



# Cambridge IGCSE™

CANDIDATE NAME



CENTRE NUMBER

--	--	--	--	--

CANDIDATE NUMBER

--	--	--	--



**MARINE SCIENCE**

**0697/12**

Paper 1 Theory and Data Handling

**October/November 2024**

**1 hour 45 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 **20** pages. Any blank pages are indicated.





1 Fig. 1.1 shows the layers of the Earth.

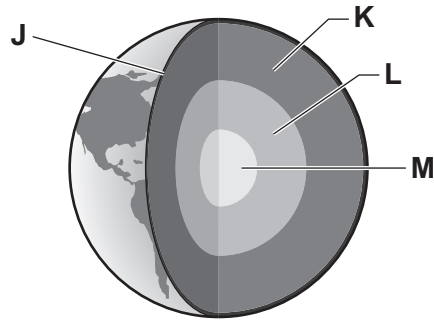


Fig. 1.1

(a) Complete Table 1.1 to give the name of each layer of the Earth and if each layer is solid, liquid or gas. [4]

Table 1.1

label	name	solid/liquid/gas
J	.....	.....
K	.....	.....
L	.....	.....
M	.....	.....

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN





(b) Fig. 1.2 shows three different types of plate boundary labelled X, Y and Z.

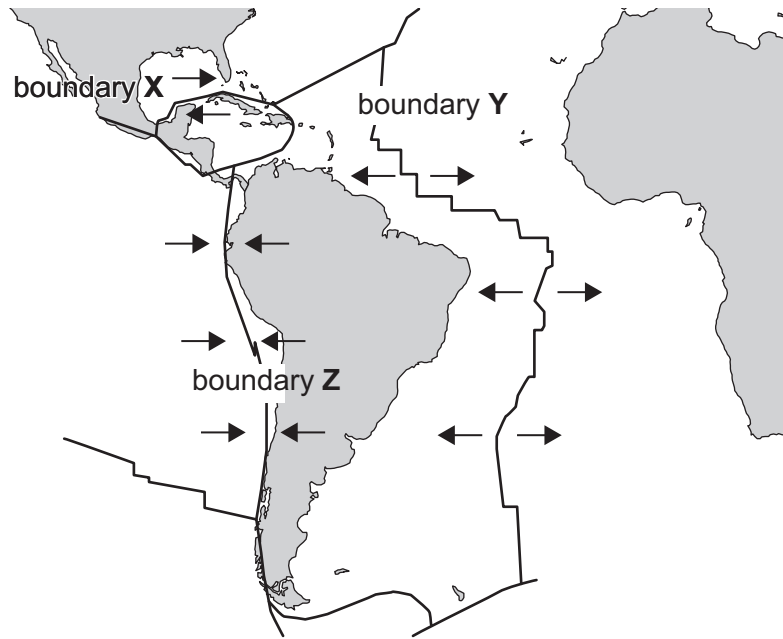


Fig. 1.2

(i) State the name of each type of boundary, X and Y.

X .....

Y .....

[2]

(ii) Explain how the movement of the plates at boundary Z can cause volcanoes to form.

.....

.....

.....

..... [2]

(iii) The movement of plates at boundary Z sometimes causes a tsunami to form.

Outline **two** effects of tsunamis on marine ecosystems.

.....

.....

.....

..... [2]

[Total: 10]



DO NOT WRITE IN THIS MARGIN



2 (a) Draw **one** line from each name to its correct definition.

name	definition
community	the community and the environment interacting together
habitat	a group of organisms of one species living in the same area at the same time
population	a group of organisms that can reproduce fertile offspring
environment	the external biotic and abiotic surroundings of an organism
	all the population of different species in one area
	the area where an organism lives and interacts with its environment and other organisms

[4]

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN





(b) Fig. 2.1 shows a pyramid of numbers for a marine food chain.

trophic level

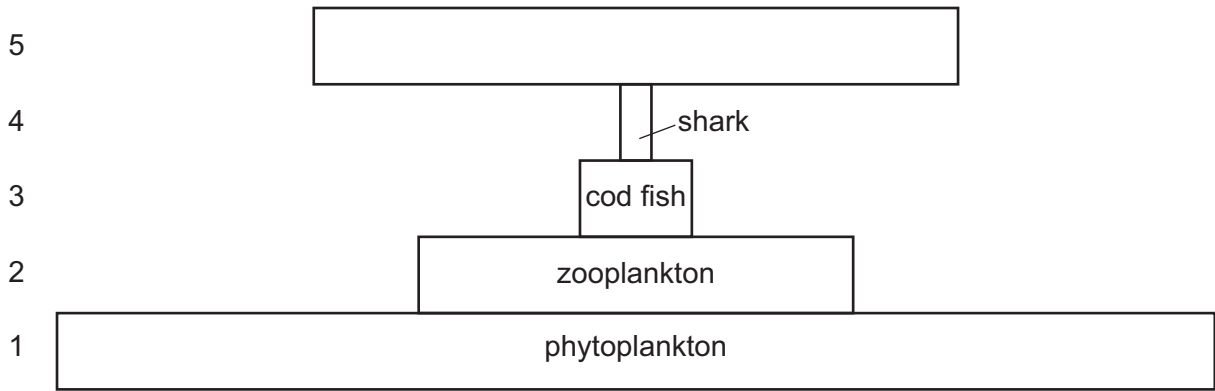


Fig. 2.1

(i) State the name of **two** groups of organisms that may be present in trophic level 1 of this food chain.

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

(ii) State the name of the secondary consumer in this food chain.

..... [1]

(iii) Suggest the type of organism that may be found in trophic level 5.

..... [1]

(iv) State **two** biotic factors that affect the rate of population growth of sharks.

1 .....

2 .....

[2]

[Total: 9]

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN





3 The open ocean is divided into three zones. These are the sunlight zone, the twilight zone and the midnight zone.

(a) Describe why the concentration of oxygen is high in the sunlight zone.

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

(b) The mean concentrations of carbon dioxide and of oxygen in air and in sea water are shown in Table 3.1.

Table 3.1

gas	mean concentration in air/a.u.	mean concentration in sea water/a.u.
carbon dioxide	416	210500
oxygen	209460	6

(i) Compare the mean concentration of carbon dioxide and of oxygen in sea water to their mean concentrations in air.

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

(ii) In surface water at night, carbon dioxide concentration increases.

Explain this observation.

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

DO NOT WRITE IN THIS MARGIN





(c) Fig. 3.1 shows a fish species.

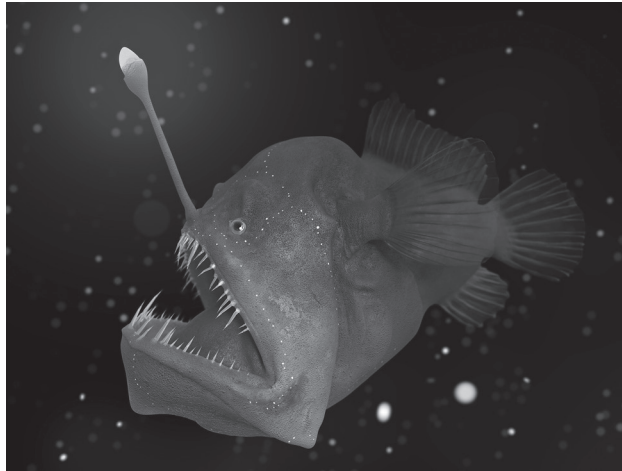


Fig. 3.1

Suggest the zone that this fish lives in **and** support your answer with adaptations visible in Fig. 3.1.

zone .....

.....  
.....  
.....  
.....  
.....  
.....  
.....

[3]

[Total:11]

DO NOT WRITE IN THIS MARGIN





4 Fig. 4.1 shows a plant cell.

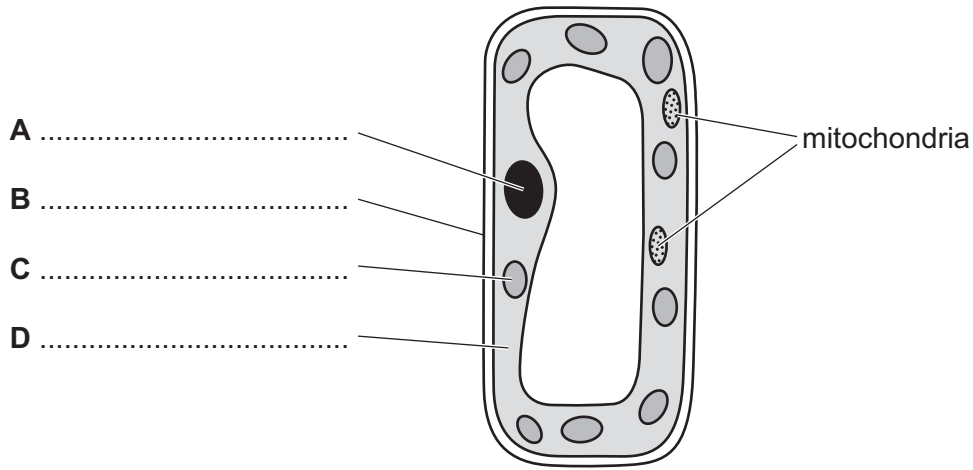


Fig. 4.1

(a) (i) Identify the structures labelled **A**, **B**, **C** and **D** on Fig. 4.1.

Write your answers in the answer spaces on Fig. 4.1.

[3]

(ii) State the function of the structure labelled **C**.

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

(iii) State **one** similarity and **one** difference between the plant cell in Fig. 4.1 and a dinoflagellate cell.

similarity .....  
difference ..... [2]

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN







(b) Fig. 4.2 shows a typical seagrass.

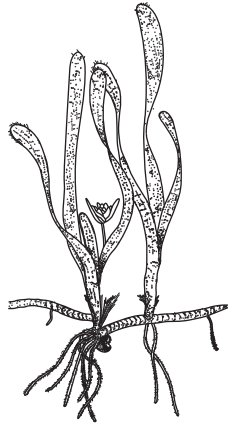


Fig. 4.2

- (i) Identify and label a leaf, the roots, a rhizome and a flower on Fig. 4.2. [2]
- (ii) For each feature of the seagrass in Fig. 4.2, draw **one** line to its function.

**feature**

**function**

leaf

anchors the seagrass to the substrate and absorbs minerals

root

keeps the leaves floating

flower

the organ of photosynthesis

rhizome

for asexual reproduction

for sexual reproduction

for protection

[4]

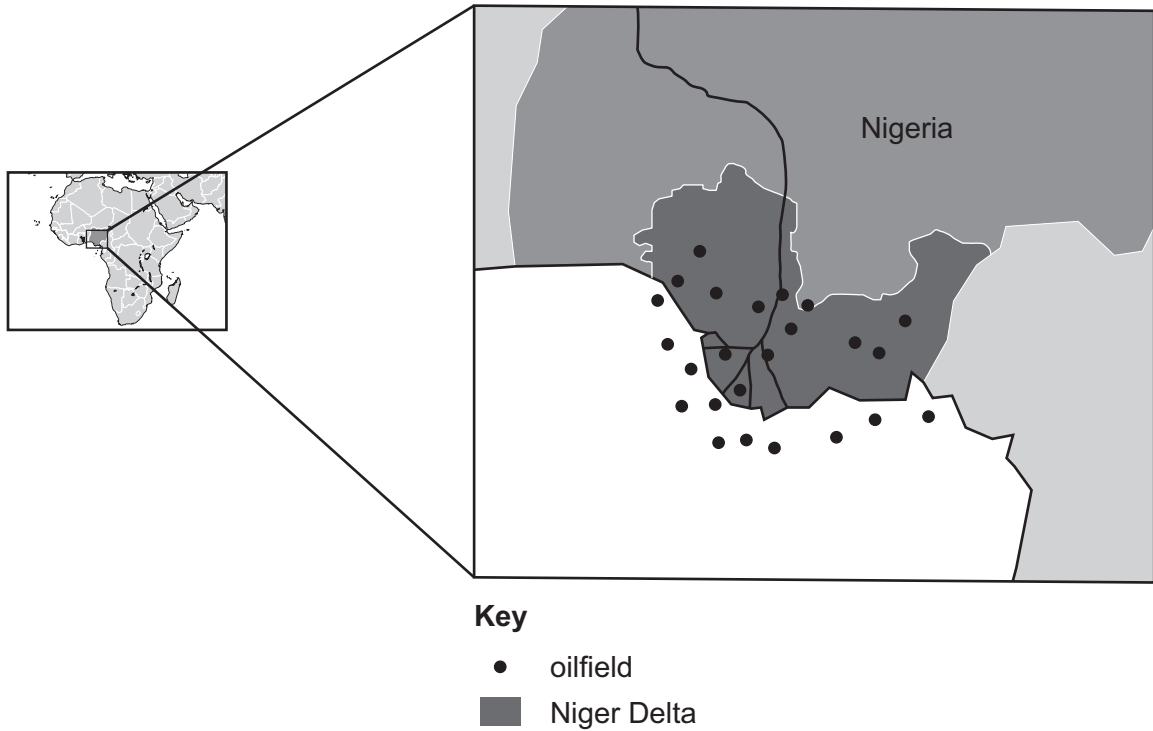
[Total: 12]



DO NOT WRITE IN THIS MARGIN



5 Fig. 5.1 shows the Niger Delta and the locations of some of the oilfields in the area.



**Fig. 5.1**

The Niger Delta in Nigeria has one of the largest mangrove forests in the world.

Nigeria exports a large volume of extracted oil from oilfields.

(a) (i) Suggest **two** benefits to Nigeria of a healthy mangrove forest.

.....

.....

.....

..... [2]

(ii) Suggest **one** benefit to Nigeria as a country which extracts oil.

.....

..... [1]

DO NOT WRITE IN THIS MARGIN





(iii) Explain how the use of extracted oil may contribute to climate change.

.....

.....

.....

.....

.....

.....

..... [3]

(iv) Suggest **two** effects of climate change on estuaries containing mangrove forests.

.....

.....

.....

..... [2]

(v) Some areas of the mangrove forest are damaged by oil spills and leaks.

Name **two** ways the impact of these spills can be reduced.

1 .....

2 ..... [2]

(b) Local conservationists work to restore the areas of mangrove forest damaged by oil spills.

They collect young mangrove tree plants attached to the mature mangrove trees and grow them on in ideal conditions.

They replant the young trees in areas where the mangrove forest has died.

(i) Suggest **one** reason why this is a form of aquaculture.

.....

..... [1]

(ii) Explain **one** reason why this project may **not** be successful.

.....

.....

.....

..... [2]

[Total: 13]

DO NOT WRITE IN THIS MARGIN







(ii) Plastic bags also enter the oceans from rivers.

Some sea life may become tangled in the plastic bags and drown.

Describe **two** other impacts of plastic bags on marine ecosystems.

.....

.....

.....

..... [2]

[Total: 10]

DO NOT WRITE IN THIS MARGIN





7 Fig. 7.1 shows the direction of the wind in the Pacific Ocean in a normal year and in a year when an El Niño effect is occurring.

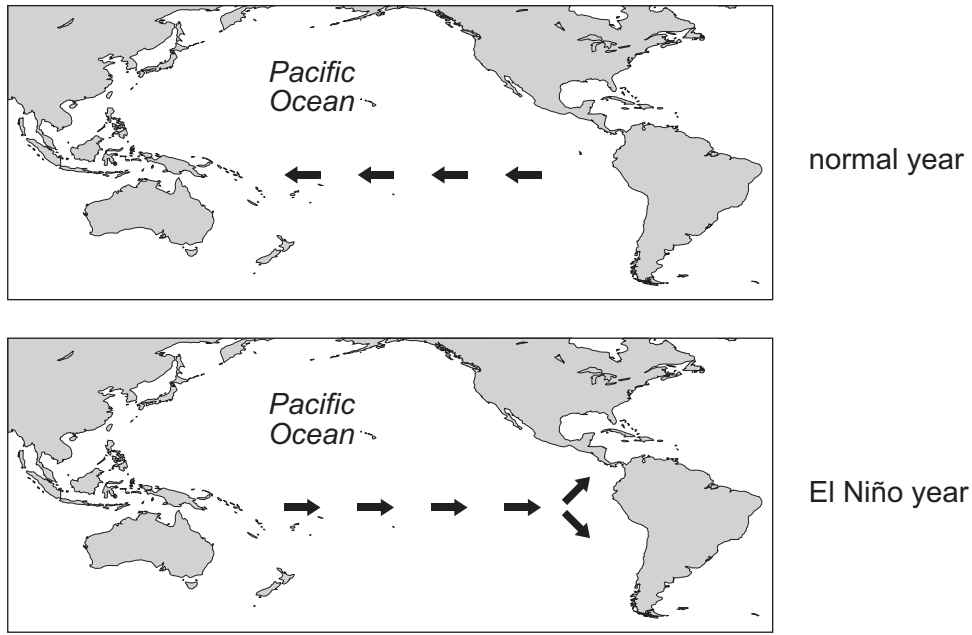


Fig. 7.1

(a) Outline the formation of El Niño.

.....

.....

.....

.....

.....

.....

.....

..... [3]

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN





(b) List **three** effects of El Niño and where these effects occur.

- 1 .....
- .....
- 2 .....
- .....
- 3 .....
- .....

[3]

[Total: 6]

DO NOT WRITE IN THIS MARGIN





8 Fig. 8.1 shows the migration routes of bluefin tuna.

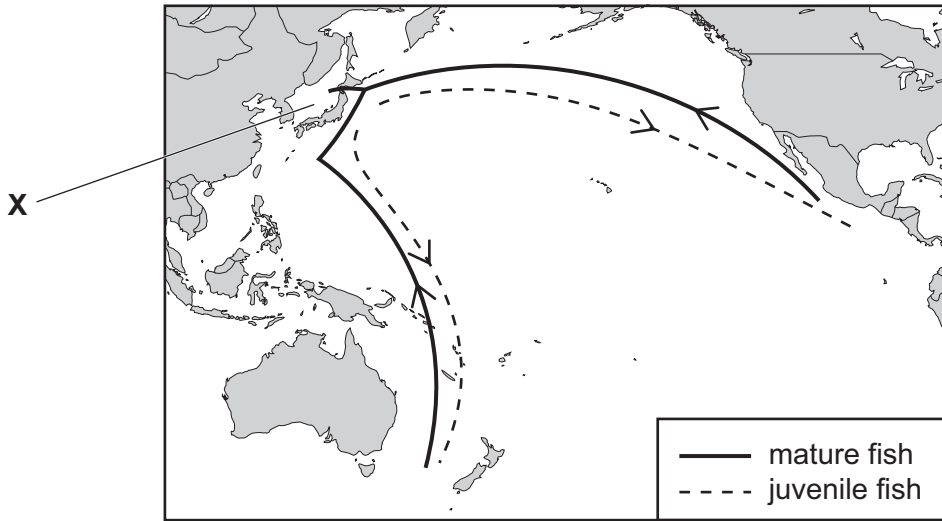


Fig. 8.1

(a) (i) Identify the main ocean this migration occurs in.

..... [1]

(ii) The area labelled X is the Sea of Japan.

Describe how a sea is different from an ocean.

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

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN











**BLANK PAGE**

DO NOT WRITE IN THIS MARGIN





BLANK PAGE

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

---

The boundaries and names shown, the designations used and the presentation of material on any maps contained in this question paper/insert do not imply official endorsement or acceptance by Cambridge Assessment International Education concerning the legal status of any country, territory, or area or any of its authorities, or of the delimitation of its frontiers or boundaries.

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 Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at [www.cambridgeinternational.org](http://www.cambridgeinternational.org) after the live examination series.

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

