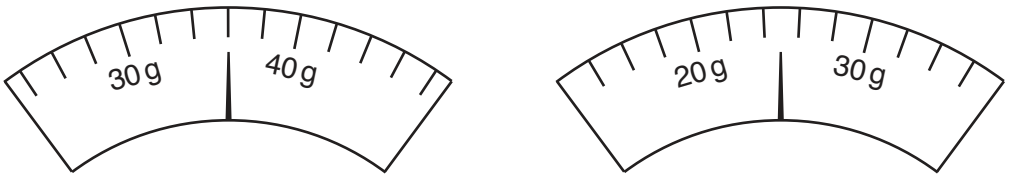

Fig. 2.2

Read the scales shown in Fig. 2.2. Record the values for the mass of each material in Table 2.1. [2]

(iii) The volume of each material was found by placing the sample into 50 cm^3 of water in a measuring cylinder. The change in volume in the measuring cylinder is equal to the volume of the sample.

Fig. 2.3 shows the results for aluminium.

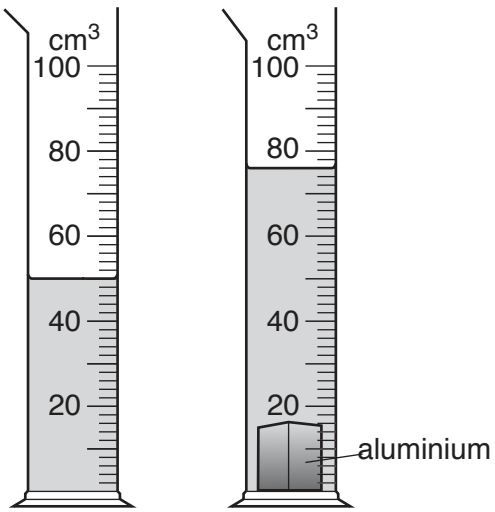

Fig. 2.3

Use Fig. 2.3 to calculate the volume of the aluminium.

Record your answer in Table 2.1. [1]

(iv) The equation for density is:

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Calculate the density of each material. Record your answers in Table 2.1. [1]

(v) State which material is the most dense.

.....[1]

(c) Fig. 2.4 shows a piece of equipment that a student made to compare the densities of sea water samples.

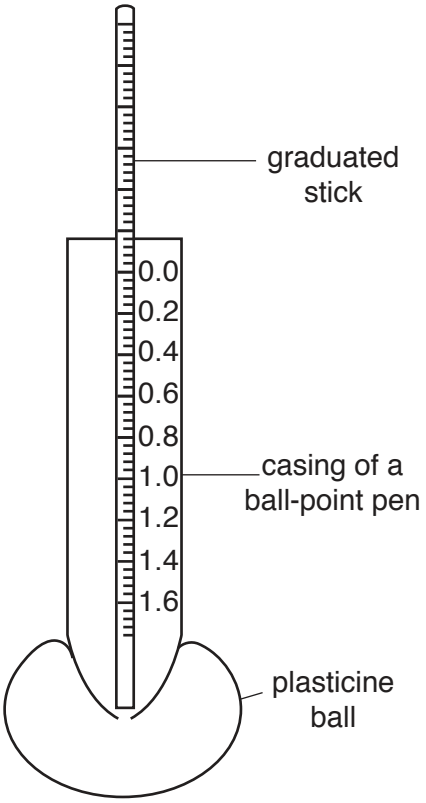

Fig. 2.4

(i) State the name of the equipment shown in Fig. 2.4.

.....[1]

(ii) Describe how this equipment could be used to compare the densities of two sea water samples.

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.....[2]

[Total: 13]

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3 Fig. 3.1 shows a cross-section of a sandy shore.

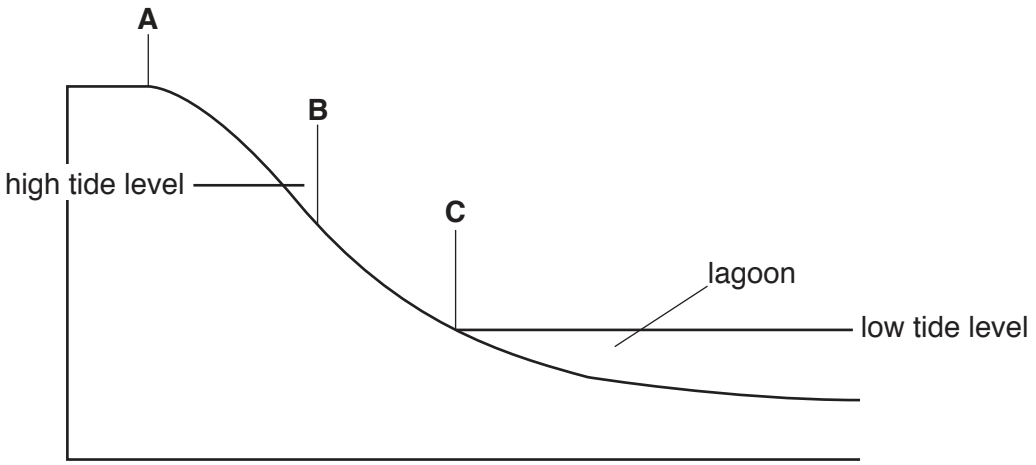

Fig. 3.1

(a) (i) Describe how you would find the percentage water content of sand from areas **A**, **B** and **C** at low tide.

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.....[4]

(ii) Suggest how the percentage water content of sand might affect the type of organisms found at **A**, **B** and **C**.

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.....[3]

(b) Fig. 3.2 shows a scale from an Atlantic salmon caught at the end of 2016.

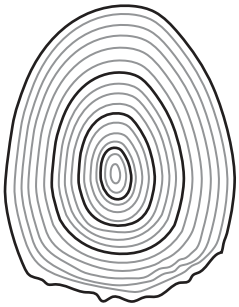


Fig. 3.2

(i) State the age of the fish. ..... years [1]

(ii) State in which year the fish hatched. ..... [1]

(iii) Suggest in which year the fish grew fastest. ..... [1]

[Total: 10]

[Turn over

4 The rate of photosynthesis in an aquatic plant can be estimated by counting the number of oxygen bubbles produced in one minute. Fig. 4.1 shows the equipment set up for this investigation.

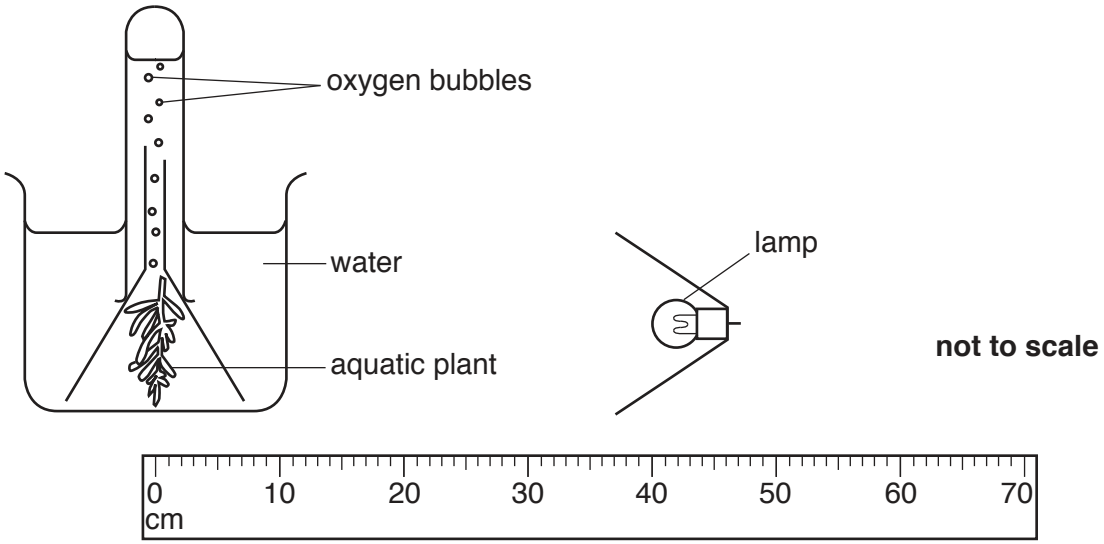


Fig. 4.1

The number of oxygen bubbles produced in one minute was counted with the lamp positioned 40 cm from the aquatic plant, as shown in Fig. 4.1.

This was repeated with the lamp different distances from the aquatic plant.

The results are shown in the student's notebook in Fig. 4.2.

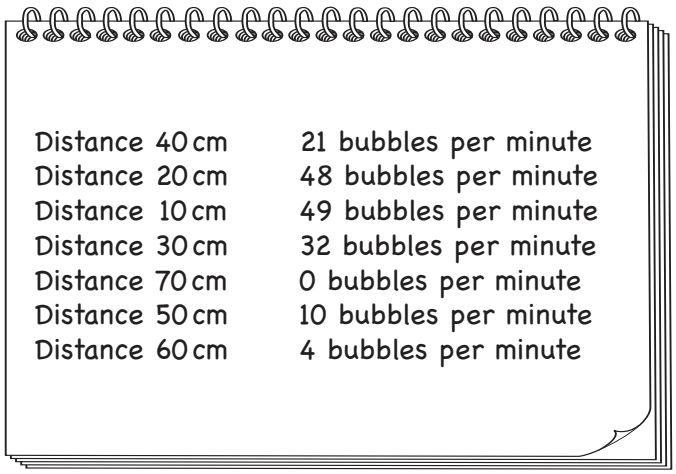
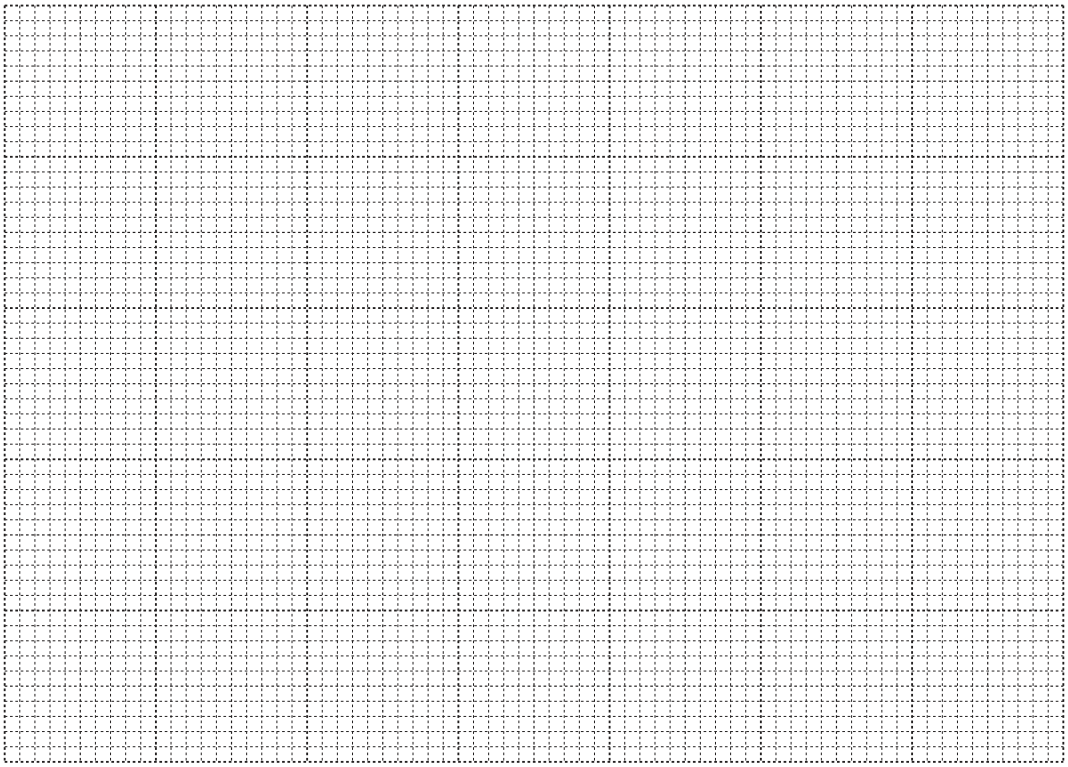


Fig. 4.2

(a) Draw a table of results for the data shown in Fig. 4.2. In your table, rank the distance from lowest to highest.

[4]

(b) Draw a line graph of the data from your table.



[4]

(c) State the conclusion that can be made from this investigation.

.....

.....[1]

[Total: 9]

5 A student noticed that there were fewer ghost crab burrows on the tourist area of a beach than the part of the beach the tourists could not reach. They decided to carry out an investigation.

The student formed the following hypothesis.

The number of ghost crab burrows is greater where there is less human activity.

(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.

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Presentation and analysis of the results.

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[13]

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

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.....[5]

[Total: 18]