
MARINE SCIENCE

5180/01

Paper 1 Structured

October/November 2017

MARK SCHEME

Maximum Mark: 80

Published

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This document consists of **11** printed pages.

Question	Answer	Marks	Guidance
1(a)	(phylum) chordata / chordate ; (genus) <i>Thunnus</i> ;	2	
1(b)	A – caudal (fin) ; B – pectoral (fin) ; C – pelvic (fin) ; D – dorsal (fin) ;	4	I qualification of dorsal (e.g. first, second)
1(c)	propels / moves fish / AW ;	1	I swimming unqualified
1(d)	stabilise against rolling / AW ;	1	I for rolling
1(e)(i)	(maintain neutral) buoyancy / description of OR sound detection ;	1	
1(e)(ii)	swim continuously ; pectoral fins provide <u>lift</u> ; OR body fat ; (fat is) less dense (than water) (so provides lift) ;	2	I fat is light

Question	Answer	Marks	Guidance
2(a)	<p><i>any 2 of:</i></p> <p>ref. to tropical conditions / description of ;</p> <p>ref. to estuarine conditions / description of ;</p> <p>ref. to muddy / AW ;</p> <p>shallow water ;</p>	2	
2(b)	<p><i>any 3 of:</i></p> <p>reduce, force / energy of waves ;</p> <p>ref. (prop roots) reduce wave height / acts as breakwater / acts as wave break ;</p> <p>reduce depth of water ;</p> <p>reduces flooding ;</p> <p>reduce erosion / stabilise shore ;</p> <p>(protection) from storms / tsunamis / cyclones / hurricanes ;</p> <p>(roots) provide shelter (from predators / wave action) ;</p>	3	

Question	Answer	Marks	Guidance
2(c)(i)	Kedah ; Negeri Sembilan ;	2	A in either order
2(c)(ii)	22 496 ; ;	2	

Question	Answer	Marks	Guidance														
3(a)	<table border="1"> <thead> <tr> <th>feature</th> <th>letter</th> </tr> </thead> <tbody> <tr> <td>has an operculum</td> <td>A ;</td> </tr> <tr> <td>has an exoskeleton</td> <td>D ;</td> </tr> <tr> <td>has a body covered with fur</td> <td>C ;</td> </tr> <tr> <td>has a cartilaginous skeleton</td> <td>E ;</td> </tr> <tr> <td>has stinging cells</td> <td>B ;</td> </tr> <tr> <td>has tube feet</td> <td>F ;</td> </tr> </tbody> </table>	feature	letter	has an operculum	A ;	has an exoskeleton	D ;	has a body covered with fur	C ;	has a cartilaginous skeleton	E ;	has stinging cells	B ;	has tube feet	F ;	6	
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3(b)	identification (of organisms)/ AW ;	1	A sorting /grouping /classification														

Question	Answer	Marks	Guidance
4(a)	goods / services, to another country / AW ;	1	
4(b)	4 ;	1	
4(c)	April ;	1	
4(d)(i)	20.4 ;	1	
4(d)(ii)	8.4 ;	1	A ECF (28.8–4di)
4(e)	<p><i>any 2 of:</i></p> <ul style="list-style-type: none"> 1 price / tariff / tax ; 2 supply / quantity (available) / quota ; 3 demand / (the) market / type of fish / what the item is ; 4 distance ; 5 quality ; 6 laws / licences ; 7 time of year / season / month ; 8 weather ; 9 labour supply / cost ; 10 capital ; 11 economic growth ; 12 contract sales ; 13 conflict / war ; 14 politics / trade barrier ; 15 competition ; 16 (availability of) transport 	2	

Question	Answer	Marks	Guidance
5(a)	the breeding / rearing / farming / growing ; of aquatic / marine, plants / animals / named example ;	2	
5(b)(i)	minus ; 2.4 ;	2	
5(b)(ii)	as feed increases, dissolved oxygen decreases / ORA ;	1	I inversely proportional
5(b)(iii)	increased growth (rate) of fish (with more food) ; more oxygen <u>used</u> OR more respiration ; OR more waste products from fish / surplus food ; more, bacteria / decay, which <u>use</u> oxygen OR <u>eutrophication</u> ; AVP ; e.g. floating food prevents oxygen dissolution	2	

Question	Answer	Marks	Guidance
6(a)(i)	7 ;	1	I minus
6(a)(ii)	salmon AND mackerel ;	1	either order
6(b)(i)	<i>any 1 of:</i> (storage or source of) energy ; (thermal) insulation / description of ; protection (of soft organs) ; cell membranes ; making hormones ; idea of, electrical insulation ;	1	R idea of, energy <u>production</u>
6(b)(ii)	<i>any 1 of:</i> growth ; repair ; make, enzymes / hormones ;	1	
6(c)	<i>any 2 of:</i> vitamins ; minerals (salts / ions) ; carbohydrate ;	2	A maximum of one named vitamin A maximum of one named mineral A sugar or named (animal) carbohydrates A water

Question	Answer	Marks	Guidance
7(a)(i)	floating / buoyant, object / description of ; establishment of a food chain / description of / ecosystem ;	2	A either in terms of at the surface or in the body of the water I for navigation (of fish or fishermen)
7(a)(ii)	<i>any 2 of:</i> fish are more easily found / less time finding fish ; increased CPUE / less effort / easier to catch fish ; less fuel used / more profitable ; navigational aid (for fishermen) ;	2	I efficient unqualified
7(b)	<i>any 3 of:</i> non-target / endangered, species / named example, caught / by-catch ; (excessively) large numbers caught (at once) / harder to regulate catch size ; unsustainable / (easy to) exceed MSY ; risk of catching juvenile / young / immature fish ;	3	I vague descriptions such as 'wipe out ecosystem' or 'destroy foodchains' A overfishing / over-exploitation / depletion

Question	Answer	Marks	Guidance
8(a)(i)	<p><i>any 3 of:</i> reduce / prevent / stop, spoilage ;</p> <p>idea of, increases shelf life ;</p> <p>adds value / consumer appeal ;</p> <p>allows <u>long distance</u> transport / export ;</p>	3	
8(a)(ii)	canning ;	1	
8(b)	<p><i>any 3 of:</i> fillet / chopping up of, fish ;</p> <p>exposure to gamma / X rays ;</p> <p><u>kills</u>, bacteria / micro-organisms / pathogens ;</p> <p>detail of radioactive source e.g. cobalt 60 / caesium 137 ;</p> <p>ref. to different intensities of radiation / for different lengths of time ;</p> <p><u>radapperisation</u> OR <u>radication</u> OR <u>radurisation</u> ;</p>	3	
8(c)	<p>oxidation / description of ;</p> <p>of fat / lipid / oil ;</p> <p>causes unpleasant taste OR smell ;</p>	3	

Question	Answer	Marks	Guidance
9(a)(i)	(animal) feeds <u>only</u> on plants / producers ;	1	
9(a)(ii)	(animal) feeds <u>only</u> on animals ;	1	
9(a)(iii)	group of / number of, organisms of <u>same species</u> ; living in the same, area / habitat / ecosystem / community ; at the same time ;	3	
9(b)	<i>any 3 of:</i> temperature ; light intensity ; light wavelength ; (dissolved) oxygen ; (dissolved) carbon dioxide ; pressure / depth ; pH / acidity ; named type of pollution ; idea of, desiccation risk ;	3	I dissolved gases unqualified

Question	Answer	Marks	Guidance
10(a)	<i>any 2 of:</i> maintain employment ; increase earnings ; protection of fisheries resources ;	2	I managing fishing
10(b)	idea of, (a species) which is likely to become extinct/ AW ;	1	A near to extinction I low numbers unqualified
10(c)	<i>any 2 of:</i> protection / preservation OR limiting human impact ; of ecosystems / habitats / plants / animals / organisms / named example ; idea of, for the future / over the time ;	2	I conserve
10(d)(i)	8600 ;	1	
10(d)(ii)	<i>any 2 of:</i> idea of, unattractive to purchasers ; idea of, (identify it as rare) so that people do not, catch / kill / harm / trade, it ; idea of, (identify for) population / individual, monitoring ; idea of, (identify for) helping to police illegal trade ;	2	e.g. monitoring movements / population size / longevity / distribution