



Cambridge O Level

CANDIDATE
NAME

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MARINE SCIENCE

5180/01

Paper 1 Structured

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 80.
- The number of marks for each question or part question is shown in brackets [].

This document has **16** pages. Any blank pages are indicated.

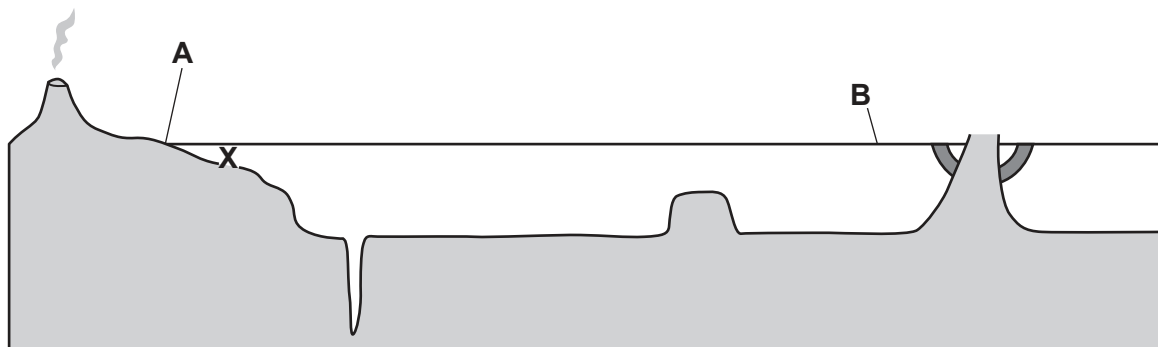
1 Fig. 1.1 shows a world map.



Fig. 1.1

(a) Label the Indian Ocean and the Pacific Ocean on Fig. 1.1. [2]

(b) Fig. 1.2 shows a cross-section of an ocean.



Not to scale

Fig. 1.2

- (i) Draw label lines on Fig. 1.2 to identify each of the following features:
- continental slope
 - abyssal plain
 - coral atoll.

[3]

(ii) Point A on Fig. 1.2 shows where a river enters the ocean.

Explain the effect of the river on the salinity of the sea water at point A compared to the salinity of the sea water at point B.

.....

.....

.....

..... [2]

(iii) State **one** factor that changes the salinity of the water at point **B** in Fig. 1.2.

..... [1]

(c) Fisheries resources at **X** are higher than in the open ocean.

Suggest reasons for this.

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

[Total: 10]

2 Fig. 2.1 shows a sea cucumber.

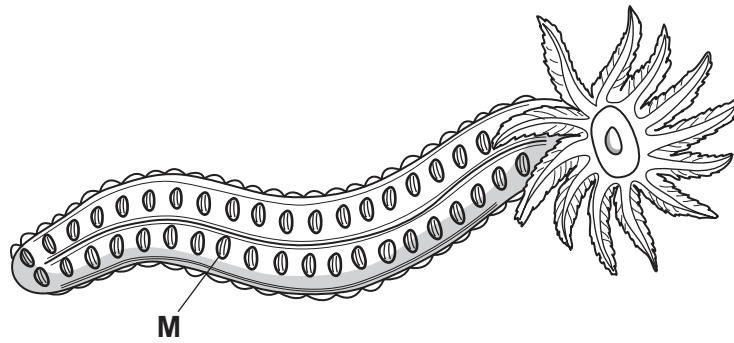


Fig. 2.1

(a) (i) State the group that sea cucumbers belong to.

..... [1]

(ii) State the function of feature **M**.

..... [1]

(iii) Describe the reproduction of sea cucumbers.

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

(b) Sea cucumbers can be a valuable fisheries resource.

Fig. 2.2 shows the catch in arbitrary units (a.u.) of different value sea cucumbers for a fishery between 2000 and 2003.

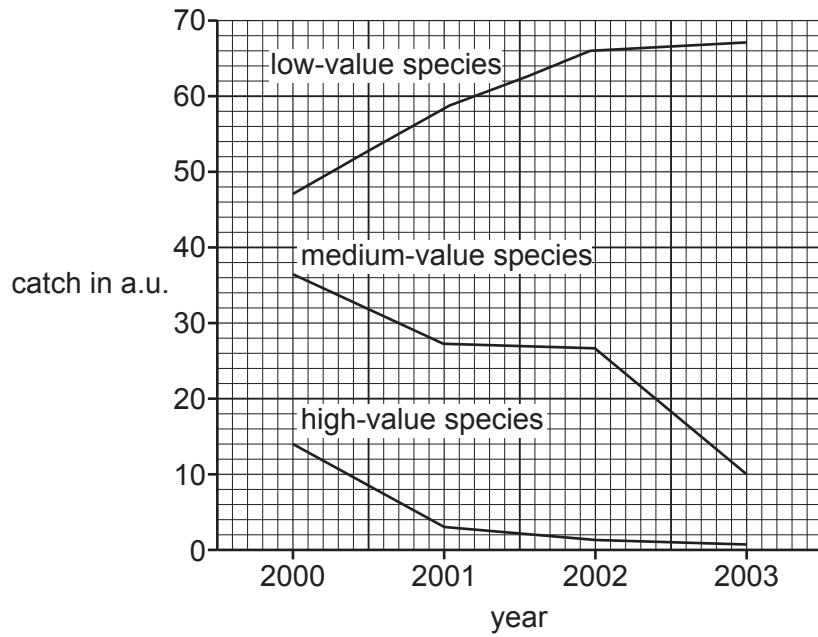


Fig. 2.2

(i) Use the graph in Fig. 2.2 to calculate the reduction in catch of high value species between 2000 and 2003.

..... a.u. [1]

(ii) Use Fig. 2.2 to describe the condition of this fishery in 2003.

Support your answer with information from the graph.

.....

 [2]

(iii) Minimum catch size for a species is one management practice used for a fishery. Suggest **two other** management practices that should be used for this fishery **and** explain the benefit of each.

1

.....

.....

.....

2

.....

.....

[4]

(c) Fig. 2.3 shows how the price of one species of sea cucumber varies by size.

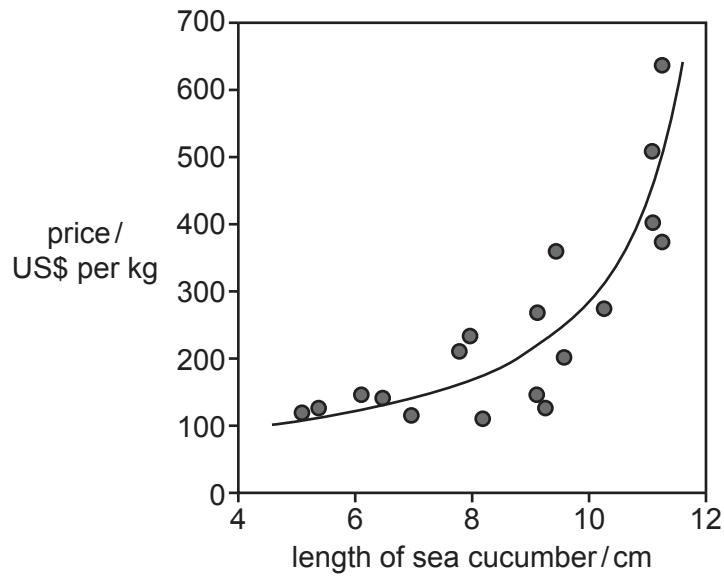


Fig. 2.3

(i) State the relationship between the length and the price of this species of sea cucumber.

.....

..... [2]

- (ii) Compare the long-term impact on the population of a minimum catch size limit of 7 cm to a minimum catch size limit of 10 cm.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 17]

3 Fig. 3.1 shows a pyramid of biomass for a food chain.

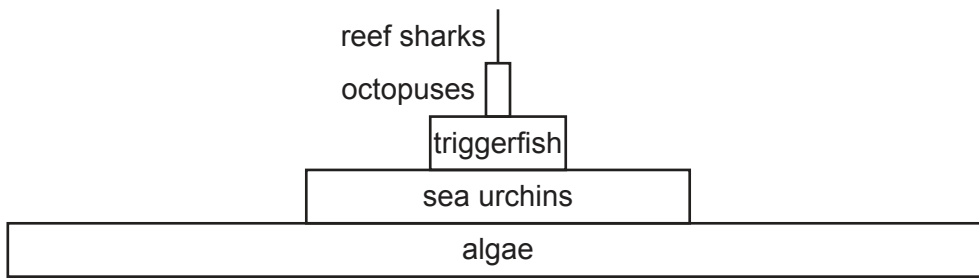


Fig. 3.1

(a) (i) State the number of trophic levels in this food chain. [1]

(ii) State the name of the organism on the fourth trophic level.
 [1]

(iii) State the names of **all** carnivores in this food chain.

 [1]

(iv) Explain why the biomass of algae is not the same as the biomass of sea urchins.

 [3]

(b) Humans harvest sea urchins from this food chain.
 Explain the impact harvesting of sea urchins has on populations of algae and triggerfish.
 algae

 triggerfish
 [2]

The harvested sea urchins are eaten to provide protein.

(c) (i) Explain the function of protein in the diet.

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

(ii) State the name of the smaller unit that proteins are made from.

..... [1]

(iii) State the name of **two** other essential components of a balanced diet.

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

[Total: 11]

4 (a) Bait fish are used in pole and line fishing.

(i) Outline how bait fish are caught.

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

(ii) Describe how bait fish are kept after collection.

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

(iii) Describe how bait fish are used for pole and line fishing for tuna.

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

(b) Describe how tuna are handled after capture to reduce spoilage.

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

(c) State **three** methods of preservation used for tuna.

1

2

3

[3]

(d) Preservation reduces rancidity.

Explain what is meant by rancidity.

.....

.....

.....

..... [2]

[Total: 15]

5 Table 5.1 shows features that may be present in wet or dry monsoons.

(a) Complete Table 5.1 to describe typical conditions during a wet and a dry monsoon.

Use the four words given in the box. Each word may be used once, more than once or not at all.

low offshore onshore high

Table 5.1

feature	wet monsoon	dry monsoon
wind direction
temperature
rainfall

[3]

(b) Wet monsoons affect the biodiversity of species.

Explain the meaning of biodiversity.

.....

.....

.....

..... [2]

[Total: 5]

6 Navigational aids help fishermen to travel safely on the ocean.

Describe the use of each navigational aid.

(a) compass and chart

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

(b) buoys

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

(c) radar

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

[Total: 7]

7 (a) Explain why coral reefs are only located in warm, clear waters.

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

(b) Describe the effect of coral mining on coral reefs **and** the fisheries they support.

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

(c) Describe the benefits of artificial reefs to the marine ecosystem.

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

[Total: 7]

8 Table 8.1 shows a partly completed classification of the giant clam, *Tridacna gigas*.

Table 8.1

kingdom
.....	mollusca
class	bivalve
genus
species

(a) Complete Table 8.1 by adding the correct names into the table. [4]

(b) Suggest **two** reasons the giant clam has become an endangered species.

1

2

[2]

(c) State the full names of **two** international organisations involved in fisheries management or conservation of marine species.

1

2

[2]

[Total: 8]

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