



## Cambridge O Level

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**MARINE SCIENCE**

**5180/01**

Paper 1 Structured

**May/June 2021**

**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.

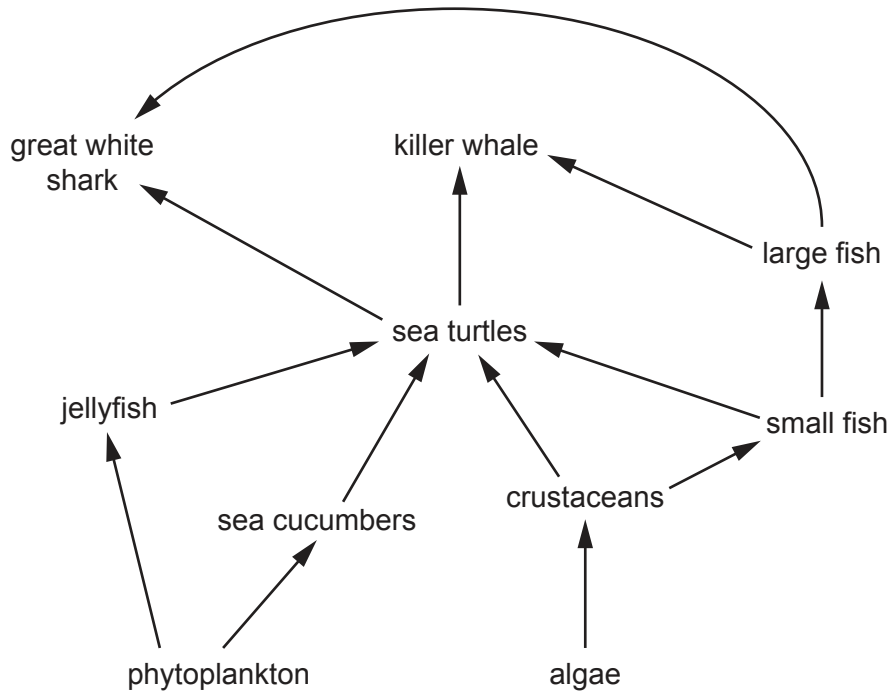
### INFORMATION

- 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.

Answer **all** questions.

1 Fig. 1.1 shows a food web.



**Fig. 1.1**

(a) Complete Table 1.1 to name **one** organism from Fig. 1.1 for each description.

**Table 1.1**

| description                             | name of organism |
|---|------------------|
| a herbivore                             | .....            |
| a primary producer                      | .....            |
| an organism on the fourth trophic level | .....            |
| a prey of the sea turtles               | .....            |

[4]

(b) Outline the role of primary producers in a food web.

.....

.....

.....

.....

.....

.....

..... [3]

(c) Most species of sea turtle are endangered.

Use Fig. 1.1 to suggest **and** explain the impact of a continued decrease in the number of sea turtles on the populations of jellyfish.

.....

.....

.....

..... [2]

(d) Suggest **two** conservation measures that can be used to help conserve sea turtles.

1 .....

2 .....

[2]

[Total: 11]

2 (a) Fig. 2.1 shows a horned ghost crab, *Ocypode ceratophthalmus*.



**Fig. 2.1**

Table 2.1 shows the classification for this species.

Complete Table 2.1 to show the correct classification of the horned ghost crab.

**Table 2.1**

| group   | name                   |
|---------|------------------------|
| kingdom | animalia               |
| phylum  | .....                  |
| .....   | crustacea              |
| order   | decapoda               |
| genus   | .....                  |
| species | <i>ceratophthalmus</i> |

[3]

(b) (i) Ghost crabs reproduce through external fertilisation.

Describe the process of external fertilisation.

.....

.....

.....

..... [2]

(ii) After the crab eggs hatch the organisms live as planktonic larvae.

State the meaning of the term planktonic larvae.

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

(iii) Suggest **one** advantage for crabs of having planktonic larvae.

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

(c) Crabs moult many times during their life cycle.

(i) Describe moulting in crabs.

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

(ii) Suggest why crabs moult.

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

[Total: 11]

3 (a) Global warming is considered a worldwide problem. State **two** causes of global warming.

1 .....

.....

2 .....

.....

[2]

(b) (i) Discuss the differences between currents and tides.

.....

.....

.....

.....

.....

.....

[3]

(ii) Suggest the impact global warming may have on tides.

.....

.....

[1]

(c) Define each of these chemical properties of sea water.

(i) pH

.....

.....

[1]

(ii) salinity

.....

.....

.....

.....

[2]

[Total: 9]

4 Coral reefs are environmentally sensitive and can be easily damaged.

(a) Describe the environmental impact of sewage and heavy metals on a coral reef.

(i) sewage

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

(ii) heavy metals

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

(b) On a healthy coral reef scientists noticed a decrease in the number of Nassau grouper fish.

(i) Explain how the catch per unit effort for Nassau grouper fish would be affected on this reef.

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

(ii) Explain how **one** named fisheries practice could be used to increase the number of Nassau grouper fish.

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

[Total: 10]

- 5 A fishing boat travels from its home port, **X**, to a fishing ground, **Y**. After fishing it takes the catch to the processing plant, **Z**, before returning to the home port.

Fig. 5.1 shows the chart for this journey.

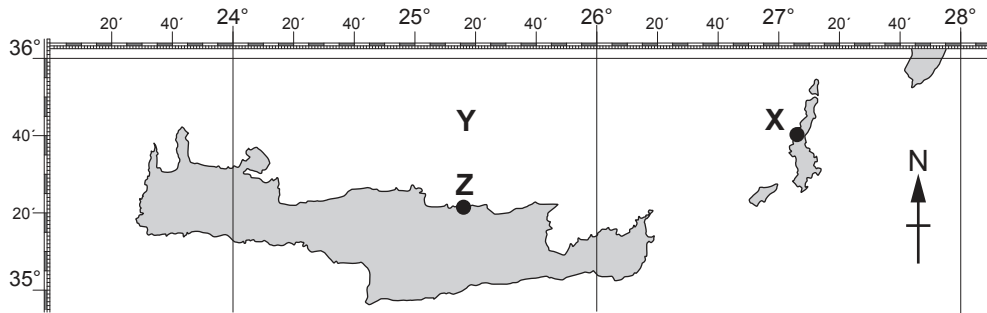


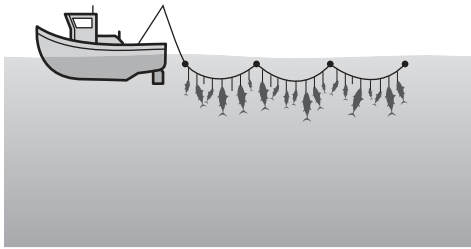
Fig. 5.1

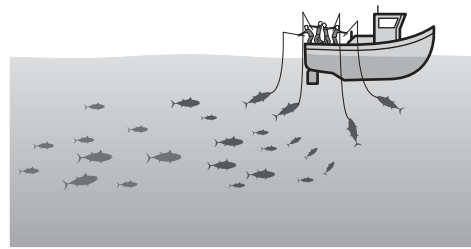
- (a) State the latitude and longitude of the home port, **X**.
- latitude .....
- longitude .....
- [2]
- (b) (i) State the name of the instrument used to know the direction of travel of the boat.
- ..... [1]
- (ii) State the direction the boat travels from the fishing ground, **Y**, to the processing plant, **Z**.
- ..... [1]
- (iii) Name **one** abiotic factor that may cause the boat to be off course.
- ..... [1]
- (c) Suggest **two** reasons why the fishermen may use an echo sounder.
- 1 .....
- .....
- 2 .....
- .....
- [2]

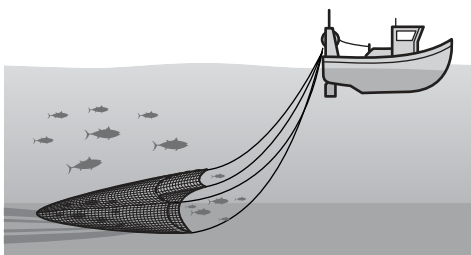


(d) The fishing boat uses the purse seine method. Fig. 5.2 shows four different fishing methods.

(i) Tick the box below the diagram that shows the purse seine method.







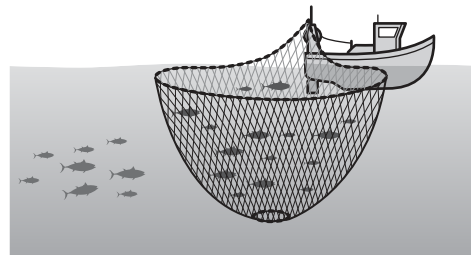



Fig. 5.2

[1]

(ii) State **one** environmental problem of purse seine fishing.

.....

..... [1]

[Total: 9]

6 (a) For each biological molecule, state **one** function in the human body.

(i) protein

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

(ii) lipid (fats or oils)

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

(iii) nucleic acids (DNA or RNA)

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

(b) State **one** social and **one** economic importance of fish as a source of food.

social

.....  
.....

economic

.....  
.....

[2]

(c) To reduce spoilage of fish it is often processed and preserved.

(i) Describe the process of putrefaction in fish.

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

(ii) Canning is a method of preserving fish.

Describe the canning method.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 10]

- 7 Fig. 7.1 shows a map of an island that has an active fishing industry. A marine ecotourism hotel has recently been built on the island.

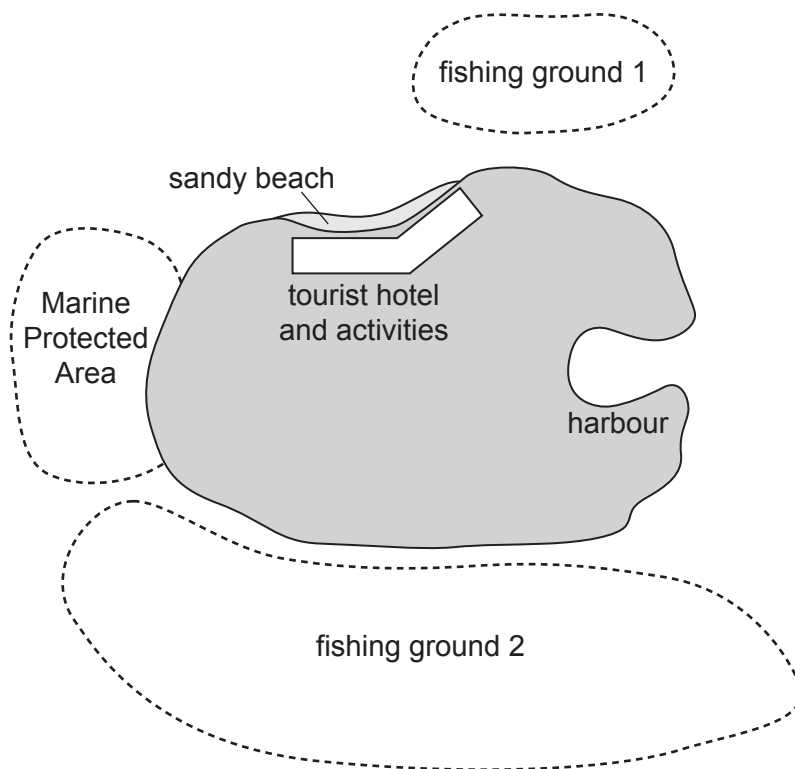


Fig. 7.1

- (a) (i) State **two** aims of marine ecotourism.

1 .....

.....

2 .....

.....

[2]

- (ii) Using Fig. 7.1, suggest **two** conflicts that could occur between the fishermen and the tourism business.

1 .....

.....

2 .....

.....

[2]

(iii) Suggest **two** benefits the tourism business could have for the fishermen.

1 .....

.....

2 .....

.....

[2]

(b) State how the Marine Protected Area can benefit both the tourism industry and the fishermen.

tourism industry

.....

.....

fishermen

.....

.....

[2]

(c) List **three** features a fisherman would expect to find at a modern harbour.

1 .....

2 .....

3 .....

[3]

[Total: 11]

8 Fig. 8.1 shows a map of the world.

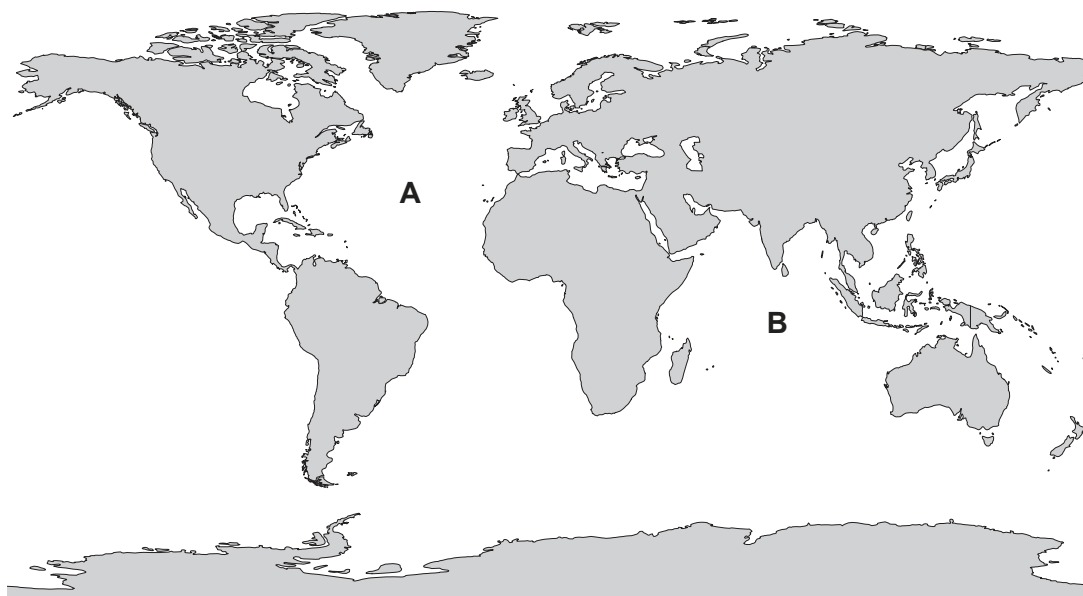


Fig. 8.1

(a) (i) Identify the oceans labelled **A** and **B**.

**A** .....

**B** .....

[1]

(ii) List the **three** main factors affecting international fisheries resources.

1 .....

2 .....

3 .....

[2]

(b) Table 8.1 shows the number of four species of shark caught as by-catch and released by the longlining fleet in the Maldives.

Table 8.1

| year | hammerhead sharks | thresher sharks | mako sharks | whitetip sharks |
|------|-------------------|-----------------|-------------|-----------------|
| 2014 | 143               | 822             | 875         | 1525            |
| 2015 | 14                | 44              | 72          | 331             |
| 2016 | 78                | 374             | 534         | 464             |
| 2017 | 34                | 86              | 141         | 86              |

In the Maldives, there is a complete ban on shark fisheries, but fishing vessels have to record the sharks accidentally caught and released.

(i) Suggest **one** action taken by the fisheries authority to ensure no sharks are landed.

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

(ii) State the year fewest total number of sharks were accidentally caught.

..... [1]

(iii) Between 2014 and 2017 the number of whitetip sharks accidentally caught decreased by nearly 95%.

Suggest **two** possible reasons for this.

1 .....  
.....  
2 .....  
..... [2]

(c) In many countries consumers want to buy fish that has a low environmental impact.

(i) Explain the meaning of the term consumer.

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

(ii) Suggest how the data in Table 8.1 show an improving environmental impact of this fishery.

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

[Total: 9]

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