

CANDIDATE
NAME

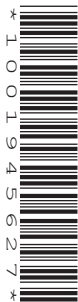
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CENTRE
NUMBER

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CANDIDATE
NUMBER

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MARINE SCIENCE

5180/03

Paper 3 Practical Assessment Paper

October/November 2016

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 **12** printed pages.

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

- 1 Fig. 1.1 shows a turbot, a demersal fish found in the North Atlantic and the Mediterranean Sea.

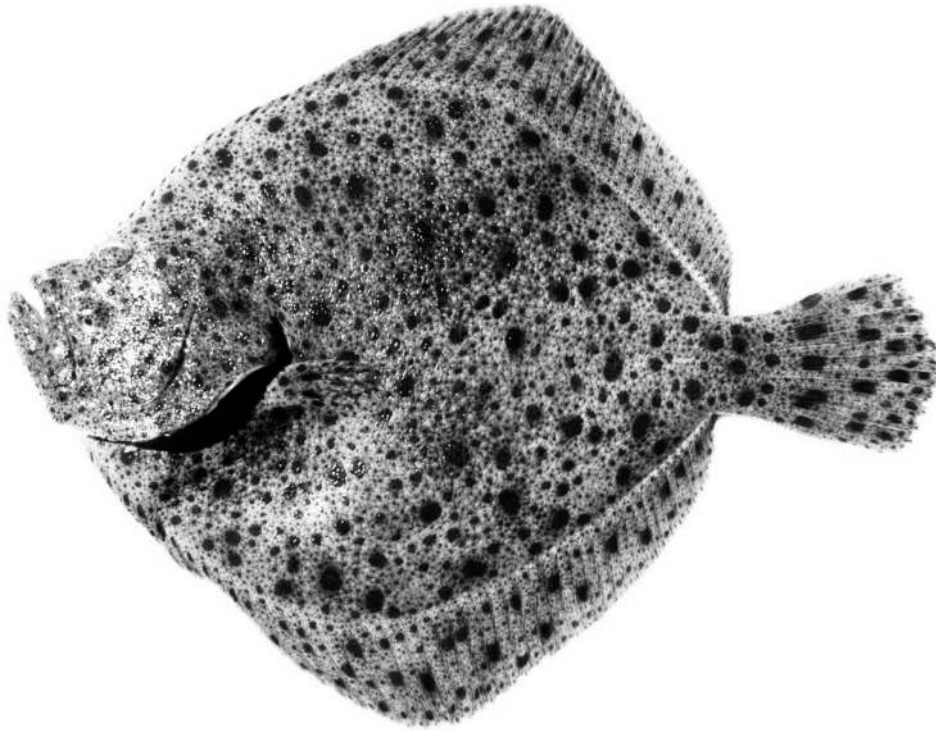


Fig. 1.1

(a) In the space below, make a large, accurate drawing of the specimen shown in Fig. 1.1. Do not show the markings of this fish.

[4]

(b) On your drawing, label each of the following features.

- caudal fin
- dorsal fin
- operculum

[3]

(c) The actual total length of the specimen in Fig. 1.1 is 25 cm.

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

(ii) Calculate the magnification of the specimen shown in Fig. 1.1.

Show your working.

magnification = [2]

[Total: 10]

- 2 (a) Fig. 2.1 shows two organisms from the marine environment.



crab

sea cucumber

Fig. 2.1

- (i) Name the phylum (major group) to which each of these organisms belongs.

crab

sea cucumber

[2]

- (ii) Table 2.1 refers to external features of the crab and of the sea cucumber.

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

Table 2.1

feature	crab	sea cucumber
has a jointed exoskeleton		
has a double row of tube feet		
has a mouth surrounded by tentacles		
has four pairs of walking legs		
has a soft, cylindrical body		

[5]

(b) Fig. 2.2 shows five shells, labelled **A** to **E**, of the common cockle, a bivalve mollusc.

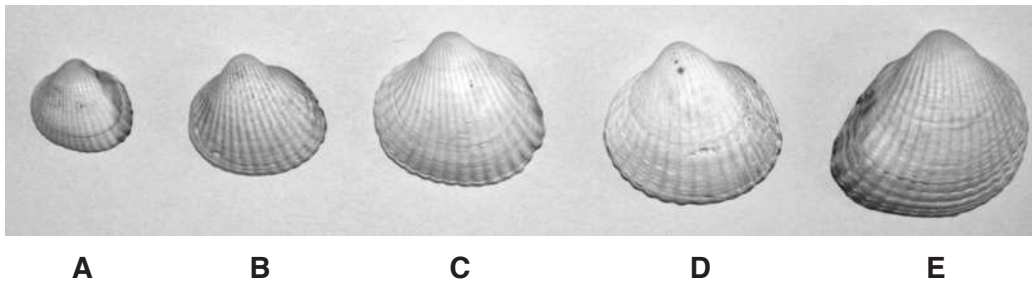


Fig. 2.2

(i) Measure the maximum width of each shell.

Record your results in Table 2.2.

Table 2.2

shell	maximum width/mm
A	
B	
C	
D	
E	

[2]

(ii) Use your results to calculate the mean width of these five shells.

Show your working.

mean width = [3]

[Total: 12]

3 Giving experimental details, including the colour changes, explain how you would test a sample of fresh mango juice for the presence of each of the following.

(a) protein

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

(b) reducing sugar

.....
.....
.....
.....
.....
.....
..... [3]

(c) non-reducing sugar

.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

[Total: 9]

Question 4 starts on Page 8

- 4 An investigation was carried out to study the relationship between the diameter of the trunk and the height of six palm trees. The results of this investigation are shown in Fig. 4.1.

diameter of trunk = 24 cm, height of tree = 6.5 m
diameter of trunk = 35 cm, height of tree = 10.2 m
diameter of trunk = 12 cm, height of tree = 3.4 m
diameter of trunk = 20 cm, height of tree = 6.0 m
diameter of trunk = 30 cm, height of tree = 7.8 m
diameter of trunk = 15 cm, height of tree = 4.3 m

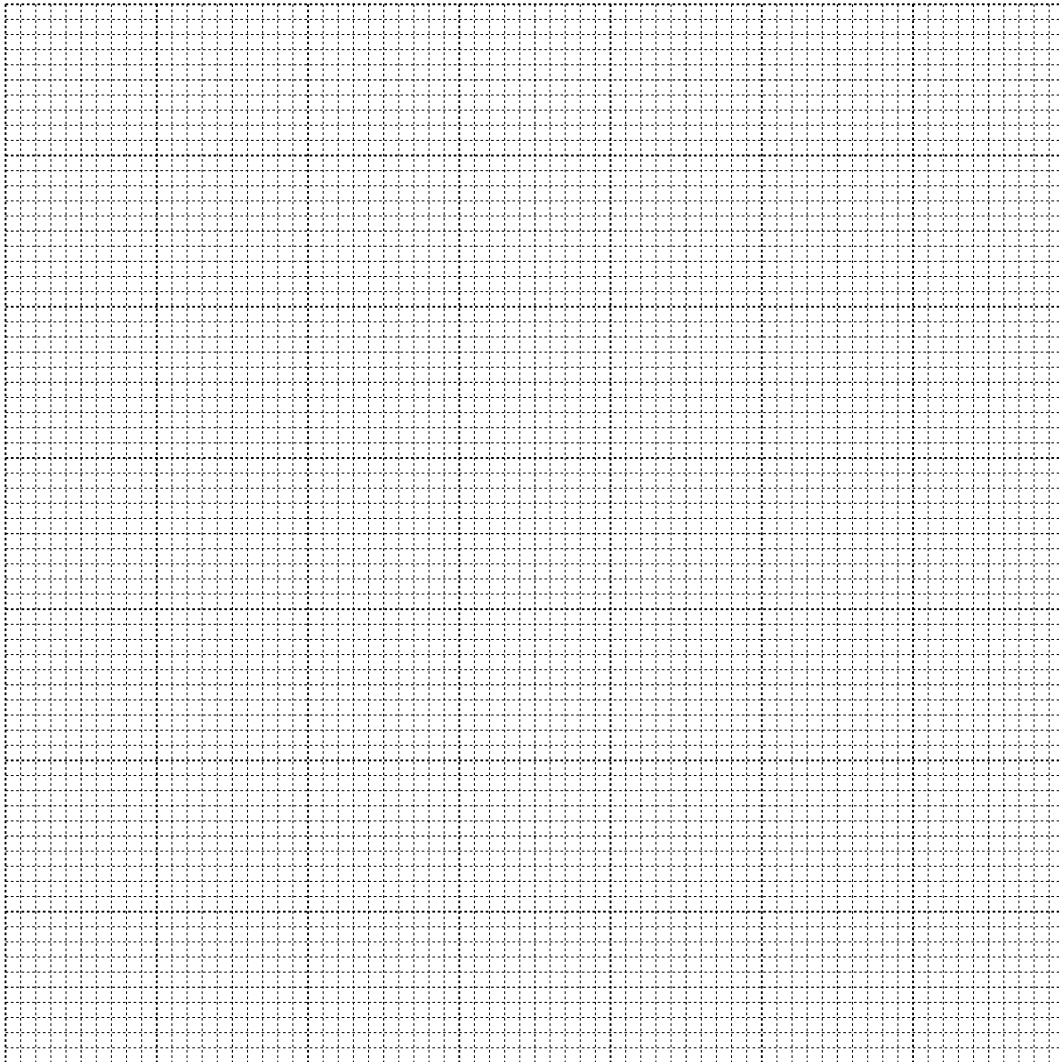
Fig. 4.1

- (a) In the space below, prepare a table of these results. In your table, rank the diameter of the trunks from smallest to largest.

[4]

(b) Plot a graph of these results to show the relationship between the diameter of the trunk and the height of these trees.

Draw a line of best fit through the points on your graph.



[4]

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

.....
..... [1]

[Total: 9]

