

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge Ordinary Level

## **MARK SCHEME for the October/November 2014 series**

### **5180 MARINE SCIENCE**

**5180/01**

Paper 1 (Structured Questions), maximum raw mark 80

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.

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<b>Page 2</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge O Level – October/November 2014</b>	<b>5180</b>	<b>01</b>

<b>Question</b>	<b>Expected answers</b>	<b>Additional guidance</b>	<b>Marks</b>
<b>1 (a)</b>	any FOUR of: ref. to (sun) light (energy) ; (converted) to chemical energy ; ref. to chlorophyll ; (uses) carbon dioxide ; (uses) water; oxygen (given off) ; production of carbohydrate / CHO ;	<b>I</b> energy produced <b>I</b> chloroplasts  <b>A</b> glucose / sucrose / starch / any valid carbohydrate <b>I</b> food  for equation accept carbon dioxide ; water; → carbohydrate / CHO; + oxygen;	[4]
<b>(b) (i)</b>	fall of / AW ;  by 85 to 86 (arbitrary units) / from 100 to 14 / 15 (arbitrary units) ;		[2]
<b>(ii)</b>	any TWO of:  reflected by + sea surface / AW ;  some used / absorbed + by plants / for photosynthesis / AW ;  scattered + by particles / sediments in water / AW ;  absorbed + by water / AW ;		[2]

<b>Page 3</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge O Level – October/November 2014</b>	<b>5180</b>	<b>01</b>

<b>(c)</b>	any THREE of: (more) light available ; (more) photosynthesis takes place ; (more) phytoplankton / algae / producers ; idea of (more) food available (to animals / fish / herbivores) ; warm(er) / AW ; (more) oxygen available ; for respiration ;		[3]
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**[Total: 11]**

<b>Question</b>	<b>Expected answers</b>	<b>Additional guidance</b>	<b>Marks</b>
<b>2 (a)</b>	P – head / protein coat ; Q – tail ;	<b>A</b> capsid	[2]
<b>(b)</b>	R – DNA / nucleoid ; S – flagellum ; T – cell wall ;	<b>R</b> nucleus / RNA <b>A</b> flagella	[3]
<b>(c)</b>	any FOUR of: reference to putrefaction ; (bacteria) reproduce / divide / grow (rapidly) ; (bacteria) produce enzymes ; produce poisons / toxins ; ref. histamine / trimethylamine / TMA / hydrogen sulfide / indole ; smells / ammonia / AW ;		[4]

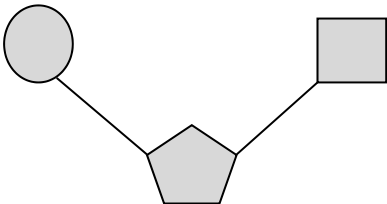
**[Total: 9]**

<b>Page 4</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge O Level – October/November 2014</b>	<b>5180</b>	<b>01</b>

<b>Question</b>	<b>Expected answers</b>	<b>Additional guidance</b>	<b>Marks</b>														
<b>3 (a)</b>	<table border="1"> <thead> <tr> <th><b>name of group</b></th> <th><b>letter of animal</b></th> </tr> </thead> <tbody> <tr> <td>mammal</td> <td>A ;</td> </tr> <tr> <td>reptile</td> <td>F ;</td> </tr> <tr> <td>cephalopod</td> <td>D ;</td> </tr> <tr> <td>cnidarian</td> <td>E ;</td> </tr> <tr> <td>echinoderm</td> <td>C ;</td> </tr> <tr> <td>annelid</td> <td>B ;</td> </tr> </tbody> </table>	<b>name of group</b>	<b>letter of animal</b>	mammal	A ;	reptile	F ;	cephalopod	D ;	cnidarian	E ;	echinoderm	C ;	annelid	B ;		[6]
	<b>name of group</b>	<b>letter of animal</b>															
	mammal	A ;															
	reptile	F ;															
	cephalopod	D ;															
	cnidarian	E ;															
	echinoderm	C ;															
annelid	B ;																
<b>(b) (i)</b>	any TWO of: B ; C ; D ;		[2]														
<b>(ii)</b>	E ;		[1]														
<b>[Total: 9]</b>																	

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge O Level – October/November 2014	5180	01

Question	Expected answers	Additional guidance	Marks
4 (a) (i)	A – (purse) seine (net) ; B – trawl ; C – gill net / drift net ; D – long / bottom line(s) ;	<b>R</b> vertical long line <b>A</b> horizontal	[4]
(ii)	any THREE of: <i>reference to</i> passive gear ; set at different / specific depth(s) ; <i>reference to</i> anchored / weighted ; floats / buoys ; (fish) entangled / trapped / caught ; by gills / operculum ;	<b>A</b> on / at sea bed / on / at the bottom	[3]
(b) (i)	non-target species / juveniles caught ;	e.g. unwanted fish caught	[1]
(ii)	increase mesh size (to allow small fish / juveniles to escape) ;		[1]
(c)	(net) dragged along sea bed / reef ;  (damage / destroy) reefs / corals / reef organisms / AW ;	<b>A</b> kills corals <b>I</b> other named reef organisms	[2]
			<b>[Total: 11]</b>

<b>Question</b>	<b>Expected answers</b>	<b>Additional guidance</b>	<b>Marks</b>
<b>5 (a) (i)</b>	tuna and salmon ;		[1]
<b>(ii)</b>	trout and oysters ;		[1]
<b>(iii)</b>	18.8 / 10 ; 1.88 / 1.9 ;		[2]
<b>(b)</b>	any TWO of: water ; vitamins ; fibre/roughage ;		[2]
<b>(c) (i)</b>	any ONE of: DNA / deoxyribonucleic acid ; RNA / ribonucleic acid ;		[1]
<b>(ii)</b>	1 mark per link ; 	max 1 if link between phosphate and base	[2]
<b>[Total: 9]</b>			

<b>Page 7</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge O Level – October/November 2014</b>	<b>5180</b>	<b>01</b>

<b>Question</b>	<b>Expected answers</b>	<b>Additional guidance</b>	<b>Marks</b>
<b>6 (a)</b>	idea of a large wave / large displacement of water ;  fast moving wave ;	I tidal wave	[2]
<b>(b) (i)</b>	$40 \times 12$ and $320 \times 12$ ;  $3360$ (km) ;		[2]
<b>(ii)</b>	any TWO of:  damage to buildings / houses / factories / eq ;  damage to infrastructure / roads / bridges / power lines / gas pipes ;  drowning / death (of people) ;  destruction of habitats / marine organisms e.g. corals / shoreline washed away / erosion ;  salination of fresh water / land / eq ;  kills palm trees / inland plant / crops ;  flooding ;		[2]
<b>[Total: 6]</b>			

<b>Page 8</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge O Level – October/November 2014</b>	<b>5180</b>	<b>01</b>

<b>Question</b>	<b>Expected answers</b>	<b>Additional guidance</b>	<b>Marks</b>
<b>7 (a) (i)</b>	1040 to 1060 ; thousand tonnes ;		[2]
<b>(ii)</b>	any THREE of:  fall, rise, fall ;  1965 to 1975/6 (fall) from 1450 (thousand tonnes) to 425 (thousand tonnes) <b>or</b> by 1025 (thousand tonnes) ;  1975/6 to 1984 (rise) from 425 (thousand tonnes) to 650 (thousand tonnes) <b>or</b> by 225 (thousand tonnes) ;  1984 to 1995 (fall) from 650 (thousand tonnes) to 100 (thousand tonnes) <b>or</b> by 550 (thousand tonnes) ;		[3]
<b>(b)</b>	any TWO of:  overfishing / catch exceeds MSY ;  fewer fish available / decrease in stock ;  decrease in fishing effort / days / fewer boats / smaller CPUE / AW ;  decreased demand ;	<b>1</b> causes of there being fewer fish	[2]
			<b>[Total: 7]</b>



Page 9	Mark Scheme	Syllabus	Paper
	Cambridge O Level – October/November 2014	5180	01

Question	Expected answers	Additional guidance	Marks
8 (a) (i)	mouth ;		[1]
(ii)	tentacles/tube feet ; picking up/collecting /catching + detritus/plankton/mud/organic matter/food ;	<b>A</b> for feeding	[2]
(b)	any FOUR of:  male <b>and</b> female gametes/eggs <b>and</b> sperm ;  (eggs/sperm/gamete) released into water/sea/ocean ;  external fertilisation/in water/sea/ocean ;  fertilised egg/zygote ;  (planktonic) larva(e) ;  reference to settling ;  grow/mature into adult ;	<b>A</b> all points on an annotated diagram	[4]
<b>[Total: 7]</b>			
Question	Expected answers	Additional guidance	Marks
9 (a) (i)	people who produce goods/ services ;	<b>A</b> example of goods / services	[1]
(ii)	people who buy/use goods/services ;	<b>A</b> example of goods / services	[1]
(b) (i)	(supplier) reduces price/price drops ;  to encourage/ stimulate demand/AW ;		[2]
(ii)	supply (of goods/services) equals demand (for goods/services)/ora ;	e.g. supply of fish equals demand	[1]
<b>[Total: 5]</b>			

<b>Page 10</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge O Level – October/November 2014</b>	<b>5180</b>	<b>01</b>

<b>Question</b>	<b>Expected answers</b>	<b>Additional guidance</b>	<b>Marks</b>
<b>10 (a)</b>	release / introduction / contamination + harmful / AW + substances / materials (into the environment as a result of human activities) ;		[1]
<b>(b) (i)</b>	any TWO of:  refuse ;  bunker oil ;  sewage ;  noxious substances ;		[2]
<b>(ii)</b>	illegal / banned / reference to fines / AW ;		[1]
<b>(iii)</b>	any TWO of:  toxic / poisonous / kill / harm marine organisms / e.g. ;  idea of bioaccumulation / build up in food chains / AW ;  disrupts food webs / chains <b>or</b> decreases biodiversity ;		[2]
			<b>[Total: 6]</b>