

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Advanced Subsidiary Level

MARK SCHEME for the October/November 2014 series

9693 MARINE SCIENCE

9693/01

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

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9693	01

Question	Expected answers	Additional guidance	Marks
1 (a) (i)	parasitism ; one organism benefits at expense of other / owtte ; nematodes gain food from tuna tissues ; tuna is harmed ;		[2]
(ii)	symbiosis / mutualism ; both organisms benefit from relationship / owtte ; coral provides protection / photosynthetic materials ; zooxanthellae photosynthesise ; provide food for coral ;		[2]
(b)	as temperature increases % dead coral increases / % healthy coral decreases ; as temperature increases bleaching increases / ora ; reference to bleached corals increasing then decreasing ; correct reference to change stated in figures ;		[3]
(c) (i)	axes fully labelled ; axes with suitable scales ; plots plotted correctly ; line of best fit / point to point ;	tolerance $\pm \frac{1}{2}$ square	[4]
(ii)	decreases by $0.55 \times 10^6 \text{ cm}^{-2}$ / from 0.6 to $0.05 \times 10^6 \text{ cm}^{-2}$;		[1]
			[Total: 12]

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9693	01

Question	Expected answers	Additional guidance	Marks
2 (a)	light <u>energy</u> ; to chemical (energy) ; in organic material/ named ; carbon dioxide and water ; oxygen released ;	allow in equation (words or symbols)	[4]
(b) (i)	(Steller sea lions are) predator, (cod are) prey;		[1]
(ii)	ONE of: shrimp ; zooplankton ; molluscs ;		[1]
(iii)	TWO of: reflected by clouds/sea/water/waves ; water absorbs some light ; phytoplankton too deep ; reference to sediments in water ;		[2]
(iv)	lost in heat from respiration ; not all organism eaten ; lost in excretion/egestion ;		[2]
(c) (i)	64/25 ; 2.56 per year;		[2]
(ii)	increase in humans ; more sea lions killed ; OR fall in number of herring ; less food for sea lions ;		[2]
			[Total: 14]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9693	01

Question	Expected answers	Additional guidance	Marks
3 (a) (i)	A – barrier reef ; C – fringing reef ;		[2]
(ii)	B, C, A ;	2 in correct sequence = 1	[2]
(b) (i)	land (and carried by rivers into sea) ; (carried by storms from) open sea ; avp;		[2]
(ii)	from 375 metres to 700 metres ;	allow from 375 metres	[1]
			[Total: 7]

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9693	01

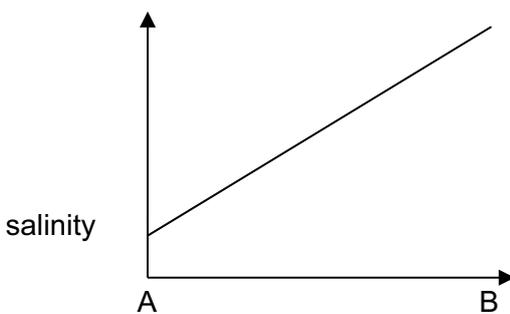
Question	Expected answers	Additional guidance	Marks
4 (a)	any 1 named organic compound ;		[1]
(b) (i)	carbon dioxide ;		[1]
(ii)	burning / combustion of fossil fuels ;		[1]
(iii)	upwelling ;		[1]
(iv)	dissolving of shells / rocks / erosion / weathering / owtte ;		[1]
(v)	amount taken in for photosynthesis equals amount given out by respiration /owtte ; reference to figures – 90 in, 90 out ; amount from upwelling and death / decay is the same ; reference to figures – 37 and 37 ;		[3]
(vi)	acidification of sea water / decrease in pH /owtte ; reference to any named effect, e.g. dissolves skeletons of corals ; reference to increase in productivity / increased rate of photosynthesis ;		[2]
			[Total: 10]

Page 6	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9693	01

Question	Expected answers	Additional guidance	Marks
5 (a)	<p>Earth's crust/lithosphere made up of plates ;</p> <p>(plates float) on asthenosphere ;</p> <p>(plates) moving / owtte ;</p> <p>convection currents in magma / mantle below plate is moving ;</p> <p>driven by heat / density ;</p> <p>plate (boundaries) named ;</p>	R Earth made of plates	[4]
(b)	<p>fit between coastlines / owtte ;</p> <p>distribution of fossils / e.g. ;</p> <p>magnetic stripes on ocean floor ;</p>		[3]
(c) (i)	<p>convergent plate boundaries / description ;</p> <p>reference to pressure build up ;</p> <p>thin earth's crust ;</p> <p>pressure released ;</p> <p>hot gases / molten rock / magma / lava escape through surface ;</p> <p>OR</p> <p>divergent plate boundaries ;</p> <p>plates move apart ;</p> <p>magma / lava rises to fill space and solidifies ;</p> <p>new crust formed ;</p> <p>lava cools / solidifies to form rock ;</p> <p>builds up volcano form ;</p>		[3]

Page 7	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9693	01

(ii)	convergent plate boundaries / description ; 'lock' together ; subduction / owtte ; further movement causes pressure build up ; plates slip releasing pressure ; transform boundaries ; pressure build up released by earthquake ;		[3]
[Total: 13]			

Question	Expected answers	Additional guidance	Marks
6 (a)	evaporation increases salinity ; precipitation decreases salinity ;		[2]
(b)	salinity increases with depth / water with low salinity is above water with high salinity ; (overall) change in salinity is small ; saltier water is more dense / ora ; denser water at bottom of ocean / ora ; reference to halocline / large, rapid change in vertical salinity gradient ;		[3]
(c) (i)	line increasing left to right, e.g. 		[1]
(ii)	fresh water at A with low salinity ; fresh water mixes with sea water at mouth of river / estuary ; gives low salinity at mouth of river / estuary ; salinity increases with distance from river ; normal sea water salinity in open sea / B ;		[4]
[Total: 10]			

Page 9	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9693	01

Question	Expected answers	Additional guidance	Marks
7 (a)	low pressure area ; thunderstorms ; strong winds/wind speed of 74 mph / 119 kph ; heavy rain ;		[4]
(b) (i)	lower pressure, higher category / ora ;		[1]
(ii)	rise of sea water above mean sea level caused by severe weather system / owtte ;		[1]
(c)	water to deserts / owtte ; fills reservoirs ; replace soil nutrients ; brings nutrients to sea surface / reference to upwelling ; named nutrient* ; reference to increased productivity ; reference to increased / faster crop growth / owtte ;	* anywhere	[3]
			[Total: 9]