

Cambridge IGCSE™

MARINE SCIENCE**0697/23**

Paper 2 Theory and Practical Skills

October/November 2025

MARK SCHEME

Maximum Mark: 80

Published

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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

This document consists of **18** printed pages.

PUBLISHED**Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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 'List rule' guidance

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.

6 Calculation specific guidance

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 Guidance for chemical equations

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.











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 |
|  | correct point or mark awarded from marking point 1 similar numbered ticks are used for marking point 2, 3, 4 etc. |
|  | incorrect point or mark not awarded |
|  | information missing or insufficient for credit |
|  | incorrect or insufficient point ignored while marking the rest of the response |
|  | benefit of the doubt given |
|  | error carried forward applied |
|  | contradiction in response, mark not awarded |
|  | incorrect point or point rejected |
|  | key point attempted / working towards marking point / incomplete answer / response seen but not credited / blank page seen |

| Annotation | Meaning |
|---|--|
|  | point has been noted, but no credit has been given or blank page seen |
|  | used to highlight parts of an extended response |
|  | used to highlight parts of an extended response |

| Question | Answer | Marks |
|----------|---|-------|
| 1(a)(i) | tropics / tropical (area) ; | 1 |
| 1(a)(ii) | <i>idea that</i> all oceans are connected / AW ; | 1 |
| 1(b) | <p><i>any three from:</i></p> <p>1 mid-Atlantic ridge / plate boundary, is between the two islands ;</p> <p>2 there is a <u>divergent plate boundary</u> / AW ;</p> <p>3 plates move apart (in opposite directions) / plates diverge / AW ;</p> <p>4 plates float on the mantle / AW ;</p> <p>5 plates move due to convection currents (in the mantle) / AW ;</p> <p>6 AVP ;</p> | 3 |
| 1(c)(i) | 0.48 (m) ; | 1 |
| 1(c)(ii) | <p><i>any three from:</i></p> <p>1 gravity from the moon / AW ;</p> <p>2 (moon / gravity) pulls water / AW ;</p> <p>3 moon causes bulge of water / AW ;</p> <p>4 rotation of Earth affects the time of high tide / low tide / affects tide ;</p> <p>5 area facing moon / on opposite side, has high tide ;</p> <p>6 area away from moon, AW, has low tide ;</p> | 3 |

| Question | Answer | Marks |
|----------|---|----------|
| 2(a)(i) | <p><i>any two from:</i></p> <p>wetlands ;</p> <p><u>coral</u> reefs ;</p> <p>sandy shores ;</p> <p>muddy shores ;</p> <p>kelp (forests) ;</p> <p>seagrass (beds) ;</p> <p>mangrove (forests) ;</p> | 2 |
| 2(a)(ii) | <p><i>any two from:</i></p> <p>(in intertidal area)</p> <p>movement of, water / tide, over the area / AW / ORA ;</p> <p>spends time underwater / less exposed to air / less dehydrating / ORA ;</p> <p>less exposure to sunlight / ORA ;</p> <p>less exposure to wind / ORA ;</p> <p>less fluctuation in temperature / more stable temperature / ORA ;</p> <p>lower salinity / ORA ;</p> <p>less oxygen / ORA ;</p> | 2 |

| Question | Answer | Marks |
|-----------|---|----------|
| 2(b)(i) | <p><i>any two from:</i></p> <p>pentaradial symmetry ;</p> <p>spiny skin ;</p> <p>tube feet ;</p> | 2 |
| 2(b)(ii) | <p><i>any four from:</i></p> <p>1 <i>ref. to <u>transect</u> ;</i></p> <p>2 lay out a tape measure / line / string (from the tidal region) / AW ;</p> <p>3 (place) <u>quadrat</u> ;</p> <p>4 (at) regular intervals ;</p> <p>5 count number, of limpets / starfish / macroalgae / organisms ;</p> <p>6 repeat ;</p> <p>7 description of how to calculate mean / description of how to calculate organisms for square metre ;</p> | 4 |
| 2(b)(iii) | <p><i>any one from:</i></p> <p>appropriate clothing / footwear ;</p> <p>warn people about going out / stay with group / work near teacher / AW ;</p> <p>check weather / tides / AW ;</p> | 1 |

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| Question | Answer | Marks |
|----------|---|----------|
| 2(b)(iv) | <p><i>any four from:</i></p> <p>1 macroalgae / limpets / starfish, decrease with distance ;</p> <p>2 limpets increase and then decrease / AW ;</p> <p>3 (macroalgae / limpets / starfish have) higher exposure to, air / sun / wind, <u>higher up shore</u> / ORA ;</p> <p>4 limpets increase because fewer starfish eat them / limpets decrease because more starfish eat them / AW ;</p> <p>5 limpets decrease (higher up shore), as not enough food / not enough macroalgae to eat / ORA ;</p> <p>6 limpets / starfish, need cover from macroalgae to survive / AW ;</p> <p>7 limpets / starfish, may be eaten by other predators when higher up shore / exposed / AW ;</p> <p>8. AVP ;</p> | 4 |

| Question | Answer | Marks |
|----------|--|----------|
| 3(a)(i) | <p><i>any two of:</i></p> <p>chloroplasts ;</p> <p>cell wall ;</p> <p>vacuole ;</p> | 2 |
| 3(a)(ii) | <p>clear lines with no breaks or overlapping lines + no shading / stippling ;</p> <p>two setae and serrations on top and bottom drawn ;</p> <p>height, width, and gap between setae in correct proportion + directions and angle of setae are correct;</p> <p>drawing takes up over one third of space ;</p> | 4 |

| Question | Answer | Marks |
|-----------|--|-------|
| 3(a)(iii) | correct labelling of a setae with straight line ; | 1 |
| 3(a)(iv) | <i>any one of:</i> bilateral symmetry ; segmented ; soft body ; | 1 |
| 3(b)(i) | <i>any four of:</i> 1 place into a beaker / evaporating dish / AW ; 2 weigh / find mass / find weight / take stated mass of substrate / AW ; 3 place into an oven / warm gently / AW ; 4 keep weighing until mass stops changing ; 5 find difference in mass / AW ; 6 divide change by original mass and $\times 100$ (to calculate percentage of water) ; | 4 |
| 3(b)(ii) | <i>any three of:</i> <ul style="list-style-type: none"> • (iron is used to) produce haemoglobin ; • to obtain oxygen / haemoglobin binds oxygen / AW ; • so lugworm can respire / for respiration / AW ; • lugworms live in burrows / in the substrate / AW ; • live in a, low / no, oxygen environment / AW ; | 3 |

| Question | Answer | Marks |
|-----------|--|----------|
| 4(a)(i) | pH is, decreasing / more acidic / less alkaline ; but there are fluctuations / goes up and down / AW ; | 2 |
| 4(a)(ii) | <i>any three of:</i> 1 combustion / burning, of fossil fuel ; 2 release of carbon dioxide ; 3 carbon dioxide, <u>dissolves</u> in water / <u>diffuses</u> into water / is <u>absorbed</u> into water ; 4 carbon dioxide is an acidic gas / carbon dioxide forms carbonic acid / acid rain may be formed ; | 3 |
| 4(a)(iii) | <i>any three of:</i> 1 place samples into test-tubes / beakers / AW ; 2 use of a syringe / pipette / burette / AW ; 3 add equal volumes of universal indicator / same number of drops / AW ; 4 compare with colours on card / chart / AW ; 5 red / AW , is acidic / green is neutral / blue, AW , is alkaline ; | 3 |

| Question | Answer | Marks |
|----------|---|----------|
| 4(b) | <p><i>any three of:</i></p> <ul style="list-style-type: none"> 1 coral bleaching / loss of coral reefs / AW ; 2 damage to, food chains / food webs, AW ; 3 loss of habitats / damage to seabed from fossil fuel extraction ; 4 damage to shells (of molluscs) / AW ; 5 acid rain ; 6 change migration patterns / AW ; 7 oil spills / AW ; 8 (increased temperature) affects sex ratios of some organisms / AW ; 9 (increased temperatures causes) changes to salinity / changes to oxygen / changes to sea currents / AW ; 10 AVP ; | 3 |

| Question | Answer | Marks |
|----------|---|----------|
| 5(a) | <p><i>any three of:</i></p> <p>1 prevent overfishing / reduce bycatch / AW ;</p> <p>2 <i>ref. to</i> ban on fishing during breeding season / in nursery areas / closed seasons / closed areas / AW ;</p> <p>3 allow fish to breed / replenish populations / AW ;</p> <p>4 set quotas / use of licences / set rules / set laws / AW ;</p> <p>5 credit example of methods that would be banned or encouraged e.g. bottom trawling reduced / pole and line increased / mesh sizes increased / AW ;</p> <p>6 can prevent some nations exploiting other nations stocks ;</p> <p>7 treaty signing is voluntary / some countries do not ratify / AW ;</p> <p>8 difficult to, monitor / policed / AW ;</p> | 3 |
| 5(b)(i) | <p>linear scale on y-axis ;</p> <p>axes labelled with units ;</p> <p>plots correct ;</p> <p>neat, equal width bars with gaps ;</p> | 4 |
| 5(b)(ii) | <p>2100 ;</p> <p>One mark for 42 000 or division by 2000 ;</p> | 2 |

| Question | Answer | Marks |
|-----------|--|----------|
| 5(b)(iii) | <p><i>any two of:</i></p> <ol style="list-style-type: none"> 1 there are no controls / legislation / AW, (in area X) ; 2 less fishing (allowed) in area Y so moved into X / AW ; 3 increased demand / AW ; 4 increased price of fish / AW ; 5 better boats / fishing technology / AW ; 6 need to fish for longer, due to overfishing / due to lower stocks / AW ; | 2 |
| 5(b)(iv) | <p><i>any two of:</i></p> <ol style="list-style-type: none"> 1 signals may stop transmitting / equipment breaks ; 2 ships may turn off AIS / may fish illegally ; 3 some boats do not have AIS ; 4 monitoring equipment, may not be switched on / might not be working ; 5 ship may be in area but not actively fishing / may just be travelling through / would not spend all time fishing / AW ; 6 AVP ; | 2 |

| Question | Answer | Marks |
|----------|--|----------|
| 6(a)(i) | headers with units ; data in order of time of day ; table as box with straight lines and all data correctly added ; | 3 |
| 6(a)(ii) | <i>any 3 from:</i> 1 salinity increases (over time) ; 2 temperature increases (over time) ; 3 water evaporates / evaporation increases ; 4 as water (molecules) have more kinetic energy / AW : 5 no increase in salinity between 7 am and 8 am as temperature has not increased ; | 3 |
| 6(b)(i) | to identify anomalies / calculate means / calculate averages / AW ; | 1 |

| Question | Answer | Marks |
|----------|--|----------|
| 6(b)(ii) | <p><i>any 2 from (mark in pairs):</i></p> <p>depth in water ;</p> <p>different depths have different temperatures / colder water sinks / salinity varies with depth / AW ;</p> <p>OR</p> <p>weather conditions / rainfall / wind speed / AW ;</p> <p>rain will reduce salinity / wind will increase evaporation / AW ;</p> <p>OR</p> <p>location / area of water / same rock pool / volume of water (in rock pool) / AW ;</p> <p>as different areas have more run off / less water circulation with sea / change in volume would cause a change in salinity due to evaporation / AW ;</p> | 2 |

| Question | Answer | Marks |
|----------|--|----------|
| 7(a) | <p>carbon dioxide + water ;</p> <p>glucose ;</p> | 2 |

| Question | Answer | Marks |
|----------|---|----------|
| 7(b) | <p><i>any 6 from:</i></p> <ol style="list-style-type: none"> 1 add different acids / buffers / place producers in different pHs / AW ; 2 count number of bubbles / measure volume of oxygen / use oxygen probe / AW ; 3 set / stated time / AW ; 4 same species of producer / algae / pond weed / same size producer / AW ; 5 same carbon dioxide concentration / AW ; 6 same light intensity / same lamp distance / same light wavelength / AW ; 7 same temperature / use of heat shield / water bath / AW ; 8 place plant so that cut end is pointing upwards / AW ; 9 safety feature e.g. eye protection / gloves / AW ; 10 repeats / means / AW ; 11 method for calculating rate, e.g. number of bubbles divided by time / AW ; | 6 |