

Cambridge International Examinations

Cambridge Ordinary Level

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

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.



Answer all the questions in the spaces provided.

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

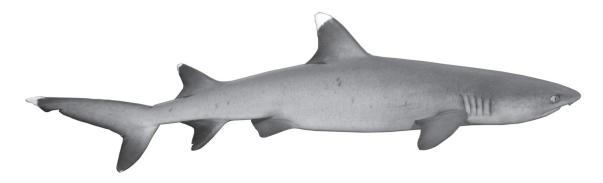


Fig. 1.1

(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	e 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 specime	n. [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.

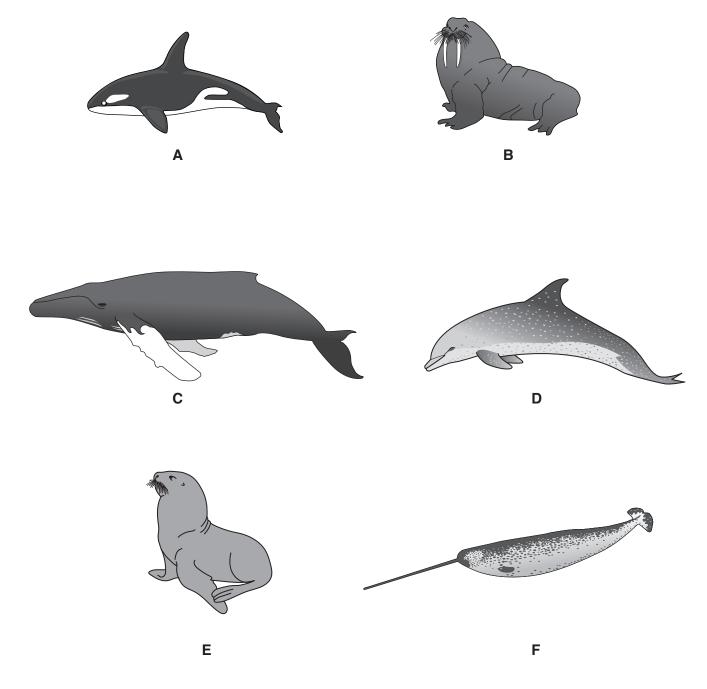


Fig. 2.1

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 no	sego to 2)	
2)	Mammal has spots all over their body	go to 4)	
	Mammal does not have spots all over their bo	odygo 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. <i>Megaptera novaeangliae</i>	[4]

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

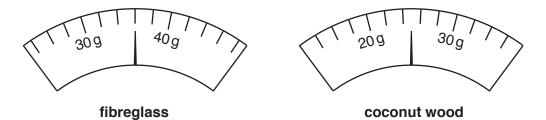


Fig. 2.2

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 cm³ 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.

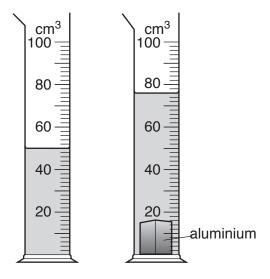


Fig. 2.3

	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:	
	$density = \frac{mass}{volume}$	
	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.

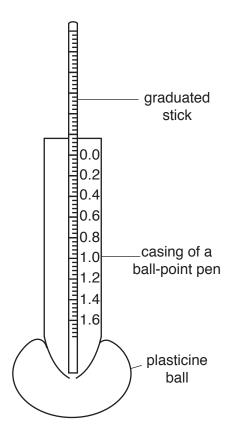


Fig. 2.4

(1)	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.
	[2]

[Total: 13]

BLANK PAGE

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

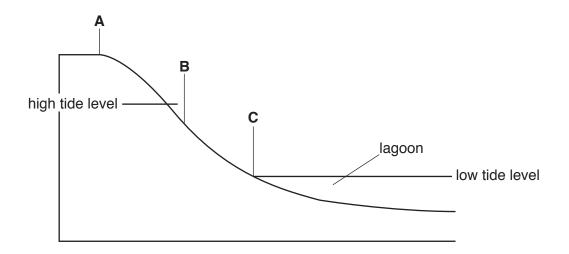


Fig. 3.1

a)	(i)	Describe how you would find the percentage water content of sand from areas A, B and C at low tide.
		[4]
	(ii)	Suggest how the percentage water content of sand might affect the type of organisms found at A , B and C .

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

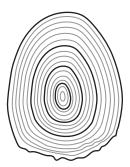


Fig. 3.2

(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]

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.

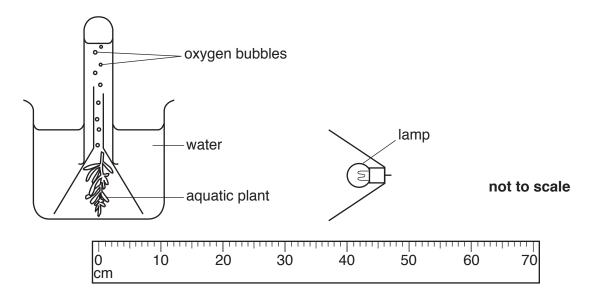


Fig. 4.1

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.

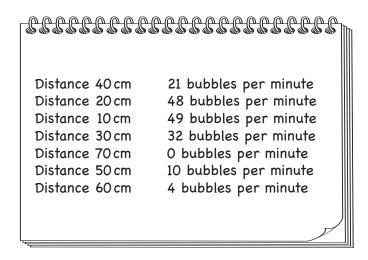
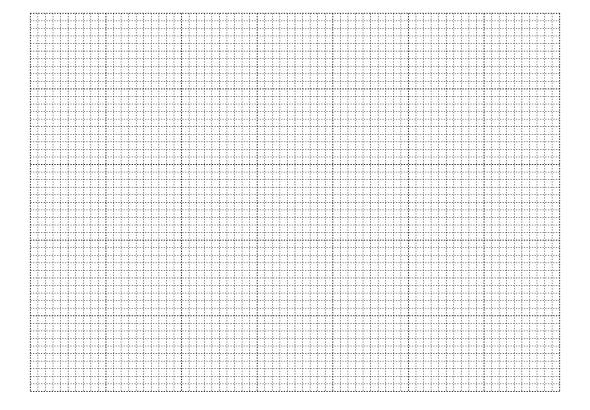


Fig. 4.2

(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]

State the conclusion that can be made from this investigation.		de from this investigation.	on that can be made	State the conclusi	(c)
[1	[1				
[Total: 9	[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.

Ī		
•		
•		
•		
	Describe the limitations of your method. Suggest further work to extend and impro	ΟV
[ii	Describe the limitations of your method. Suggest further work to extend and impronvestigation.	ΟV
E iii	Describe the limitations of your method. Suggest further work to extend and impronvestigation.	OV(
[ii	Describe the limitations of your method. Suggest further work to extend and impronvestigation.	0V6
	Describe the limitations of your method. Suggest further work to extend and impronvestigation.	OV6
	Describe the limitations of your method. Suggest further work to extend and impronvestigation.	OV(
i	nvestigation.	
i	Describe the limitations of your method. Suggest further work to extend and impronvestigation.	
i	nvestigation.	
i	nvestigation.	OV(
i	nvestigation.	OV(
i	nvestigation.	
i	nvestigation.	
i	nvestigation.	OV(
i	nvestigation.	

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.