Cambridge Assessment International Education

# Cambridge IGCSE™

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**MARINE SCIENCE** **0697/01**

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.

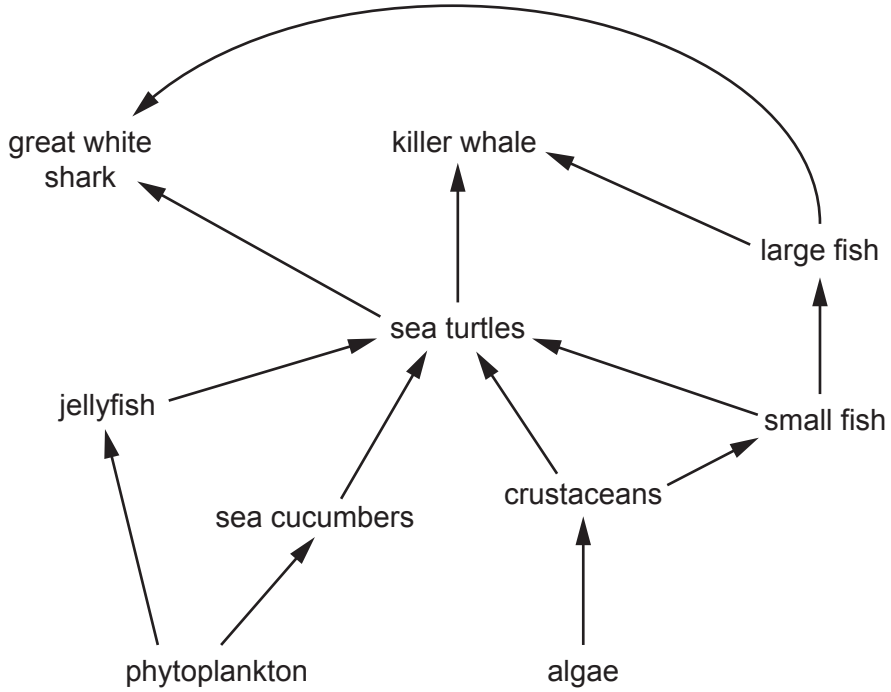


**Fig. 1.1**

**(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 | *ceratophthalmus* |

[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.

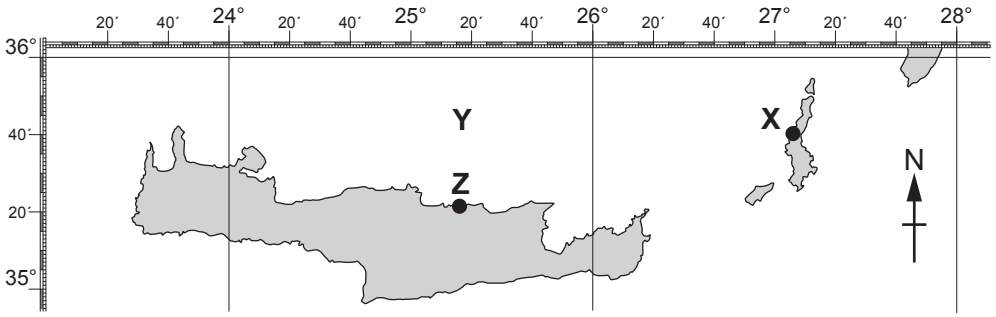


**Fig. 5.1**

**(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.

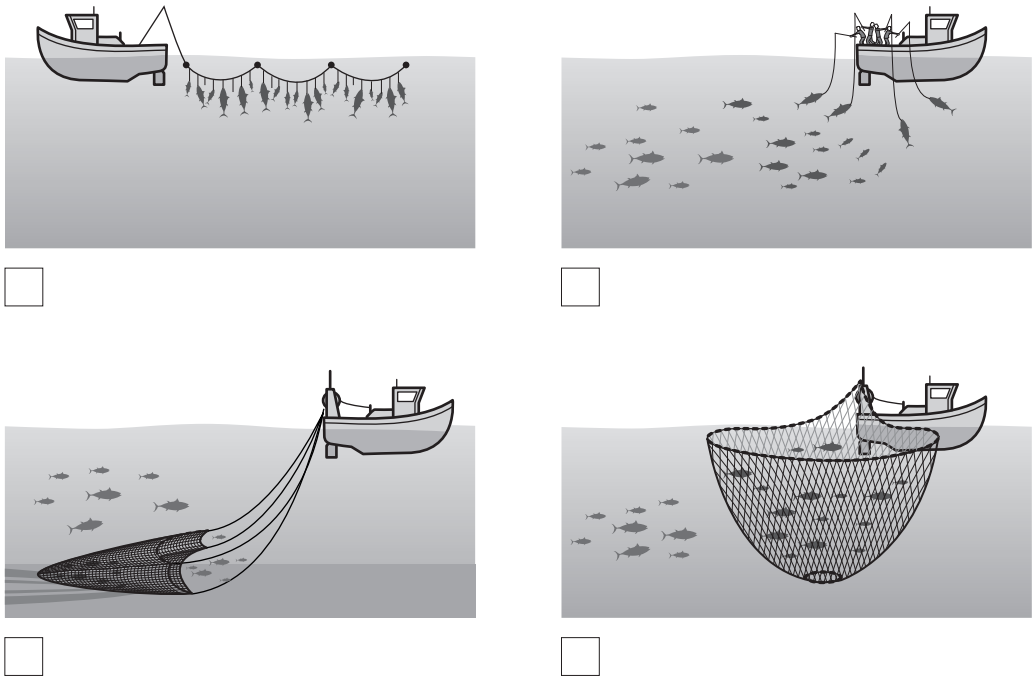

**Fig. 5.2**

[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.

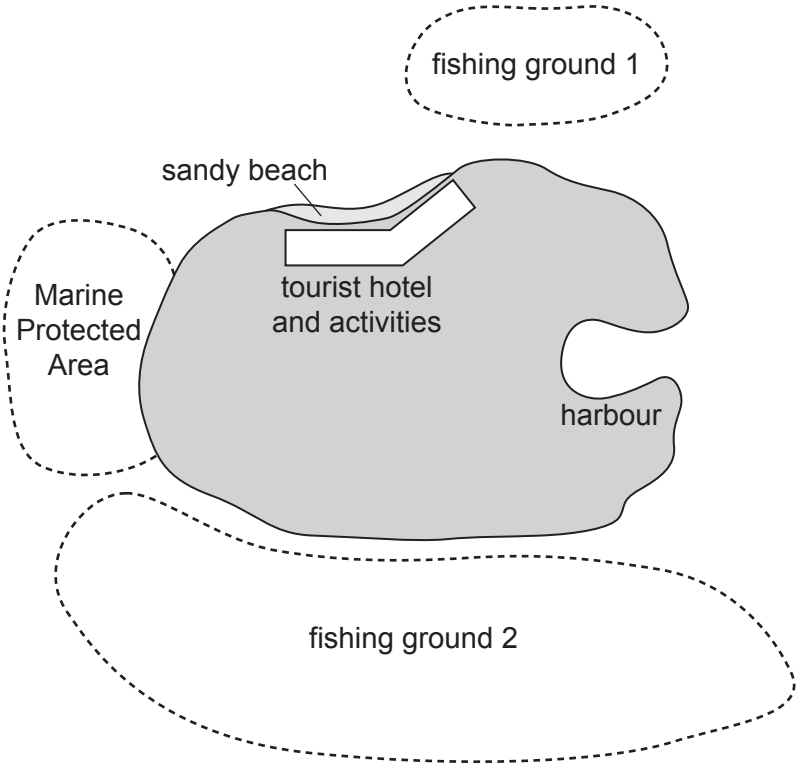


**Fig. 7.1**

**(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.

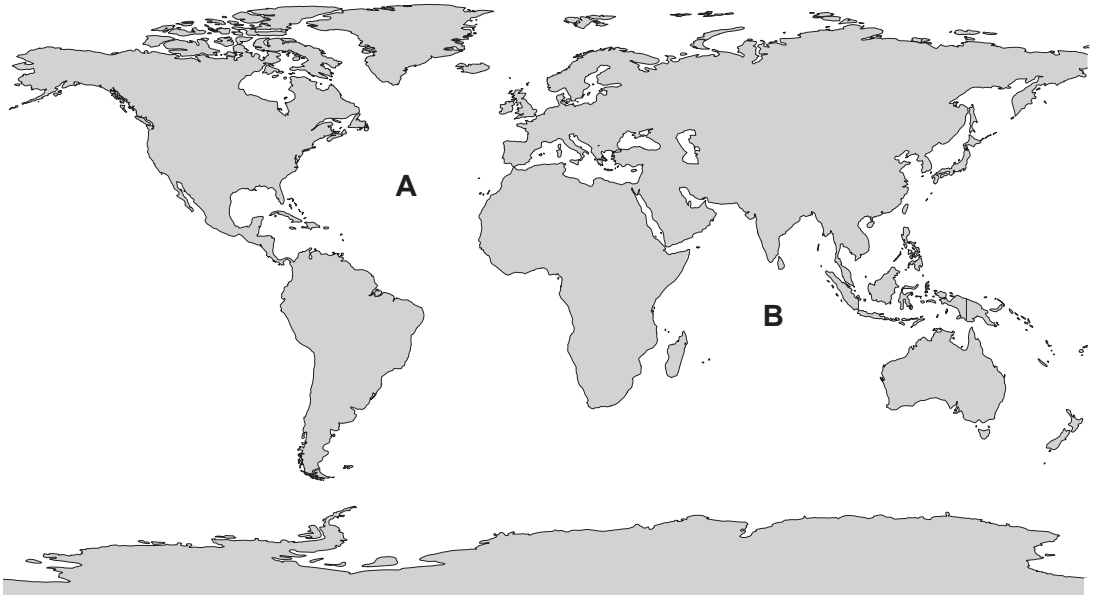


**Fig. 8.1**

**(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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