CAMBRIDGE
International Education

Cambridge IGCSE™

MARINE SCIENCE **0697/12**

Paper 1 Theory and Data Handling **May/June 2026**

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

This document consists of **21** printed pages.

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General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

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Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	<u>'List rule' guidance</u> For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

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6	<u>Calculation specific guidance</u> Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'. For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values. For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme. Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.
7	<u>Guidance for chemical equations</u> Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme. State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
✓	correct point or mark awarded
✗	incorrect point or mark not awarded
^	information missing or insufficient for credit
I	incorrect or insufficient point ignored while marking the rest of the response
BOD	benefit of the doubt given
ECF	error carried forward applied
CON	contradiction in response, mark not awarded
R	incorrect point or point not awarded
●	key point attempted / working towards marking point / incomplete answer / response seen but not credited / blank page seen
SEEN	point has been noted, but no credit has been given **or**

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Annotation	**Meaning**
	blank page seen
	used to highlight parts of an extended response
	used to highlight parts of an extended response

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Mark Scheme Abbreviations

;	separates marking points
/	separates alternative responses for the same marking point
Allow	accept the response
Ignore	ignore (mark as if this material was not present)
AND	indicates that two or more parts of a response are required for the mark
AVP	alternative valid point
AW	alternative wording (where responses vary more than usual)
OR	alternative responses for the same marking point
owtte	or words to that effect
underline	actual word given must be used by candidate (grammatical variants excepted)
ecf	error carried forward
ORA	or reverse argument
( )	the word / phrase in brackets is not required but sets the context
max	indicates the maximum number of marks
MP	marking point

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(a)</td><td>satellite ;

planet ;

gravity ;</td><td>3</td><td>Ignore Moon
Do not allow ‘artificial satellite’

must be in correct order</td></tr>
<tr><td>1(b)(i)</td><td><table><tr><th>type and height of tide</th><th></th></tr><tr><td>neap high tide</td><td>✓</td></tr><tr><td>spring high tide</td><td></td></tr><tr><td>neap low tide</td><td></td></tr><tr><td>spring low tide</td><td></td></tr></table></td><td>1</td><td>Do not allow more than 1 box ticked</td></tr>
<tr><td>1(b)(ii)</td><td>(neap) because the Moon and the Sun, form 90º with the Earth / form a right angle with the Earth / ORA ;

(high) as the Moon is directly above the Earth (at point X) pulling the water towards it ;</td><td>2</td><td>Allow Moon, Sun and Earth are perpendicular OR quadrature for right angle
Allow Sun, Earth and Moon are not aligned, so not a spring tide
Allow ecf from 1(b)(i) for:
neap low tide – MP1 only OR spring high tide – MP2 only</td></tr>
</table>

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(c)</td><td><table><tr><th>feature</th><th>letter(s)</th></tr><tr><td>equator</td><td>E</td></tr><tr><td>temperate regions</td><td>C and G</td></tr><tr><td>polar regions</td><td>A and H</td></tr><tr><td>Atlantic Ocean</td><td>C</td></tr><tr><td>Indian Ocean</td><td>F</td></tr></table></td><td>4</td><td>all rows correct for 4 marks
any 4 rows correct for 3 marks
any 3 rows correct for 2 marks
any 2 rows correct for 1 mark</td></tr>
<tr><td>2(a)(i)</td><td>K and M ;</td><td>1</td><td>Allow 6.6 AND 3.8</td></tr>
<tr><td>2(a)(ii)</td><td>$\text{density} = \frac{\text{mass}}{\text{volume}}$;

correct substitution and calculation = 1.03 ;

g / cm^3 ;</td><td>3</td><td>Ignore 1

Allow kg / dm^3</td></tr>
</table>

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Question	Answer	Marks	Guidance
2(b)	*any **5** from:*	**5**	
	global warming / increase in (atmospheric) temperature ;		**Ignore** becomes hotter
	increases, water temperature / kinetic energy of water particles ;		**Ignore** more water
	more / faster water evaporates (from sea) ;		**Allow** higher humidity
	more water vapour condenses (in cooler/other regions);		
	forming (more) clouds ;		**Allow** droplets increase in size
	as it cools / as water particles lose kinetic energy ;		
	water droplets become too heavy (to stay in the clouds) ;		
	AVP ;		

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Question	Answer	Marks	Guidance
3(a)(i)	**P**: rocky shore **AND** **Q**: mangrove (forest) ;	**1**	
3(a)(ii)	*any **3** from:* (rocky shore **P**) higher wave energy / action / **ORA** (**Q**) ; (rocky shore **P**) many large rocks / sediment size / **ORA** (**Q**) ; (rocky shore **P**) fewer producers / no trees / lower productivity **ORA** (**Q**); (rocky shore **P**) higher oxygen in the water / **ORA** (**Q**) ; (rocky shore **P**) steeper slope / **ORA** (**Q**) ; (rocky shore **P**) more erosion / less deposition / **ORA** (rocky shores **P**) have a stable salinity **ORA** mangroves salinity varies more (rocky shores **P**) have a lower biodiversity (**Q**) ; **AVP** ;	**3**	must be **comparative** terms **Allow** producers are larger in mangrove forests **Ignore** ref to sand **Allow** ref to **Q** containing archer fish / mudskippers **OR** rocky shores contain molluscs cnidaria, macroalgae **Allow** rocky shores are found everywhere but mangroves are only found in tropical zones **Allow** comparison of sedimentation rates e.g. mangroves have high rate of sedimentation or erosion / rocky shore has low rate of sedimentation or erosion

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Question	Answer	Marks	Guidance
3(a)(iii)	*any **1** from:* deforestation ; building of infrastructure ; cleared for shrimp farms ; named pollution / oil spills ; overfishing reducing biodiversity ;	**1**	**Allow** burning, to clear all trees / habitat destruction **Ignore** cutting down trees unqualified **Allow** any named infrastructure / change in land use e.g. resorts
3(b)	community / organisms and their environment ;	**1**	**Allow** habitat for environment **Allow** variety of species or populations of different species for community / organisms **Ignore** biotic / abiotic

Question	Answer	Marks	Guidance
4(a)(i)	(organism that) makes its own (organic) food / nutrients / glucose ; using light energy / through photosynthesis ;	**2**	**Allow** autotrophic / autotroph, **Do not allow** make energy **Allow** produces organic material from inorganic sources **Allow** ref to chemosynthesis **Ignore** phytoplankton **Ignore** it is a food source **Ignore** first trophic level

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Question	Answer	Marks	Guidance
4(a)(ii)	*any **2** from:* (marine) plants ; (marine) protoctists ; (marine) bacteria ;	**2**	**Allow** seagrasses **Allow** diatoms **OR** dinoflagellates / microalgae **Allow** cyanobacteria **Allow** phytoplankton if protoctists and bacteria have not already been awarded
4(a)(iii)	*any **3** from:* increased temperature ; (increased) upwelling (of nutrients) / increased nutrient availability ; increased run-off ; increased sunlight (hours or intensity) / lower water turbidity ; increased carbon dioxide (concentration) ;	**3**	**Ignore** ref to fishing **Allow** warmer water **Allow** *idea of* coastal ecosystems being more productive (due to land run-off)
4(b)(i)	*any **2** from:* leaves sufficient / more, (to reproduce) for future (generations) ; leaves fish stocks at a level that does not affect food chains / **ORA** ; the method does not cause damage to the environment / named examples of method and damage caused ;	**2**	**Allow** so fish can repopulate / prevents extinction of species / maintains the population **Ignore** to balance the food chain **Allow** not damaging (named) habitats e.g. benthic trawling destroys seabed / corals, blast fishing damages corals **Allow** pole and line fishing doesn't damage the ecosystem

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Question	Answer	Marks	Guidance
4(b)(ii)	*any **2** from*: restricting, boats size / mesh size / net types / gear ; quotas ; licences ; closed seasons ; Marine Protected Areas / MPAs ; international agreements ;	**2**	**Allow** ref to 'larger nets to allow juveniles to escape' for mesh size **Allow** ban blast fishing / benthic trawling use pole and line fishing / other sustainable methods **Allow** only catch a certain number / certain size / limits on size / number of fish caught / stop overfishing **Ignore** 'set times to fish' unqualified **Allow** No catching during the breeding season **Ignore** aquaculture / education / raise awareness

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>5(a)</td><td>
<table>
<tr><th>structure</th><th>name</th><th>function</th></tr>
<tr><td>R</td><td>mouth / anus</td><td>food intake / waste removal ;</td></tr>
<tr><td>S</td><td>tentacle</td><td>food capture / move food to the mouth ;</td></tr>
<tr><td>T</td><td>stinging cells / nematocysts</td><td>defence / sting prey ;</td></tr>
<tr><td>U</td><td>stomach</td><td>digesting food / absorb nutrients ;</td></tr>
</table>
</td><td>4</td><td>1 mark for each correct row

Allow consume / ingest
Ignore nutrients

Allow stir water to bring water with more oxygen closer / spread waste away

Allow injects toxin/ causes paralysis /injects venom
Ignore zooxanthellae</td></tr>
<tr><td>5(b)(i)</td><td>single / an, organism / parent, making, exact copy of itself / clone ;

and any 2 from:

budding ;
(budding) forms a new individual next to it ;

fragmentation ;
(fragmentation) develops a new colony if it lands in a suitable substrate ;</td><td>3</td><td>Allow one polyp splits into two

Ignore (bud) separating</td></tr>
<tr><td>5(b)(ii)</td><td>they are all susceptible to the same disease / a detrimental change in environment will kill all ;</td><td>1</td><td>Allow increased risk from disease as they are identical</td></tr>
<tr><td>5(c)</td><td>absorb toxins from prey ;

to become toxic (to predators) ;</td><td>2</td><td>Allow bright colours to camouflage (on coral reef) / to warn predators they are toxic</td></tr>
</table>

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Question	Answer	Marks	Guidance
6(a)(i)	drift in the currents	1	**Allow** limited motility / free floating **Ignore** single cell **Do not allow** photosynthetic / contain chlorophyll
6(a)(ii)	carnivore ;	1	
6(b)(i)	*any **2** from:* (twilight zone) has less light / **ORA** ; (twilight zone) has a (more) stable temperature / **ORA** ; (twilight zone) has a higher pressure / **ORA** ; (twilight zone has less (dissolved) oxygen / **ORA** ; (twilight zone) has less productivity / **ORA** ;	2	 **Do not allow** no light **Allow** lower temperature **Ignore** salinity
6(b)(ii)	*any **4** from:* more, phytoplankton/ productivity / higher abundance of phytoplankton, at surface (due to sunlight availability) ; (copepods / zooplankton) rise to the surface to feed (on the phytoplankton) ; predators (more) active at, surface / sunlight zone, in daylight / copepods more likely to be seen by predators (during daytime) / **ORA** : (copepods / zooplankton) move to deeper water because they are safer from predators ; **AVP** ;	4	 **Ignore** temperature / nutrient **Allow** stated time during daytime for sunlight zone **Allow** avoid sunlight zone during the day due to predators **Allow** to reduce ultraviolet damage

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Question	Answer	Marks	Guidance
6(c)(i)	*any **2** from*: horizontal migration ; over longer distances ; to find breeding grounds ; faster speed of travel ; follow currents ; seasonal / annual (migration) ;	**2**	**Allow ORA** if clearly stated **Allow** to different oceans / regions (for distance) **Ignore** feeding grounds / to find food **Allow** tuna actively swim
6(c)(ii)	*any **2** from:* Earth's magnetic field ; location of Sun, Moon and stars ; olfaction / smell (of the water) ; mental maps / landmarks ;	**2**	**Allow** follow currents **Allow** sun and stars / sun and moon **Allow** mind maps as mental maps

Question	Answer	Marks	Guidance
7(a)(i)	heat (energy) absorbed into water / increase in water temperature ; thermal expansion / water molecules (gain kinetic energy and) move further apart / increases the volume of the water ; increased melting of land-based ice sheets / glaciers (which runs into oceans)	**3**	**Allow** water becomes warmer so less dense / water **Allow** ice caps melt / icebergs melt **Ignore** ice melting unqualified / melting of sea ice / increased evaporation / condensation

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Question	Answer	Marks	Guidance
7(a)(ii)	*any pair from:* (oil) can spill (from oil rigs) ; named effect on marine animals ; **OR** extraction damages the seabed ; destroying habitats of marine organisms ; **AVP** ;	**2**	 **Allow** stated damage to animals e.g. coating fur / being ingested / disrupting food chains / reduces light so reduces photosynthesis **Allow** sound pollution **Allow** disrupts marine organisms / disrupts migration patterns / no longer stay in their habitat / disrupts communication / can cause physical injury
7(b)(i)	*any **3** from:* larger animals can become entangled / trapped in the nets / marine organisms ingest parts of ghost nets when eating trapped organisms ; suffocate / starve / drown / other correct consequences to organisms ; physical damage to habitats e.g. coral reefs ; (plastic) nets can break down (slowly) into microplastics and pass up the food chain ; (plastics) release toxins which are absorbed by marine organisms / taken in when eaten ;	**3**	 **Allow** infected wounds / easier to predate **Allow** microplastics clog gills of fish / coral mouths stopping respiration / feeding **Allow** bioaccumulation for pass up the food chain

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Question	Answer	Marks	Guidance
7(b)(ii)	*any **2** from:* (positive impact) stated benefit e.g. help remove the nets / remove (release) animals trapped in the nets / beach clean-up ; (negative impact) tourists may go fishing then, discard / lose, fishing nets / lines into the ocean ; more tourists means more food required ; more fishing occurs so more fishing nets lost ;	**2**	
7(b)(iii)	*any **2** from:* (tourists may not come) if they see marine animals caught in nets / dying in the nets ; (tourists may not come) if number of marine organisms to see is reduced / lower biodiversity ; (tourists may not come) if (named) habitats are damaged ; (tourists may not come) as divers / snorkelers might get caught in the nets / areas prohibited from divers due to dangers ; (may cause more tourists to come) **more** ecotourism to reduce the problem e.g. divers may come to remove the ghost nets	**2**	**Allow** nets are unsightly for divers / unsightly if they wash ashore **Allow** environment is damaged e.g. coral reefs

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Question	Answer	Marks	Guidance
8(a)	*any **3 pairs** from:* scales (covering the body) ; for protection ; operculum: as a gill cover ; (named) fins ; for (forward) movement ; (different named) fins ; ref. to yawing, pitching , rolling / changing direction ; lateral line ; to detect vibrations ; nares ; to detect chemicals in the water ;	**6**	max **3** for named features only **Allow** stability / balance, when swimming **Allow** to detect movement / electrical impulses / pressure **Allow** can smell food nearby

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Question	Answer	Marks	Guidance
8(b)	*any **2 pairs** from:* bioluminescence / make own light ; to, attract / see, prey or mates ; large backward facing teeth ; prevent prey escaping (once caught) ; dark brown / black, colouration ; so difficult to see (from bioluminescence) ; large eyes ; to see bioluminescent light ; no eyes to see ; , because there is not light **AVP** ;	**4**	 **Allow** possess photophores for bioluminescence **Allow** transparent for colouration **Allow** (extreme jaw mobility allows) jaws to open very wide / large mouth to ensure prey capture **Allow** gelatinous bodies due to high pressure **Allow** slow moving with a long lifespan due to low oxygen and low temperature

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