

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2014 series

5180 MARINE SCIENCE

5180/02

Paper 2, maximum raw mark 60

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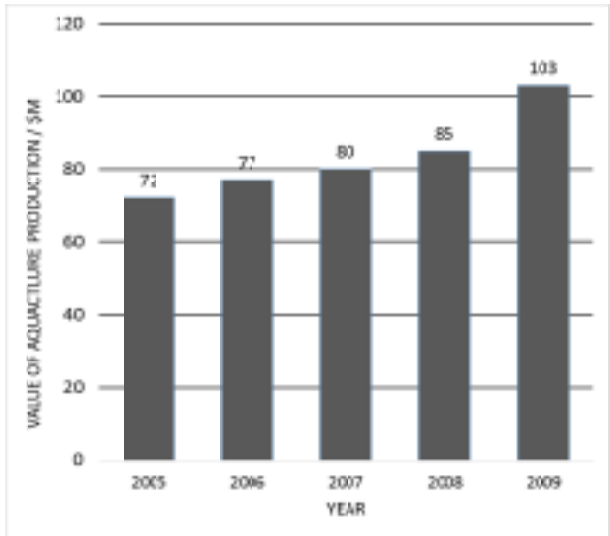
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Question	Expected answers	Additional guidance	Marks												
1 (a)	<p>axis labelled year ;</p> <p>linear axis labelled value of aquaculture production / \$m ;</p> <p>5 bars plotted correctly (1 mark for each bar) ; ; ; ; ;</p>	<p>sample graph</p>  <table border="1"> <caption>Value of Aquaculture Production / \$m</caption> <thead> <tr> <th>Year</th> <th>Value (\$m)</th> </tr> </thead> <tbody> <tr> <td>2005</td> <td>72</td> </tr> <tr> <td>2006</td> <td>77</td> </tr> <tr> <td>2007</td> <td>80</td> </tr> <tr> <td>2008</td> <td>85</td> </tr> <tr> <td>2009</td> <td>103</td> </tr> </tbody> </table>	Year	Value (\$m)	2005	72	2006	77	2007	80	2008	85	2009	103	[7]
Year	Value (\$m)														
2005	72														
2006	77														
2007	80														
2008	85														
2009	103														
(b)	reference to an overall increase ;		[1]												
(c) (i)	<p>103 – 72 ;</p> <p>= 31 \$m ;</p>		[2]												
(ii)	<p>any TWO of:</p> <p>increased production (by aquaculture) ;</p> <p>increased demand ;</p> <p>increased production of high value products ;</p>		[2]												

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(d)	<p>any THREE of:</p> <p>no need for (expensive) fishing gear and boats/eq ;</p> <p>lower production costs/lower maintenance costs ;</p> <p>lower capital investment ;</p> <p>increased production/ increased yield ;</p> <p>predictable yield ;</p> <p>(high) quality product ;</p> <p>idea that product is safe for consumers ;</p> <p>no depletion of wild stocks/eq ;</p>	<p>I 'easy to produce'</p> <p>A 'expensive equipment not needed'</p> <p>I bigger prawns</p> <p>A less health risk / healthy product / healthy prawns</p> <p>A 'overfishing cannot occur'</p>	[3]
[Total: 15]			

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2 (a) (i)	herring ;		[1]
(ii)	whiting ;		[1]
(iii)	2007 ;		[1]
(iv)	79 585 (tonnes) ;		[1]
(b) (i)	$(13067 \div 76612) \times 100\%$; = 17 (.1 %) ;		[2]
(ii)	any THREE of: reference to higher percentage of total for cod in 2010 ; cod less abundant in 2007 ; quota for cod increased in 2010 ; quotas for other species / named examples reduced ; other species / named example less abundant ; monkfish quotas stay the same (2007 to 2010) ;	I descriptions of percentages R 'more cod'	[3]
(c)	any THREE of: quotas represent total allowable catch ; prevent overfishing / overexploitation ; catches kept below MSY ; maintain population / increase population / increase reproduction / increase spawning ; reference to population growth = rate of fishing ;	A idea of catching a certain amount of fish, <i>or</i> limits the catching of fish	[3]

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(d)	any THREE of: licences / laws / fines / permits ; boat restrictions ; fishing gear restrictions, e.g. mesh size, not using purse seine nets ; closed seasons ; closed areas ; surveillance ;	A reference to Marine Protected Areas / catching fish away from protected areas R EEZ / economic exclusion zones	[3]
[Total: 15]			

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3	(a) (i)	detects , pressure changes / vibrations ;		[1]
	(ii)	protection (against predators / abrasion) / reduce drag / increase hydrodynamic efficiency ;		[1]
	(iii)	reduce / control + pitching / yawing / rolling movements ;		[1]
	(b)	<p>skeleton / bones ; reference to support / movement / flexible backbone / eq ;</p> <p>gills ; gas exchange / respiration / osmoregulation / eq ;</p> <p>heart ; idea that it pumps blood (around the body / to gills) ;</p> <p>swim bladder ; reference to buoyancy ;</p> <p>gonads / ovaries / testes ; production of gametes / eq ;</p> <p>gut / stomach / intestines / ileum ; reference to digestion / absorption / eq ;</p> <p>muscles ; reference to movement ;</p>	<p>accept points from a labelled diagram of a dissected fish</p> <p>A stomach 'stores food'</p>	[12]
				[Total: 15]

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4 (a) (i)	<p>credit named example, such as phytoplankton/ sea grass/ algae/ seaweed/ plant/ eq ;</p> <p>any TWO of:</p> <p>reference to photosynthesis/ autotrophic/ use light ;</p> <p>production of organic substances/ named example/ food ;</p> <p>from inorganic substances/ eq ;</p> <p>way in which energy enters food chains/ food webs ;</p>	<p>R phytoplankton <u>and</u> zooplankton</p> <p>R production of food <u>and</u> energy</p> <p>A CO₂ or H₂O</p> <p>A 'makes food for other organisms / consumers' = 2 marks</p>	[3]
(ii)	<p>nitrate required for synthesis of amino acids/ DNA/ RNA/ organic bases/ nucleotides ;</p> <p>and proteins/ polypeptides ;</p> <p>phosphates for DNA/ RNA/ nucleic acids ;</p> <p>phosphates for ATP ;</p> <p>phosphates for phospholipids/ cell membranes ;</p>		[3]
(b)	<p>upwelling explained as movement of water upwards ;</p> <p>upwelling brings nutrients upwards (from sea bed)/ eq ;</p> <p>(movement of water) as a result of wind ;</p> <p>reference to deflection of water by underwater ridge ;</p> <p>movement of water away from a coastline ;</p>		[4]

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(c)	<p>reference to bacteria / fungi ;</p> <p>(break down) dead remains / detritus / eq ;</p> <p>nutrients released ;</p> <p>credit reference to N/P/C ;</p> <p>further details, e.g. N from break down of proteins ;</p> <p>nutrients then available to producers / eq ;</p>	<p>A 'nitrifying bacteria'</p> <p>A 'dead fish'</p> <p>A references to ammonium / ammonia / nitrate / phosphate / carbon dioxide</p> <p>I 'organisms' unqualified, i.e. they must be <i>producers</i></p>	[5]
[Total: 15]			