

Cambridge IGCSE[™]

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

MARINE SCIENCE 0697/02

Paper 2 For examination from 2020

SPECIMEN PAPER 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 60.
- The number of marks for each question or part question is shown in brackets [].

This document has 12 pages. Blank pages are indicated.

Section A

Answer both questions in this section.

Write your answers in the spaces provided.

1 A Marine Protected Area (MPA) was set up off the coast of South Africa in 1990.

The total catch of seabream from areas of ocean close to the MPA were recorded over a period of ten years. The results are shown in Table 1.1.

Table 1.1

year	seabream catch / kg
1990	200
1992	500
1994	800
1996	1200
1998	1300
2000	1350

(a)	(i)	State what is meant by the term Marine Protected Area.
		[4]
		1

3 (ii) Draw a bar chart of the data in Table 1.1 on the grid provided.

[4] (b) (i) Within which two-year period was there the largest change in catch? Calculate the change in seabream catch between 1990 and 2000. Show your working and state your units.

...... and[1] (ii) [2]

	(iii)	Describe the change in seabream catch between 1990 and 2000.	
			[∠]
(c)	Sug	gest three reasons for the change in seabream catch in areas close to the MPA.	
	1		
			[3]
(d)	Sug	gest one advantage and one disadvantage of MPAs to fishermen.	
	adva	antage	
	disa	dvantage	
			[2]

[Total: 15]

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2 Fig. 2.1 shows a marine food chain and the total biomass at each trophic level.

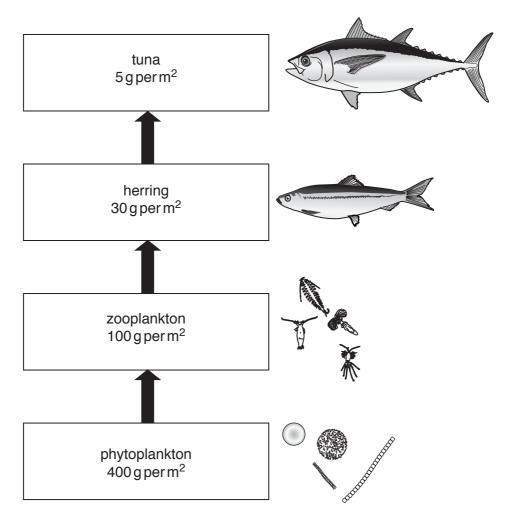


Fig. 2.1

(a)	(i)	Use Fig. 2.1 to name:	
		a producer	
		a carnivore at trophic level three	[2]
	(ii)	Predict the effect of overfishing of tuna on the population of zooplankton. Explain t reason for this.	he
		prediction	
		explanation	

[3]

((iii)	Draw a	labelled	pyramid	of biomass	for this	food chair	٦.

[2]

(b) Table 2.1 shows the total energy in each trophic level each year.

Table 2.1

trophic level	total energy / kJ per m² per year
phytoplankton	250 000
zooplankton	23 000
herring	1800
tuna	150

(i) The percentage of energy that is lost during the transfer between herring and tuna can be calculated using the following equation.

percentage of energy lost =
$$\left(\frac{\text{energy in herring} - \text{energy in tuna}}{\text{energy in herring}}\right) \times 100$$

Calculate the percentage of energy that is lost during the transfer between herring and tuna.

Show your working.



(ii) Explain why the percentage of energy lost between herring and tuna is high.	
	[3]
(c) Inorganic nutrients such as nitrates and phosphates are also passed along the food chain	١.
Suggest why overfishing of tuna and herring would reduce the quantity of nutrients availa to the rest of the food chain.	ıble
	[3]
[Total:	15]

Section B

Answer **both** questions in this section.

Write your answers in the spaces provided.

3	(a)	(i)	Boats are built from a range of materials.
			Name one of these materials and describe how its properties make it suitable for building boats.
			material
		(ii)	Describe the features of a typical fishing boat.
		(,	

(b)	Des	scribe each of the following fishing methods and explain their environmental impacts.
	(i)	pole-and-line fishing
	(ii)	pelagic long-lining [3]
	(11)	pelagic long-inning
		[3]
		[Total: 15]

4	(a) (i	i)	State what is meant by the term extensive aquaculture.
			[2]
	(i	i)	Describe the possible environmental impacts of extensive aquaculture.
			[5]

(b)	Aquaculture produces large quantities of fish that are processed and preserved to prevent spoilage.
	Describe the processes involved in the spoilage of fish.
	[8]

[Total: 15]

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