Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

8824771695

MARINE SCIENCE **5180/01**

Paper 1 Structured **October/November 2016**

1 hour 30 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
Write your answers in the spaces provided on the Question Paper.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **16** printed pages.

CAMBRIDGE
International Examinations

Answer **all** the questions in the spaces provided.

1 Fig. 1.1 shows a marine food web.

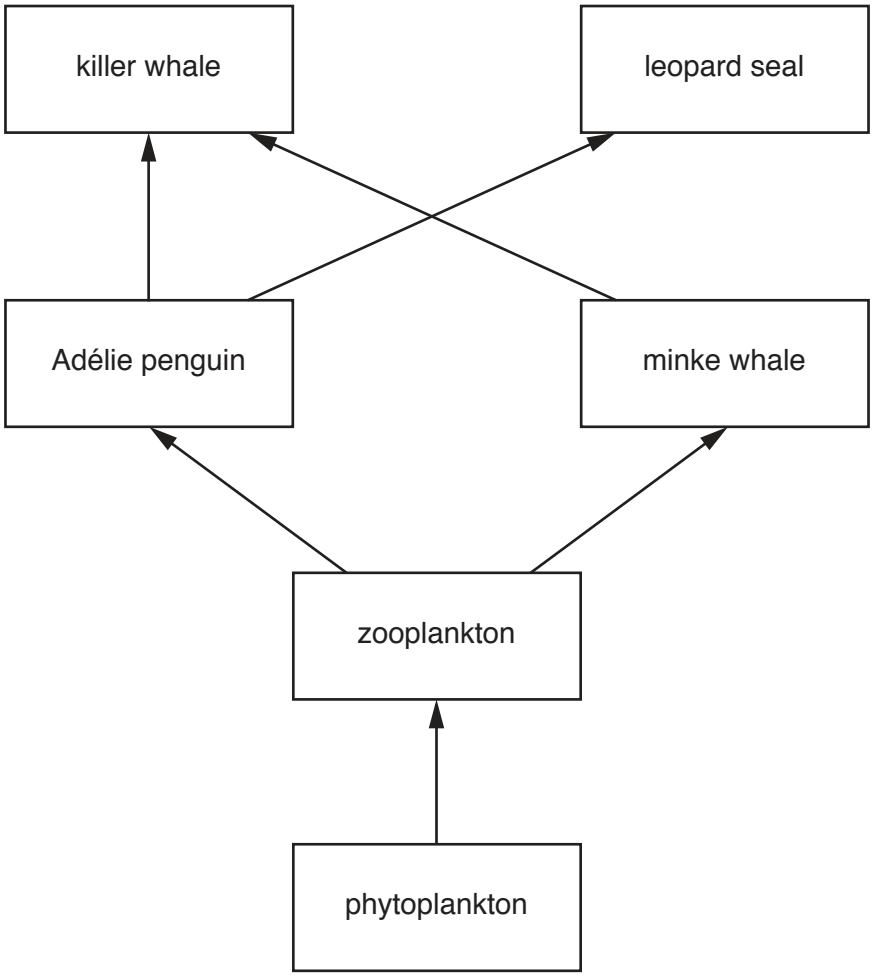


Fig. 1.1

(a) State the initial source of energy for this food web.

..... [1]

(b) Using a named example from Fig. 1.1, explain the meaning of each of the following terms.

(i) *trophic level* .....

.....

.....

..... [2]

(ii) *producer* .....

.....

.....

..... [2]

(iii) *prey* .....

.....

.....

..... [2]

(c) State **two** ways in which energy is lost between trophic levels.

1 .....

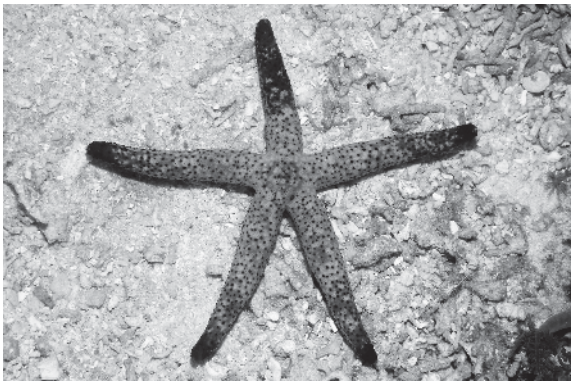
.....

2 .....

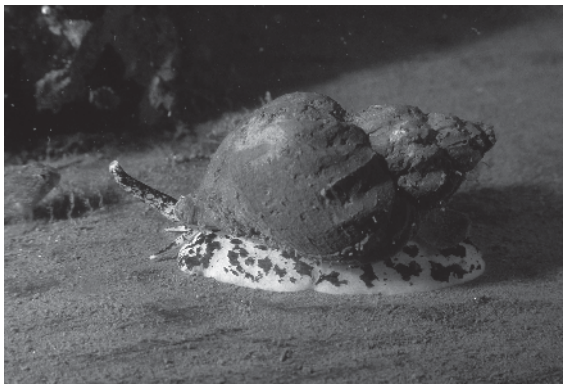
..... [2]

[Total: 9]

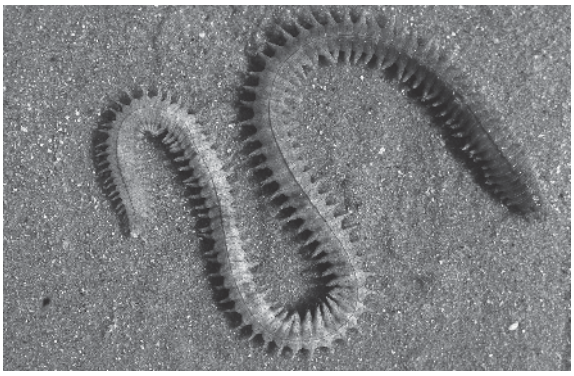
2 **(a)** Fig. 2.1 shows five marine organisms. The images are not to the same scale.



A

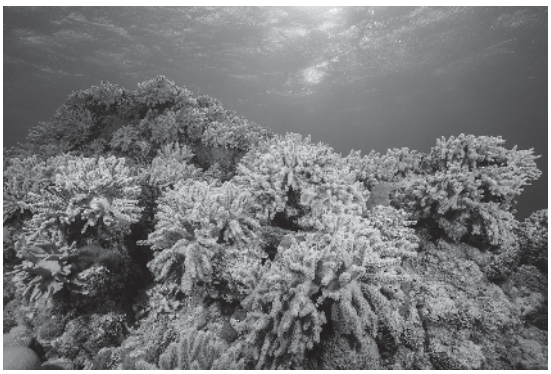


B



C

D



E

Fig. 2.1

Match the letter of the organism to the name of the group to which it belongs.

Table 2.1

group	letter
cephalopod	
cnidarian	
echinoderm	
polychaete	
gastropod	

[5]

(b) Read the descriptions of two species of fish.

LITTLE TUNNY

Description:

- streamlined body shape tapering from head to tail
- small finlets are present between dorsal and anal fins and the caudal fin
- colouration is dark greenish or dark greenish-blue along the top and upper sides fading to silvery below
- wavy stripes are present on the rear portion of the back (above the lateral line)
- several dark spots appear below the base of the pectoral fin

ALBACORE

Description:

- streamlined body tapering from head to tail
- finlets are present between dorsal and anal fins and the caudal fin
- pectoral fin is extremely long, extending past the start of the anal fin
- colouration is dark blue on top fading to silvery white sides and belly
- first dorsal fin is yellow

State **one** similarity and **one** difference between these two species of fish.

similarity .....

.....

difference .....

..... [2]

(c) Suggest **two** reasons why body colour is not a very accurate way of identifying a fish.

1 .....

.....

2 .....

..... [2]

[Total: 9]

3 **(a)** Describe the function of each of the following parts of a bony fish.

(i) operculum .....

.....

.....

..... [2]

(ii) gills .....

.....

.....

..... [2]

(iii) heart .....

..... [1]

(iv) scales .....

..... [1]

(b) Describe the life cycle of a bony fish.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 10]

4 Fig. 4.1 shows some of the changes in the positions of the Earth's land masses over the last 250 million years.

Diagram **A** shows the positions of the land masses 250 million years ago.

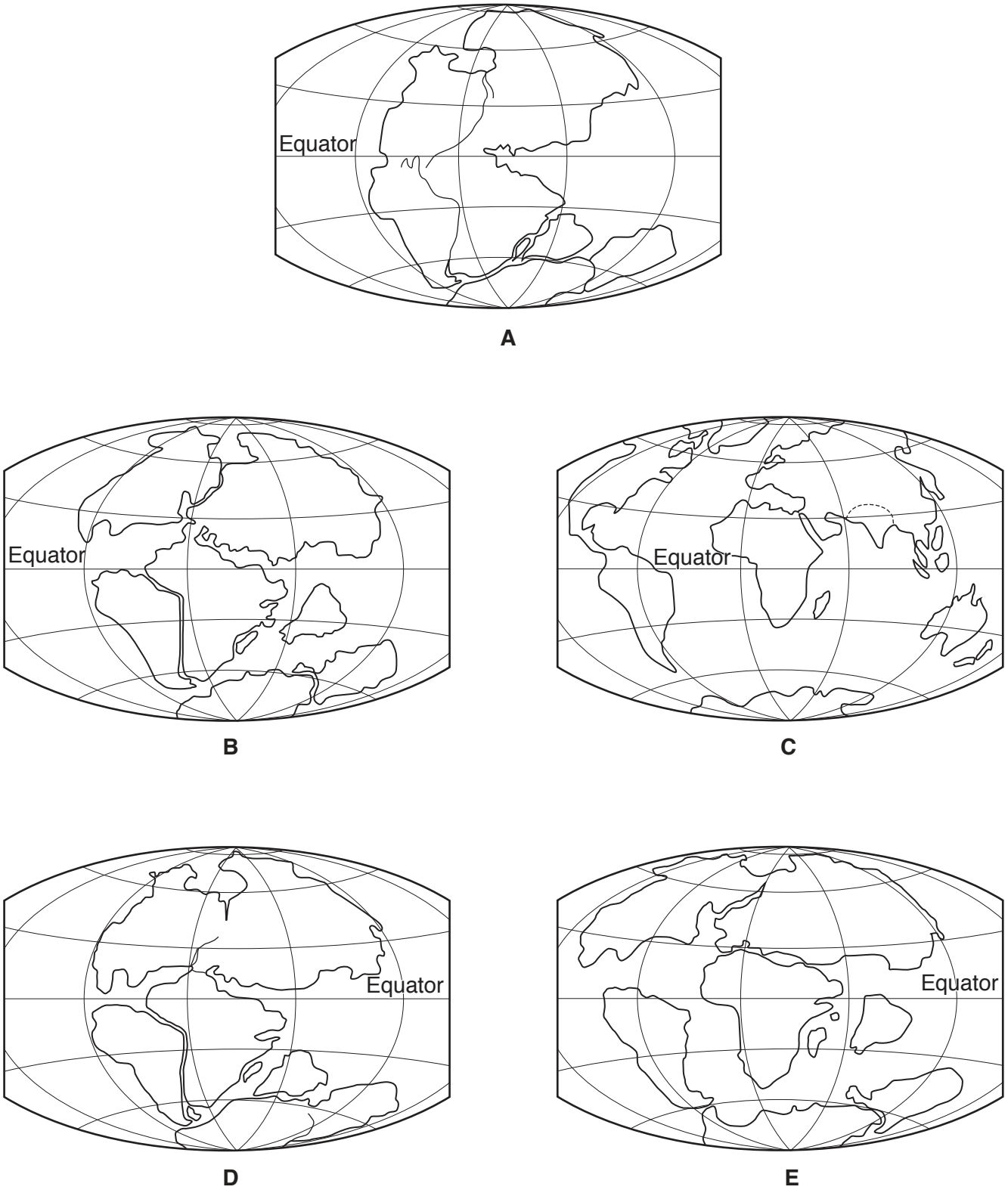


Fig. 4.1

(a) Complete Table 4.1 to show the order in which the changes in the positions of the Earth's land masses occurred.

Table 4.1

order	diagram
1	**A**
2	
3	
4	
5	

[3]

(b) Name the process that caused the land masses to move apart.

..... [1]

(c) **(i)** Outline the formation of tsunamis.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(ii) State **two** possible effects of a tsunami.

1 .....

.....

2 .....

..... [2]

[Total: 10]

5 Fig. 5.1 shows the fish pens in a fish farm.

Fig. 5.1

(a) Suggest **one** advantage and **one** disadvantage of the addition of each of the following to the fish pens.

(i) antibiotics

advantage .....

.....

disadvantage .....

..... [2]

(ii) food pellets

advantage .....

.....

disadvantage .....

..... [2]

(b) Fig. 5.2 shows the change in the aquaculture production of fish from 1970 to 2000.

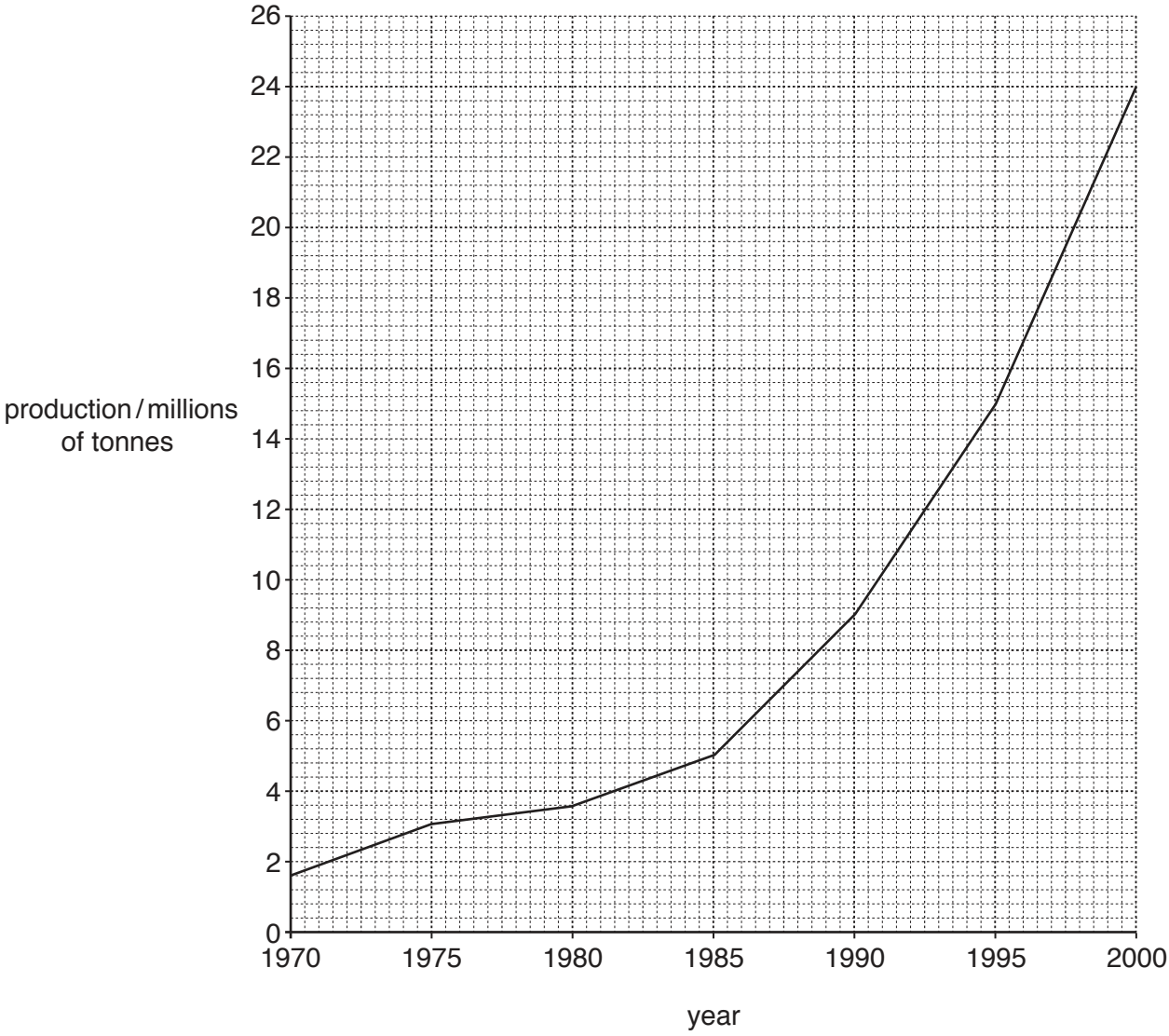


Fig. 5.2

(i) Calculate the rate of increase per year in the production of fish between 1970 and 2000. Show your working.

answer = ... [2]

(ii) Suggest **two** reasons for this increase in production.

1 .....

.....

2 .....

..... [2]

(c) Explain what is meant by each of the following terms used in fisheries economics.

(i) *market* .....

.....

.....

..... [2]

(ii) *barter* .....

.....

.....

..... [2]

(iii) *national trade* .....

.....

.....

..... [2]

[Total: 14]

6 Fig. 6.1 shows a traditional fishing boat.

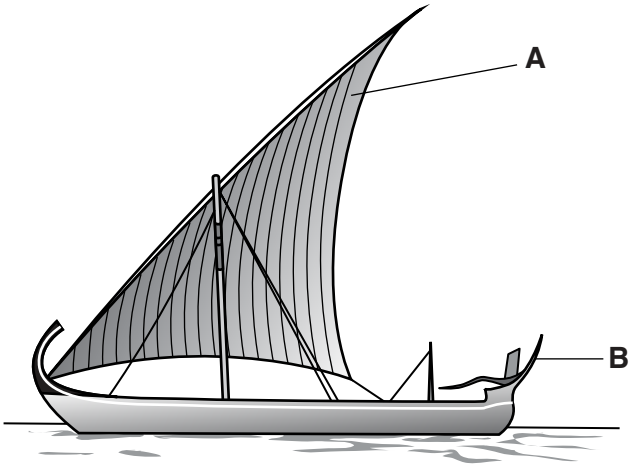


Fig. 6.1

(a) Name the parts labelled **A** and **B**.

A .....

B ..... [2]

(b) Name the type of navigational aid that would be used by a boat for each of the following.

(i) to find the depth of the water ..... [1]

(ii) to steer in thick fog ..... [1]

(iii) to navigate in unknown waters ..... [1]

(iv) to find the direction of the boat ..... [1]

(c) State **three** functions of a boatyard.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[Total: 9]

7 Fig. 7.1 shows how the oxygen concentration of sea water changes with depth.

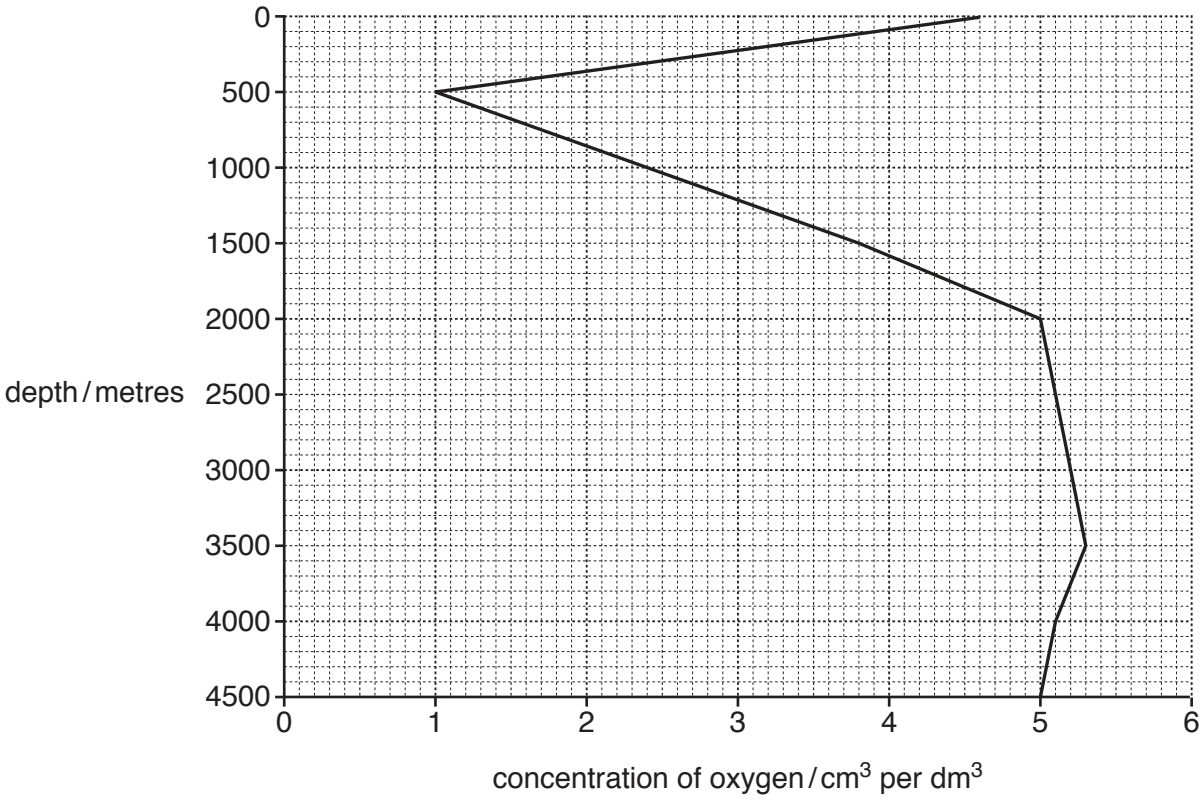


Fig. 7.1

(a) Use Fig. 7.1 to find the oxygen concentration at a depth of 500 metres.

..... cm^3 per dm^3 [1]

(b) Suggest explanations for the changes in the oxygen concentration in sea water as shown by Fig. 7. 1.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 5]

8 **(a)** Green turtles are an example of an endangered species.

State what is meant by the term *endangered species*.

.....

..... [1]

(b) Fig. 8.1 shows the number of nesting sites of three species of turtle between 2005 and 2010 on Bonaire, an island in the Caribbean.

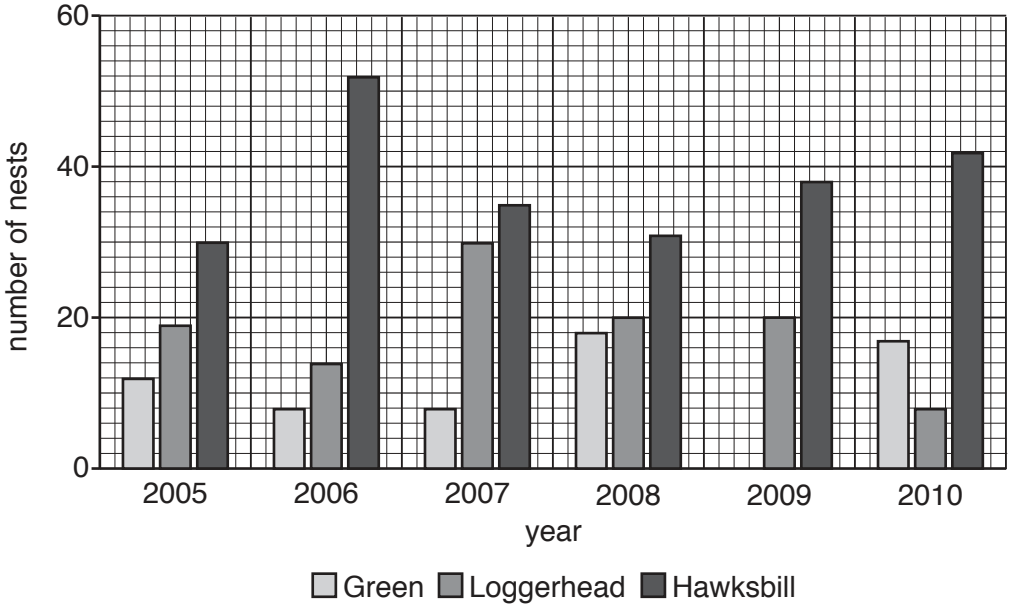


Fig. 8.1

(i) Calculate the difference in the total number of nests in 2005 and 2010.

..... nests [1]

(ii) Using the information in Fig. 8.1, describe the changes in the number of Hawksbill turtle nests from 2006 to 2010.

.....

.....

.....

.....

.....

..... [3]

(iii) State **one** method for the conservation of turtles.

.....

..... [1]

[Total: 6]

9 **(a)** Freshly caught fish spoil quickly.

State what is meant by each of the following terms.

(i) *autolysis* .....

.....

.....

..... [2]

(ii) *rigor mortis* .....

.....

.....

..... [2]

(b) Describe the process of putrefaction of fish.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 8]