CAMBRIDGE
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ENVIRONMENTAL MANAGEMENT **0680/22**

Paper 2 Management in Context **May/June 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 May/June 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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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	<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.

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 standard isation 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
	incorrect or insufficient point ignored while marking the rest of the response
	contradiction in response, mark not awarded
	benefit of the doubt given
	error carried forward applied
	First answer
	response has not answered question
	power of ten error

Annotation	Meaning
SEEN	point has been noted, but no credit has been given or blank page seen
TV	response is too vague or there is insufficient detail in response
REP	repetition in response
	to show a correct point but where the number of points does not relate to the number of marks ie 3 correct= 2 marks
	correct awarding one mark from marking point or marking group 1. similar numbered ticks are used for marking point or marking groups 2, 3, 4 etc.
Highlighter	Highlight

Question	Answer	Marks
1(a)	M1 62 000 ÷ 46 / 1347.8(26087); M2 1348;	**2**
1(b)(i)	M1 6 correct plots; M2 7 correct plots; M3 bars drawn with straight lines **and** of equal width **and** 2 small squares in between bars;	**3**
1(b)(ii)	140;	**1**
1(b)(iii)	M1 17 348−16 597 / 751; M2 4.5(2);	**2**
1(c)(i)	*any two from:* M1 smaller sample; M2 idea of pretesting questions / can change or improve questions; M3 shows whether survey gives the information you are investigating; M4 gives idea of, response rate / how many people will answer the questionnaire; M5 shows if questions are too long / shows how long questionnaire takes;	**2**
1(c)(ii)	*any three from:* M1 relies on literacy; M2 relies on people to return the survey; M3 answers may not be truthful; M4 expensive; M5 time consuming; M6 does not include, homeless people / tourists; M7 a lot of data to process / big data (set);	**3**

Question	Answer	Marks
2(a)(i)	2020 circled;	**1**
2(a)(ii)	Mar(ch);	**1**
2(b)	*any two from:* M1 to avoid competition / so trees do not compete; M2 to prevent disease; M3 idea of allowing access for (picking) machines to travel between trees; *to get enough:* M4 nutrients; M5 water; M6 light; M7 (light needed) for (maximum or optimum) photosynthesis;	**2**
2(c)(i)	systematic;	**1**
2(c)(ii)	15;	**1**
2(d)(i)	to compare (with no application) / control;	**1**
2(d)(ii)	lack of nutrients (in soil) / trees have used the nutrients;	**1**
2(d)(iii)	*note: each row conclusion must be different* *row 2 fertiliser:* decrease yield in year 2 then goes back to yield in year 1 / small change in yield (compared to no fertiliser or row 1); *row 4 fertiliser*: greatest yield / increases yield (compared to no fertiliser or row 1) / fertiliser is the best or most effective; *row 5 fertiliser:* lowest yield / decreases yield / year 3 yield is (approx.) half year 1 / fertiliser is the worst or least effective;	**3**
2(e)(i)	balance;	**1**
2(e)(ii)	2 columns or rows with headings **and** units for mass and thickness;	**1**

Question	Answer	Marks
2(e)(iii)	*any three from:* M1 **select / choose / identify** parent or parents with desirable characteristics; M2 breed / cross / pollinate; M3 choose best offspring with desired characteristics; M4 repeat over many generations;	**3**
2(e)(iv)	*any two from:* M1 irrigation; M2 pest control; M3 weed control; M4 genetic modification; M5 controlled environment / greenhouse / hydroponics;	**2**

Question	Answer	Marks
3(a)	M1 evaporation; M2 gas; M3 soil; M4 run-off;	**4**
3(b)(i)	*any two from:* M1 infrastructure or named example, destroyed or damaged or buried; M2 buildings / businesses, destroyed or damaged or buried; M3 vehicles destroyed or damaged or buried; M4 food shortages / crops covered with mud / decreases crop yield; M5 possessions destroyed or damaged or buried; M6 job losses / loss of income;	**2**
3(b)(ii)	*any four from:* M1 (vegetation) <u>roots</u> bind or hold soil; *lack of vegetation causes:* ora M2 more / increases, <u>run-off</u>; M3 less / decreases, <u>infiltration</u>; M4 less / decreases, <u>interception</u>; M5 faster / increases, speed (of flow) of <u>water</u>;	**4**

Question	Answer	Marks
3(b)(iii)	*any one from:* M1 no land zoning / no regulations (on building); M2 houses built on unsuitable land / unknown safety of land / survey not carried out; M3 too many houses in one area; M4 poor, construction / building materials / foundations;	**1**
3(c)(i)	*any two from:* M1 increased production of waste / littering; M2 named example of pollution e.g. air / noise / visual / water; M3 loss of habitat / loss of biodiversity; M4 increase in house prices / decrease in availability of housing (for locals); *increased use of:* M5 energy; M6 water; M7 food;	**2**
3(c)(ii)	*any one policy from:* M1 banning cars / (car) quotas / reducing number of cars / car-free zones; M2 banning fossil fuel cars / encouraging electric cars; M3 encouraging car, sharing or pooling; M4 congestion charges; M5 speed limits; M6 provide public transport; M7 provide bicycles (for hire or free use); M8 limit transport to island e.g. boats to island; *any one explanation from:* M9 less traffic jams / congestion; M10 reduce air pollution or stated air pollution e.g. particulates / carbon dioxide or carbon emissions / global warming / SO_2 emissions / acid rain / particulates; M11 reduce traffic accidents;	**2**

Question	Answer	Marks
3(d)(i)	*any one from:* M1 the volumes of each sample are not the same; M2 small sample / data not representative; M3 no control variable; M4 volumes or data not comparable	**1**
3(d)(ii)	1 km should be 1000 (m) / there should be no units within the cell of a table;	**1**
3(d)(iii)	32;	**1**
3(d)(iv)	*any one from:* M1 risk of getting ill from, *E.coli* / bacterial disease; M2 wear gloves / wearing protective clothes; M3 risk of collection at sea / risk of drowning / wear a life jacket; M4 wash hands after collection / avoid contact with water (on skin);	**1**
3(d)(v)	*any one from:* M1 1 m from land, is greater than the maximum concentration or is not safe; M2 further out to sea the safer or lower concentration / ora;	**1**
3(d)(vi)	cholera / typhoid / any sewage related bacterial disease;	**1**
3(d)(vii)	chlorination;	**1**

Question	Answer	Marks
4(a)	*any one from:* M1 provides shade / cars stay cooler / cars don't overheat; M2 limited space on island / makes good use of available land; M3 doesn't use crop land / idea of two uses for one area of land;	**1**
4(b)(i)	pie / bar;	**1**

Question	Answer	Marks
4(b)(ii)	*any two from:* M1 no (risk of) leaching at landfill / landfills not used; M2 no incineration; M3 materials can be repurposed; M4 reduces energy use (in making new product); M5 recycled product or material can be sold; M6 reduces demand for **raw materials** / reduces demand for **materials to make new batteries** / less mining (of raw materials) / fewer resources needed **to make new batteries**;	**2**
4(b)(iii)	*any two from:* M1 lack of public awareness / lack of public interest; M2 lack of facilities; M3 lack of expertise; M4 recycling is, not accessible / complicated; M5 not cost effective; M6 contains lots of different components;	**2**

Question	Answer	Marks
5(a)(i)	M1 magma; M2 (magma) cools; M3 (cooled magma) crystalises / becomes solid / solidifies;	**3**
5(a)(ii)	granite / basalt / other correctly named igneous rock;	**1**
5(b)(i)	*any three from:* M1 geology / quality or quantity of ore; M2 accessibility; M3 environmental impact assessment / EIA; M4 demand for ore; M5 availability or cost of workforce; M6 availability or cost of, machinery / extraction; M7 public opinion / idea of opposition from, public / government; M8 idea of some areas are protected / stated example of why an area cannot be mined e.g. presence of endangered species;	**3**

Question	Answer	Marks
5(b)(ii)	*any one from:* M1 risk of, gas build-up / toxic gases / risk of explosions or fire; M2 risk of collapse; M3 risk of flooding;	**1**
5(b)(iii)	*any two or developed ideas from:* M1 jobs; M2 improved economy; M3 economic benefit described e.g. more shops / taxation (of mine); M4 improved infrastructure; M5 improved infrastructure described e.g. medical facilities / more roads;	**2**
5(b)(iv)	*any two from:* M1 loss of habitat; M2 waste water (produced) / contaminated water; M3 vehicle or machinery emissions / air pollution (from vehicles); M4 noise / soil / visual, pollution; M5 risk of landslide; M6 idea of reduction or use of a **non-renewable resource**;	**2**
5(b)(v)	M1 breakdown toxins; M2 **using**, organisms / bacteria;	**2**
5(c)	*any one from:* M1 fertile / nutrient rich, **land** or **soil** or **slopes**; M2 land does not, get flooded or waterlogged / experience drought;	**1**
5(d)(i)	*any two from:* M1 a log(arithmic) scale; M2 measures the magnitude (of an earthquake or seismic activity);	**2**

Question	Answer	Marks
5(d)(ii)	*any four from:* *how to obtain:* M1 food; M2 water; M3 medicines / medical treatment / first aid; *a plan for:* M4 evacuation; M5 shelters; M6 emergency rescue / rescue teams; M7 early warning / monitoring; M8 drills; M9 design of buildings;	**4**