Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MARINE SCIENCE **0697/11**

Paper 1 Theory and Data Handling **May/June 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.

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1 **(a)** Fig. 1.1 shows an animal cell.
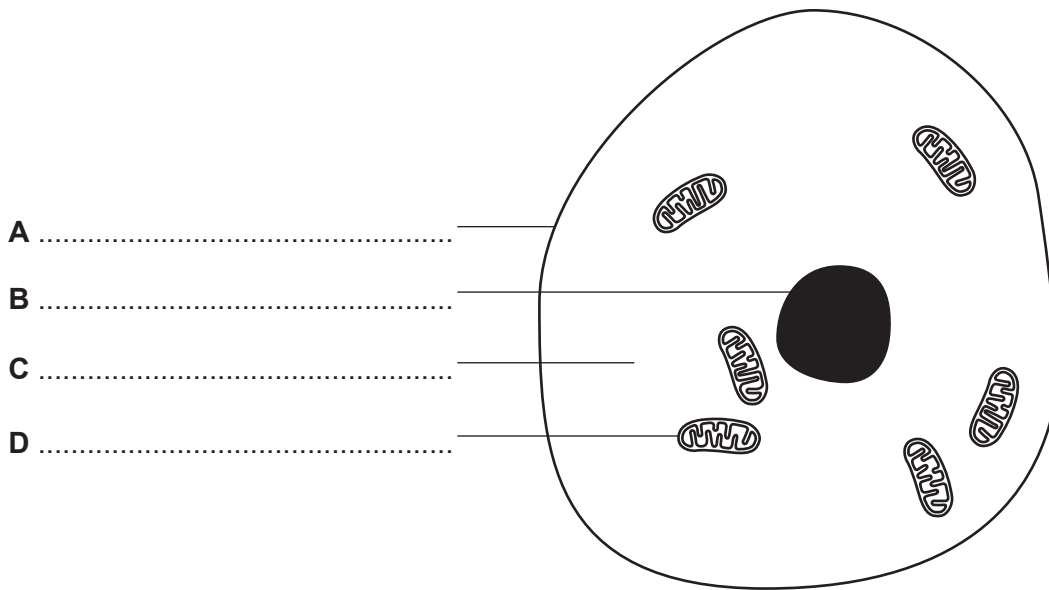
Fig. 1.1

(i) Identify the structures labelled **A**, **B**, **C** and **D** in Fig. 1.1.
Write your answers on Fig. 1.1. [3]

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

....

.... [1]

(iii) Name **two** structures found in plant cells that are **not** found in the animal cell in Fig. 1.1.

1 ....

2 ....
[2]

(b) Fig. 1.2 shows a typical macroalga.
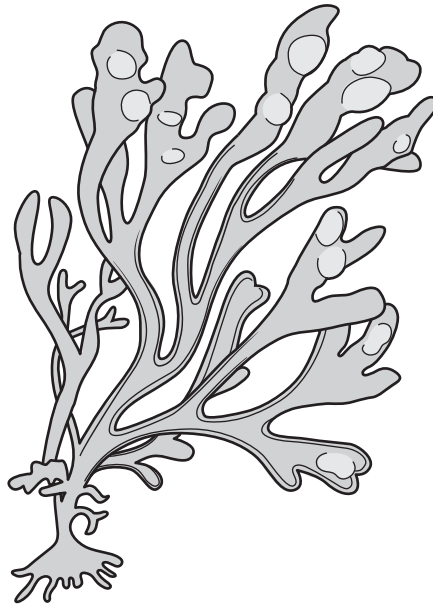
Fig. 1.2

(i) Identify and label the following key features on Fig. 1.2:

- stipe
- blade
- holdfast
- gas bladder.

[2]

(ii) For each feature of the macroalga in Fig. 1.2, draw one line to match the feature to its function. You should draw **four** lines in total.

feature	**function**

blade

stipe

holdfast

gas bladder

anchors the macroalga
to the substrate

keeps the blades
floating

for maximum
absorption of light and
photosynthesis

for asexual reproduction

stem which the blades
grow from

for protection

[4]

[Total: 12]

2 **(a)** Calcium carbonate has the formula $CaCO_3$.

Complete the sentences about calcium carbonate.

Calcium carbonate is a .... because it is made of ....

different types of atoms. It is a nutrient for some marine organisms, and animals use it to

make ....

[3]

(b) Fig. 2.1 shows the water cycle.
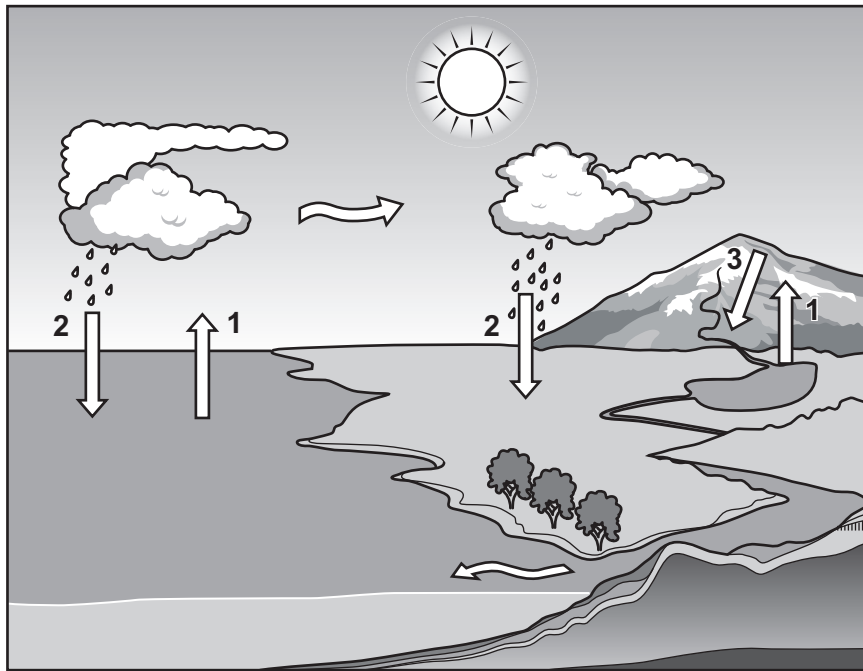
Fig. 2.1

(i) Name the processes occurring at **2** and **3**.

process at **2** ....

process at **3** ....

[1]

(ii) Describe **two** factors that affect the rate of process **1** from the ocean.

....

....

....

.... [2]

(iii) Explain the effect of process **1** on salinity in the ocean compared to its effect on salinity in the fresh water lake.

....

....

....

....

....

.... [3]

[Total: 9]

3 Fig. 3.1 shows a food web on a rocky shore.
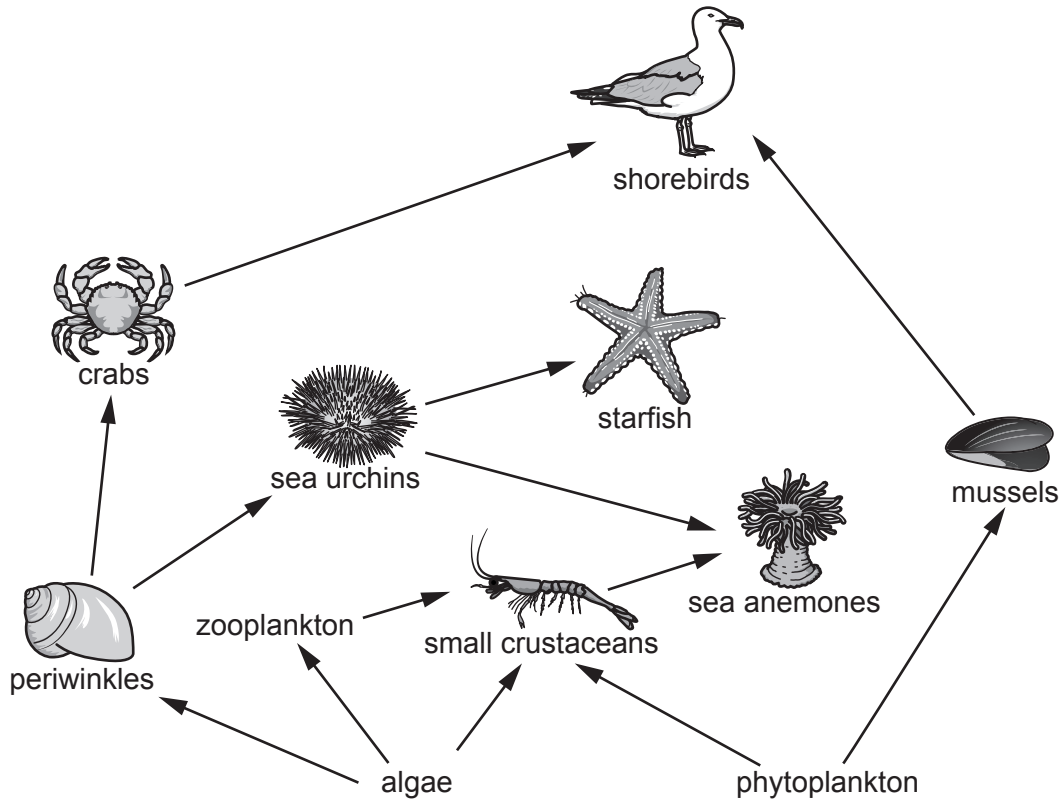
Fig. 3.1

(a) (i) State the name of **two** producers in Fig. 3.1.

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

(ii) State the name of **one** organism that is in trophic level three **and** trophic level four in Fig. 3.1.

.... [1]

(iii) State the name of **one** omnivore in Fig. 3.1.

.... [1]

(iv) Explain how energy transfers between trophic levels are affected by the respiration of organisms.

....

....

....

....

....

.... [3]

(b) Describe **one** adaptation of mussels to live on a rocky shore.

....

....

....

.... [2]

(c) State **two** biotic factors that will affect the rate of population growth of starfish.

1 ....

2 ....
[2]

(d) State the meaning of the following terms.

environment ....

....

habitat ....

....

....
[3]

[Total: 13]

4 Fig. 4.1 shows a cross-section through different ocean zones.
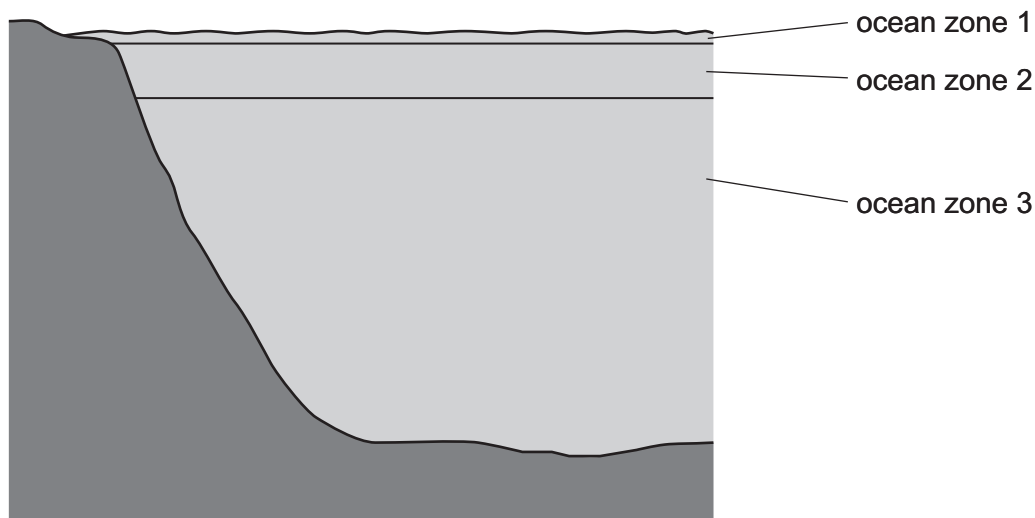
Fig. 4.1

(a) (i) Use the information about the different ocean zones shown in Fig. 4.1 to complete Table 4.1.

Table 4.1

ocean zone	name	depth range /m	concentration of dissolved oxygen	pressure
1	....	....	high	....
2	....	....	....	....
3	midnight zone	over 1000	....	high

[4]

(ii) Suggest **two** reasons why the concentration of dissolved oxygen is high in ocean zone 1.

1 ....

....

2 ....

....

[2]

(iii) Explain the effect of increasing sea water depth on the solubility of oxygen.

....

....

....

.... [2]

(b) Many plankton live in ocean zone 1. Some plankton move to different depths at different times of the day and night.

(i) Suggest the type of plankton that move to the surface during the day **and** explain why they do this.

type of plankton ....

reason ....

....

....
[2]

(ii) Explain how detritivores on the dark ocean floor can gain energy that was released from the Sun.

....

....

....

....

....

.... [3]

[Total: 13]

5 Fig. 5.1 shows the Earth in orbit around the Sun.

not to scale
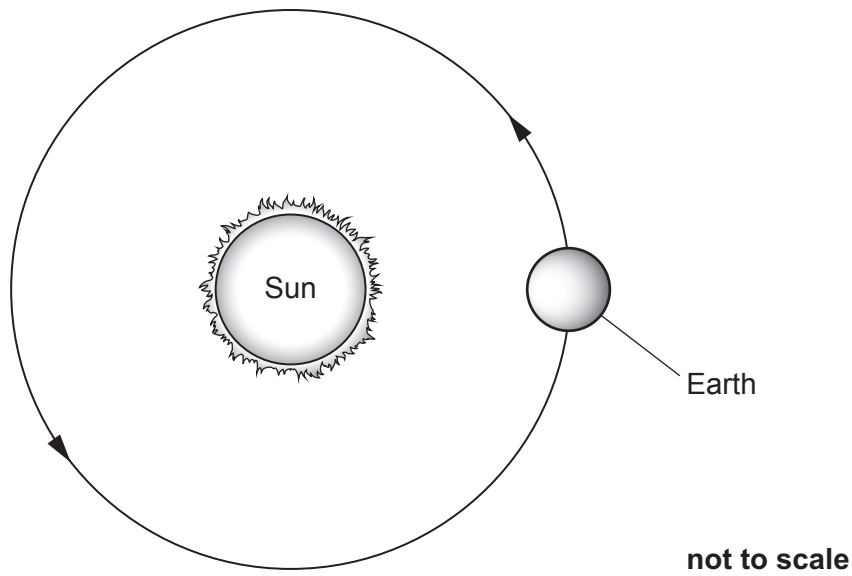
Fig. 5.1

(a) (i) Name the force which keeps the Earth in orbit.

.... [1]

(ii) Draw the position of the Moon on Fig. 5.1.
Add an arrow to show its orbit. [2]

(b) (i) Name the material that the core of the Earth is made from.

.... [1]

(ii) Explain how the core of the Earth affects the movement of some marine animals.

....

....

....

....

....

.... [3]

(c) Tectonic plates float on the mantle and move as a result of convection currents.

Describe how the movement of tectonic plates can cause a tsunami.

....

....

....

....

....

....

....

.... [4]

[Total: 11]

6 In 2019, fossil fuels generated 64% of the electricity used worldwide.

(a) Suggest **one** advantage and **one** disadvantage of using fossil fuels to generate electricity.

advantage ....

....

disadvantage ....

....

[2]

(b) Some areas of the world's oceans are mined to extract oil.
Oil is often transported around the world in ships, leading to a risk of oil spills.

(i) Ships must be built to reduce the chance of oil spills occurring.

State the name of the standards used to build ships.

.... [1]

Fig. 6.1 shows the number of large and small oil spills between 1970 and 2015.
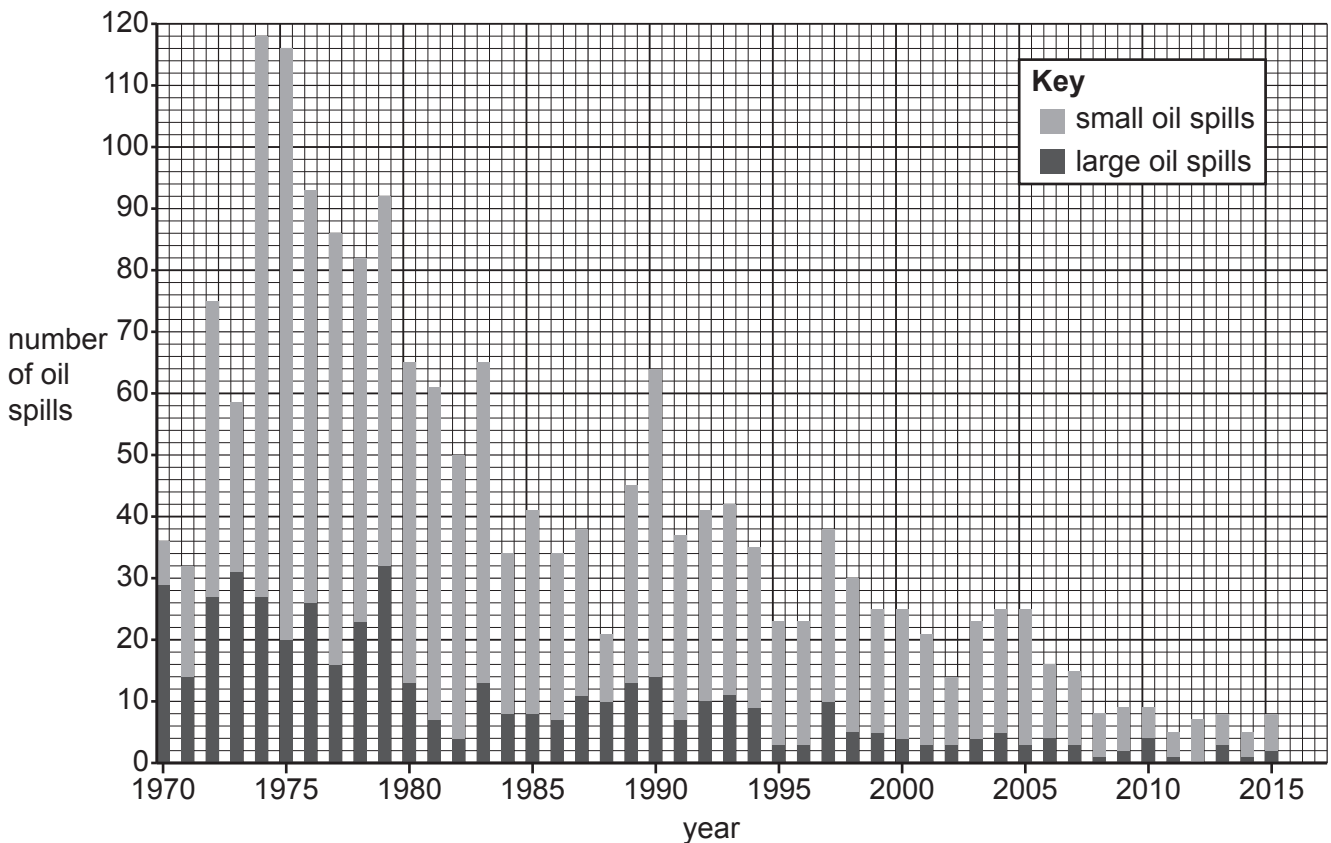

Fig. 6.1

(ii) Describe the changes in the **total** number of oil spills using the information shown in Fig. 6.1.

....

....

....

....

....

.... [2]

(iii) Calculate the decrease in the number of **small** oil spills between 1974 and 1984. Show your working.

.... [3]

(iv) Suggest why the number of oil spills did **not** fall immediately after the standards were agreed in 1973.

....

....

....

.... [2]

(c) (i) State **two** sources of renewable energy from the oceans.

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

(ii) Explain **one** environmental problem with obtaining a **named** renewable energy from the oceans.

....

....

....

.... [2]

[Total: 13]

7 Fig. 7.1 shows a tourist resort area.

Fig. 7.1

(a) Outline the impacts of tourism on marine ecosystems.

....

....

....

....

....

....

....

....

....

....

....

.... [6]

(b) Evaluate **one** named strategy for limiting the impacts of tourists on marine ecosystems.

....

....

....

....

....

.... [3]

[Total: 9]

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20

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