UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

FISHERIES SCIENCE **5151/01**

Paper 1 **October/November 2007**

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 a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

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.

For Examiner's Use	
1	
2	
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Total	

This document consists of **11** printed pages and **1** blank page.

1 Fig. 1.1 shows a skipjack tuna.

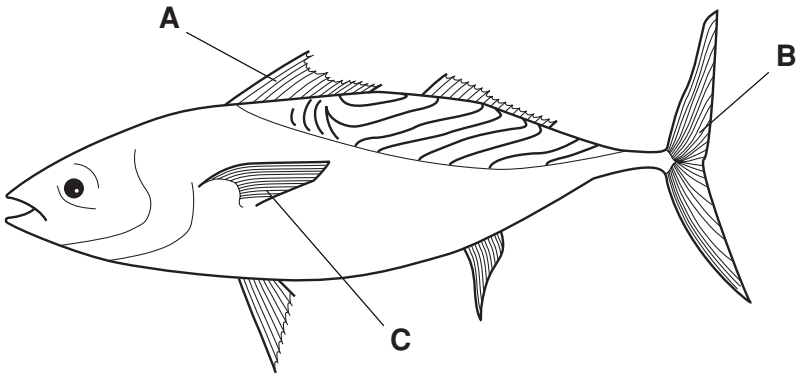


Fig. 1.1

(a) Name the parts labelled **A**, **B** and **C** and give **one** function of each part.

A Name .....

Function .....

B Name .....

Function .....

C Name .....

Function [6]

(b) Suggest why tuna swim with their mouths open.

.....

.....

..... [2]

(c) Tuna are pelagic migratory fish. They have elongated pectoral fins. Suggest why this feature is an advantage to tuna.

.....

..... [1]

2 Complete the passage below about fishing boat engines using the most appropriate words taken from the following list:

vibration	**two-stroke**	**induction**	**spark**
piston	**ignition**	**exhaust**	**maintain**
injector	**smoke**	**four-stroke**	**compression**

Marine engines are usually …… diesel engines. Unlike petrol engines, they do not have …… plugs. They have the disadvantages of being heavy and producing a lot of …… and …… when working. Their advantages are that the fuel is cheap and they are easier to …… than are petrol engines.

Air passes into the cylinder of the engine during the …… stroke. The piston moves up, compressing the air and raising the temperature during the …… stroke. In the power stroke, a fuel …… sprays fuel into the hot cylinder, where it burns. The spent gases are pushed out of the cylinder by the …… in the …… stroke. [10]

3 Fish have both red and white muscles.

(a) Table 3.1, refers to features of red and white muscles found in fish. If the feature is correct for the muscle type, place a tick (✓) in the box. If the feature is incorrect, place a cross (✗) in the box.

Table 3.1

Feature	Red muscle	White muscle
Contains a lot of fat		
Contains a lot of glycogen		
Contains actin and myosin		
Does not contain myoglobin		
Has a good blood supply		

[5]

(b) Suggest why reef fish contain a lot of white muscle but have little red muscle.

.....

.....

..... [2]

4 **(a)** Explain what is meant by the term *rigor mortis.*

.....

.....

.....

..... [3]

(b) There are three stages of rigor mortis – pre-rigor, rigor and post-rigor. These three stages are represented in Fig. 4.1 as **A**, **B** and **C**, but they are **not** shown in the correct order.

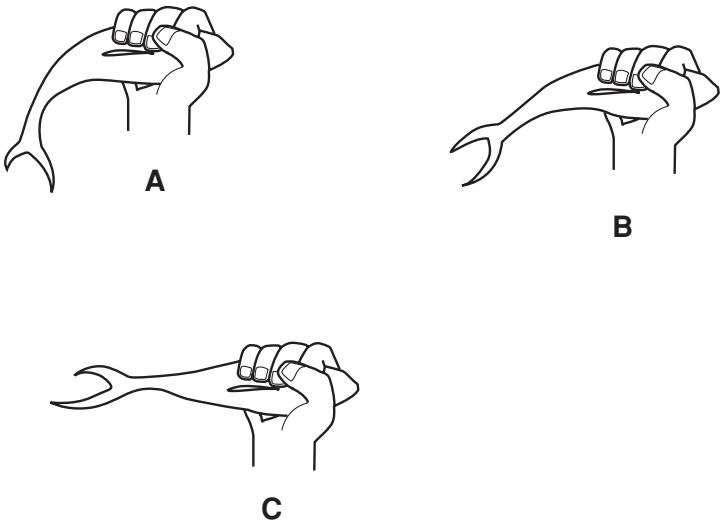


Fig. 4.1

(i) State the correct order for diagrams **A**, **B** and **C** in Fig. 4.1.

..... [1]

(ii) In which stage does the spoilage of fish begin?

..... [1]

(c) State **three** effects that will occur if fish are allowed to go into rigor mortis before they are frozen.

1. .....

2. .....

3. .....[3]

(d) State **two** processes, other than rigor mortis, involved in fish spoilage.

1. .....

2. .....[2]

5 There are three groups of economic resources needed for the survival of a society. These are natural, human and capital resources.

(a) State **three** different natural resources that Maldivian society can obtain from the sea.

1. .....

2. .....

3. ..... [3]

(b) Human resources refer to people who are producers or regulators in an economy.

(i) State the **two** main industries which produce wealth in the Republic of the Maldives.

1. .....

2. ..... [2]

(ii) State **two** main groups of people who are regulators of the economy.

1. .....

2. ..... [2]

(c) Give an example of a capital resource that is important for the development of fishing in the Maldives.

..... [1]

6 Several organisations are involved in monitoring and managing the fishing industry.

(a) Suggest why it is necessary to manage the fishing industry.

.....

.....

..... [2]

(b) State **three** ways in which the fishing industry is managed.

1. .....

2. .....

3. .....[3]

7 Fig. 7.1 represents a pyramid of biomass.

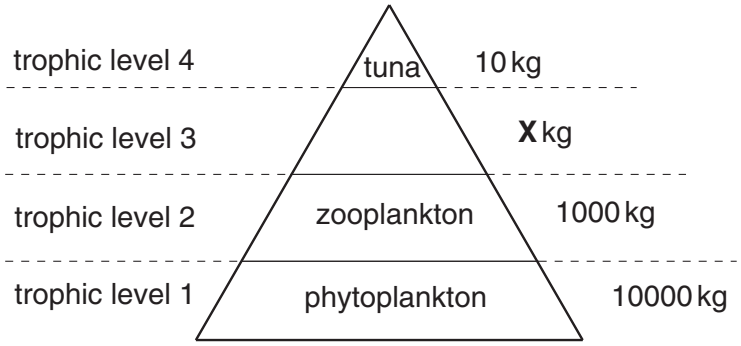


Fig. 7.1

(a) State the trophic level that contains herbivores.

..... [1]

(b) Name the group of organisms that would occupy trophic level 3 in Fig. 7.1.

..... [1]

(c) State the mass you would expect in this pyramid at **X.**

..... [1]

(d) Fig. 7.2 shows some organisms that would be found in this pyramid of biomass.

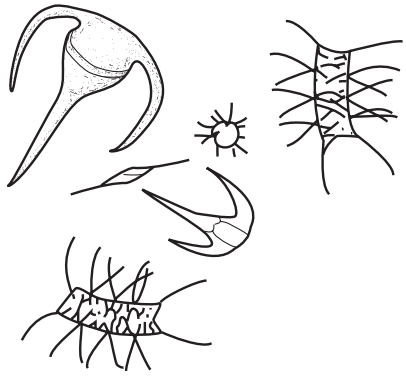


Fig 7.2

(i) State the trophic level in which they are found.

..... [1]

(ii) Name two other types of pyramid used to show ecological relationships.

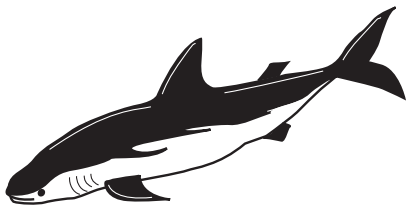
1 Pyramid of .....

2 Pyramid of ..... [2]

[Turn over

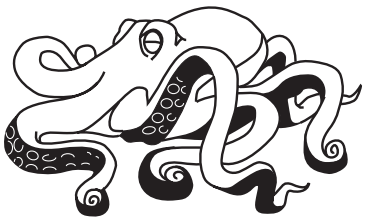
8 Fig. 8.1 shows some organisms that live in the marine environment.

A



B

C



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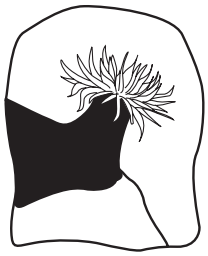

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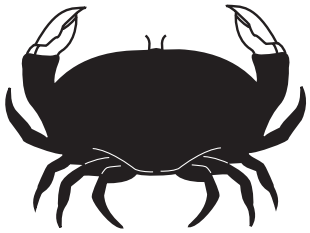
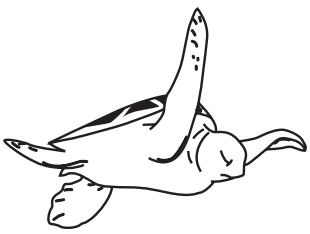
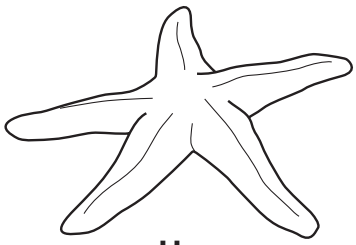


F



G



H

Not to scale

Fig. 8.1

(a) In Table 8.1 classify the animals, **A** to **H** shown in Fig. 8.1, into their groups. Write the letter of each animal in the correct box to show the group to which it belongs.

Some boxes will contain more than one letter.

Table 8.1

Group	Letters
Chordata	
Mollusca	
Echinodermata	
Crustacea	
Cnidaria	

[8]

(b) In Table 8.2 give **two** differences between animal **C** and animal **F**, shown in Fig. 8.1, that could be used in classification.

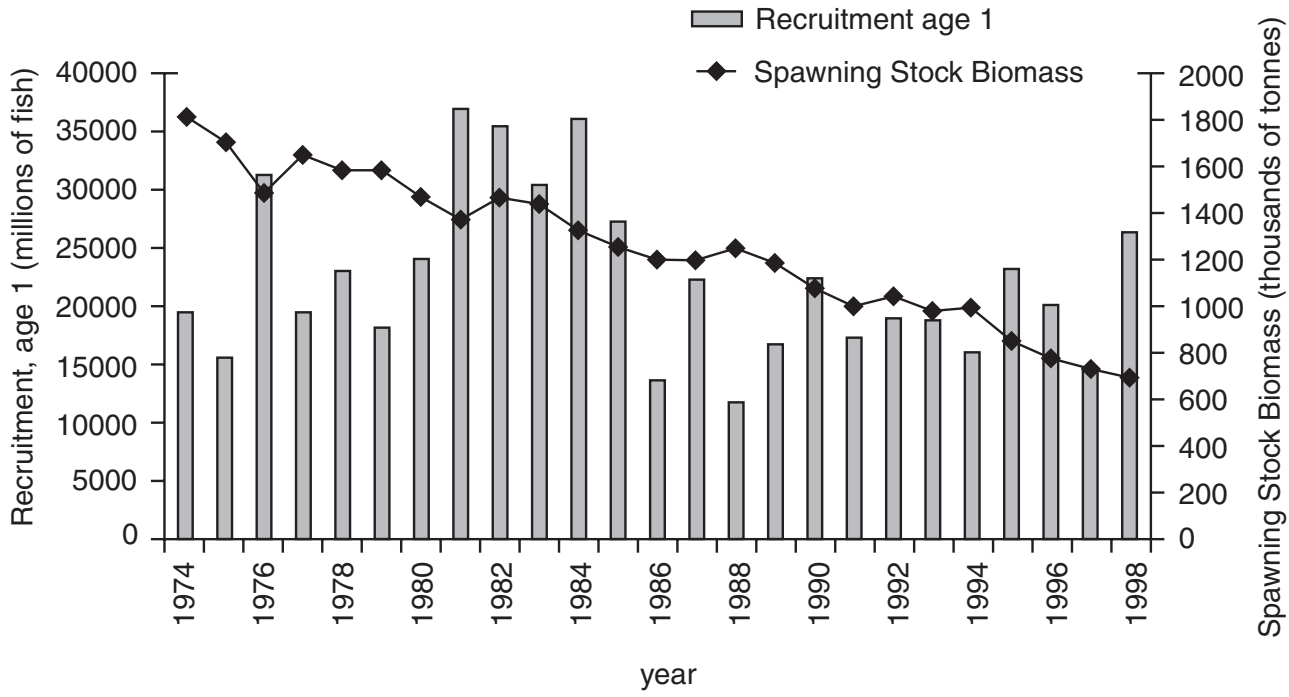
Table 8.2

Differences	Animal C	Animal F
First difference		
Second difference		

[4]

[Turn over

9 Herring is an important food fish caught off the coasts of Northern Europe. Fig. 9.1 shows the Spawning Stock Biomass (SSB) and the Recruitment of herring into the population at the age of one year, from 1974 to 1998.



(From European Communities Common Fisheries Policy. Report on the state of the resources and their expected development)

Fig. 9.1

(a) (i) State the year in which the Recruitment at age 1 was the greatest.

..... [1]

(ii) Suggest a reason for the variation in Recruitment at age 1.

..... [1]

(b) Suggest what is meant by the term *Spawning Stock Biomass.*

.....

.....

..... [2]

(c) (i) State the trend in the Spawning Stock Biomass shown in Fig. 9.1.

..... [1]

(ii) Suggest a cause for this trend.

.....

..... [1]

10 **(a)** Explain what is meant by each of the following terms.

(i) Continental shelf .....

.....

.....

..... [2]

(ii) Abyssal plain .....

.....

.....

..... [2]

(b) Give three differences between a fringing reef and a barrier reef.

1. .....

.....

2. .....

.....

3. .....

..... [3]

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