## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

## MARK SCHEME for the May/June 2009 question paper for the guidance of teachers

## 9693 MARINE SCIENCE

9693/01

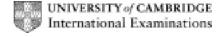
Paper 1 (AS Structured Questions), maximum raw mark 75

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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	Page 2			Mark Scheme: Teachers' version		Syllabus	Paper
				GCE A	/AS LEVEL – May/June 2009	9693	01
1	(a)	(i)	a gro	oup of organism	s that share similar characteristics	and can interbreed;	[1]
		(ii)	grou	p of interbreedir	ng organisms of the same species;		[1]
		(iii)	all o	f the plants and	animals/organisms living in a spec	ific area;	[1]
		(iv)		munity of anima rence to biotic a	ils, plants and bacteria with the phy nd abiotic;	sical and chemical e	environment/ [1]
	(b)	(i)	ener (pho refer	mosynthetic) bargy source is from	m chemical reactions; ergy source is light; hyll;		[4]
		(ii)	high no li	water temperat pressures;	cal energy source;		
			low <sub>l</sub>	pH/very acid;			[3]
							[Total: 11]
2	(a)	sali	nity ir	ncreases;			[1]
	(b)	three of: run off; volcanic activity; erosion; upwelling; precipitation; atmospheric dissolution; photosynthesis; respiration; pollution/named example;				[3]	
	(c)		four start no c large	of: at 28/29 °C; hange; e fall;	(allow reverse points if start from	1000 m)	
				II fall; ference to corre	ct figures from chart;		[4]
		(ii)	therr	mocline;			[1]

Page 3			Mar	k Scheme: Tea	achers' version	S	yllabus	Paper
			GCE	A/AS LEVEL -	- May/June 2009		9693	01
(d)	(i)	corre line;	ect plots;;;	-1 each incorr accept smooth	ect n or straight line			[4]
(	(ii)		e) fall; 34.9 to 34.4/l	oy 0.5;				[2]
								[Total: 15]
3 (a)	(i)			unts <b>and</b> eats o or from food w				[2]
(	(ii)		• .	vel in a food ch such as e.g. co	nain; od are carnivores/fo	eed on zoop	lankton)	[2]
(b)	(i)	5;						[1]
(	(ii)	one of diseat pollut fishin refere	ase; tion; ng;	ges in food sup	ply/owtte;			[1]
<b>(c)</b> r	not	deper	ndant on one	source/alterna	tive food available	if normal pre	ey population	n falls; [1]
(d)	(i)	small (large 1 cor	to1980; I fall to 1990; er) fall to 2000 rect reference		) 000 in 1980);			[3]
(	(ii)	popu	numbers less lation of cod	than pollock/or rises as pollock occur at same	does/falls as pollo	ock does;		[2]
(i	iii)	less of	caught; ence to quota	of food/feeds ons; I warming cons				[1]
								[Total: 13]

Page 4	Mark Scheme: Teachers' version	Syllabus	Paper			
_	GCE A/AS LEVEL – May/June 2009	9693	01			
plus prev less	e of: ment covers coral polyp; any two of: vents feeding; light can reach zooxanthellae; uced/little photosynthesis;		[3]			
sea	on dioxide dissolves in sea water; water becomes acidic; olves coral skeleton;		[3]			
(b) (i) 40%	;		[1]			
(ii) 30%	;		[1]			
(c) (i) cond stee	crete; I;		[2]			
long attra non	of: lily available; lasting; active to marine organisms; toxic/owtte; ng/sturdy/owtte;		[2]			
reference prevent e dissipate	create new habitat for marine organisms; reference to tourism/fishing/diving; prevent erosion of shore; dissipate energy of waves;					
	protect anchorages; reference to research/owtte;					
			[Total: 15]			
(a) area bet	area between high and low water (marks)/area submerged at high tide and exposed at low tide; [1					
sedimen	ved by action of waves/wind/rain/owtte; tation/description;					
sand/oth	er material deposited by waves/wind/owtte;		[4]			
tides exp changes	need to be able to resist wave action/cling to rocks/live under shelter/holdfasts/tough shells; tides exposes organisms to air/need adaptations to survive drying out; changes in temperature; changes in salinity;					
exposed	to predators for part of day/need to hide/camouflage; anisms adapted to these conditions will survive;		[4]			
-			[Total: 9]			

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Page 5	Mark Scheme: Teachers' version	Syllabus	Paper
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## **6** (a) four of:

caused by gravitational pull (mainly) from the moon;

reference to sun;

moon's gravity pulls on the Earth, pulling the ocean waters toward the Moon;

creates a bulge of water/pulls water;

bulge on the exact opposite side of the Earth as the Earth is pulled toward the Moon and away from the water;

reference to high and low tides;

[5]

- (b) (i) <u>vertical</u> difference/difference in <u>height</u> between the highest <u>high</u> tide and the lowest <u>low</u> tide; [1]
  - (ii) three of:

alignment of Sun and Moon;

geomorphology;

wind;

air pressure

size of body of water/depth of water;

[3]

- (c) (i) 13.2 metres; [1]
  - (ii) 12 <u>hours</u> 21 <u>minutes</u>; R 12:21 [1]
  - (iii) 0.7 to 1.0 (m); [1]

[Total: 12]