

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS General Certificate of Education Advanced Subsidiary Level and Advanced Level

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		



9693/01 MARINE SCIENCE

Paper 1 AS Structured Questions

May/June 2013 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 pencil for any diagrams, graphs or rough work.

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.

Electronic calculators may be used.

This document consists of 14 printed pages and 2 blank pages.

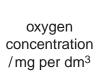


(i)				
(ii)	community.			
) Tab	le 1.1 shows		le sizes found on two differ able 1.1	ent types of shore.
		type of shore	particle diameter/mm	
	_	sandy	0.02 to 2.0	
		muddy	0.002 to 0.2	
(i)	Compare th	e particle sizes of t	he sandy shore and the m	uddy shore.
(i)			he sandy shore and the m	
(i) (ii)				

For Examiner Use	shore tends to have a higher biodiversity than a sandy shore.	(111)
	F.41	
	[4]	
	[Total: 13]	

2 (a) Fig. 2.1 shows the oxygen concentration at different temperatures in fresh water.

For Examiner's Use



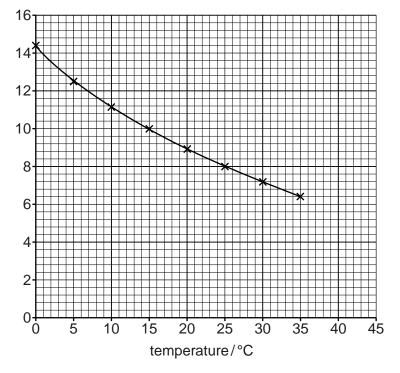


Fig. 2.1

(i) State the change in oxygen concentration between 5 °C and 15 °C.

.....[2]

(ii) Use Fig. 2.1 to estimate the oxygen concentration at a temperature of 45 °C.

[1]

(iii) Table 2.1 shows the oxygen concentration in sea water at different temperatures.

Table 2.1

temperature/°C	0	5	10	15	20	25	30	35
oxygen concentration /mg per dm ³	11.4	10.0	8.6	8.0	7.4	6.4	6.0	5.4

Plot these data on Fig. 2.1.

[4]

(iv)	Describe the differences between the oxygen concentrations in fresh water and in sea water.	For Examiner's Use
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(b) Fig. 2.2 shows the oxygen concentration at different depths in sea water.



[Total: 15]

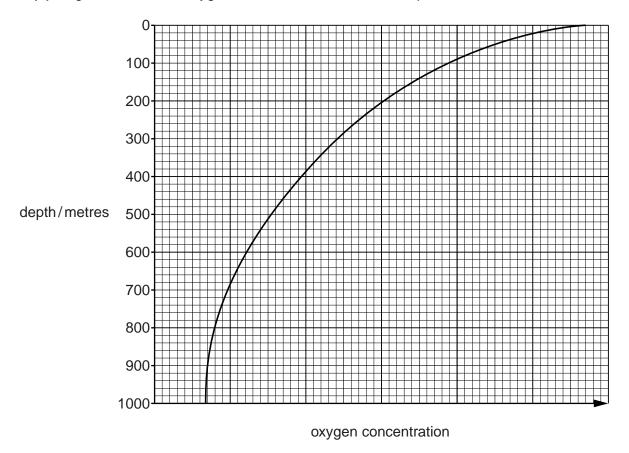


Fig. 2.2

Explain the relationship between oxygen concentration and depth as shown in Fig. 2.2.
rel
[5]

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Turn over for question 3.

3 Fig. 3.1 shows part of a food web in a kelp forest.

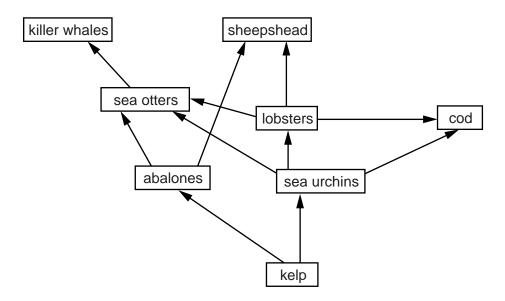


Fig. 3.1

(a)	With reference to Fig. 3.1, explain what is meant by a <i>producer</i> .
	[4]
(b)	With reference to Fig. 3.1, explain what is meant by a predator-prey relationship.
	[3]

(c)	Commercial fishing in this area targets cod and sheepshead. Using the information in Fig. 3.1, suggest and explain one possible effect of commercial fishing on the population of sea otters.	For Examiner's Use
	[4]	
	[7] [Total: 11]	
	[Iotal. 11]	

4	(a)	Describe three pieces of evidence supporting the theory of plate tectonics.
		1
		2
		3
		[6]
		Fig. 4.1
		With reference to Fig. 4.1, explain how movements at a plate tectonic boundary can lead to the formation of an ocean trench.
		[3]

For Examine Use	tsunami.	(C)
	[4]	
	[Total: 13]	

5	(a)	(i)	Explain what is meant by the term <i>productivity</i> , in marine ecosystems.
			[3]
		(ii)	List three factors which affect productivity.
			1
			2
			3
			161

(b) Fig. 5.1 shows variations in productivity with depth in the Northeast Pacific Ocean in winter, spring and summer.

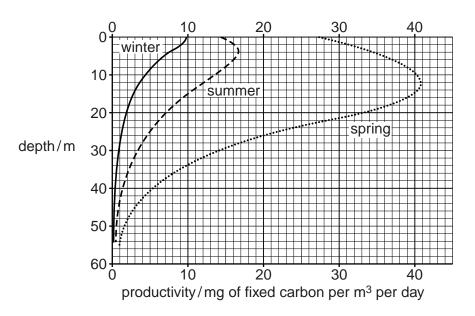


Fig. 5.1

(i)	State the depth at which the difference in productivity between winter and spring is greatest.
	[1]
(ii)	Suggest explanations for the differences between the productivity in the Northeast Pacific Ocean in the winter and the spring.
	[4]
	[Total: 11]

(a)	Rur	unoff is important in replenishing the reservoir of dissolved nutrients in the sea.		
	(i)	Describe what is meant by the term runoff.		
		[3]		
	(ii)	Suggest how runoff can be harmful to marine organisms.		
		[3]		
	(iii)	Suggest how runoff can be beneficial to marine organisms.		
		[2]		

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(b)	The mean concentration of calcium in sea water is 0.41 parts per thousand.	For
	Suggest why this concentration remains approximately constant.	Examiner's Use
	[4]	
	[Total: 12]	

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