CAMBRIDGE
International Education

Cambridge IGCSE™

ENVIRONMENTAL MANAGEMENT **0680/13**

Paper 1 Theory **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 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
	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 i.e. 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)	shaft (circled);	1
1(b)	M1 organic / plant(material); / vegetation; M2 over millions of years / compressed by sediments / anaerobic conditions; M3 heat **and** pressure;	3
1(c)	*Two from:* M1 jobs in the mine; M2 income from supplying services to the mine; M3 improvements to infrastructure;	2

Question	Answer	Marks
2(a)	0.57 billion tonnes;	1
2(b)	*Two from:* M1 idea of landfills being full / landfill takes up large areas of space; M2 leaching of toxic materials / water pollution / contaminated water ; M3 visual pollution; M4 smell / air pollution; M5 increase risk of disease; M6 transport to landfill; M7 public opposition;	2
2(c)(i)	*Two from:* M1 use of microbes / bacteria / fungi / microorganisms / decomposers; M2 remove soil pollutants / cap soil pollutants / soil contaminants / toxins;	2
2c(ii)	*Two from:* M1 adds nutrients / named nutrient / mineral ion / named mineral ion / minerals; M2 improves soil structure; M3 improves / increases water holding capacity / soil moisture content / increases infiltration; M4 aeration;	2

Question	Answer	Marks
3(a)	A: precipitation / rain / snow; B: transpiration;	**2**
3(b)	*Any three from:* M1 aquifers / groundwater; M2 wells; M3 rivers / streams; M4 reservoirs; M5 lakes; M6 glaciers / ice caps / ice sheets / permafrost / snow; M7 atmosphere / rainwater / rain ; M8 desalination plants;	**3**
3(c)	*Two from:* M1 contaminated water used to wash / prepare food / drunk / ingested / consumed; M2 leads to diseases; M3 named disease e.g. typhoid / cholera; M4 leads to nutrient enrichment / eutrophication;	**2**

Question	Answer	Marks
4(a)(i)	bar plotted at 15th Aug;	**1**
4(a)(ii)	M1 date of Earth overshoot day is getting earlier; M2 quoted data to illustrate point above need the year **and** month;	**2**
4(b)(i)	*Three from:* M1increase education about contraception / birth control / promote family planning; M2 increase career opportunities for women (so they have a family later) / increase education for women; M3 improve access to contraception / free contraception; M4 improve / provide more healthcare (facilities); M5 impose penalties / taxation on larger families / new law against having larger families ;	**3**

Question	Answer	Marks
4(b)(ii)	*Three from:* M1 traditionally / culturally had large families; M2 religious beliefs; M3 need for workforce (for farming); M4 immigration;	**3**
4(c)(i)	*Any five from:* M1 sustainability definition quoted; M2 limited stores of raw material / saves raw materials / resources can be used for other purposes ; M3 (less water used so) more available for other purposes e.g. for irrigation; M4 less toxins released / less pollution ; M5 (less energy used / saves energy so) less greenhouse gases produced / less fossil fuels burnt / reduces carbon footprint; M6 landfill is in short supply / reduces amount of waste / less waste ; M7 recycling provides employment ; M8 (saves trees so)reduction in deforestation; M9 less destruction of habitats linked to mining / less mining needed ; M10 cheaper to buy recycled items / cheaper to recycle (than to start from scratch) ;	**5**
4(c)(ii)	Two from: M1 impose quotas on mining new materials; M2 education / awareness, about the benefits / importance of recycling; M3 increase availability of recycling facilities / provide people / households with recycling bins; M4 impose fines / taxes for putting metal in landfill; M5 financial incentives to recycle / making companies develop recyclable products;	**2**

Question	Answer	Marks
5(a)	Any three from: M1 Africa is predicted to have a decrease in agricultural yield; M2 North America will have an increase in yield; M3 Australia is predicted an increase in yield; M4 Europe is predicted an increase in yield; M5 Asia is predicted an increase in North / decrease in south; M6 South America is predicted an increase in west / decrease in east; M7 increase in yields generally North and South of the tropics / North of the tropic of Cancer and south of the tropic of Capricorn; M8 countries near the Equator generally predicted to reduce in yield; M9 **and** M10 accept a named country with correct increase / decrease if continent not named previously;	**3**
5(b)(i)	farming / agricultural activities which have large inputs of machinery / pesticides / fertilisers / or grow at a high density;	**1**
5(b)(ii)	*Three from:* M1 (excessive cultivation may) destroy soil structure; M2 crops may deplete soil of nutrients: M3 lack of crop cover (may increase soil erosion); M4 loss of windbreaks / trees / hedges may cause wind erosion; M5 pesticides may kill soil organisms;	**3**
5(c)	**trickle drip irrigation**: M1 (small droplets of water placed) at plant roots; M2 water only placed where used; **contour ploughing:** M3 reduces speed of water flow down a gradient / hill; M4 allowing time for infiltration;	**4**

Question	Answer	Marks
6(a)(i)	nitrogen;	1
6(a)(ii)	carbon dioxide; noble gas / named noble gas; ;	2
6(b)	two from: M1 required for respiration; M2 to release energy;	2
6(c)	thermosphere; (mesosphere) stratosphere; troposphere;	3

Question	Answer	Marks
7(a)	core; igneous; constructive; earthquakes;	4
7(b)(i)	*Three from:* M1 village relocated **and** to a higher area so less risk of flooding; M2 river is straightened **and** allowing for faster water flow; M3 river is deeper / wider **and** to provide greater water volume; M4 use of flood defences **and** to prevent flooding of whole valley;	3
7(b)(ii)	*Two from:* M1 monitor weather conditions / river; M2 provide people with warnings; M3 emergency drills / evacuation plans; M4 provide emergency shelters / food / water supplies; M5 have emergency services on standby;	2
7(b)(iii)	increased fertility / nutrients / minerals (from silt for farming);	1

Question	Answer	Marks
8(a)	M1 **biotic factor:** a living organism / living component / living part / living factor (that has an effect on an ecosystem); M2 **community**: an (interacting) group of (different) species in a habitat / common location; M3 **niche**: the role an organism plays within an ecosystem ;	**3**
8(b)(i)	sectors in clockwise rank order; largest first starting at 'noon / 0'; correct plotting ± 4°; key competed **and** matches sector shading;	**4**
8(b)(ii)	*Three from:* M1 Introduced species have no natural predators; M2 impact the food web / chain; M3 outcompete for food; M4 competition for space; M5 damage the habitat; M6 may transmit a new disease to existing animals; M7 could be a predator / kill (native species);	**3**
8(c)	*Level of response marked question:* Level 3 [5–6 marks] **A coherent response is given that develops and supports the candidate's conclusion using relevant details and examples.** Indicative content and subject-specific vocabulary are generally used precisely and accurately. Good responses are likely to present a balanced evaluation of the statement. Level 2 [3–4 marks] **Development and support of the conclusion is evident, though the response may lack some coherence and / or detail.** Irrelevant detail may be present. Indicative content and subject-specific vocabulary are used but may lack some precision and / or accuracy. Responses contain evaluation of the statement, but this may not be balanced.	**6**

Question	Answer	Marks
8(c)	Level 1 [1–2 marks] **The response may be limited in development and / or support.** Contradictions and / or irrelevant detail may be present. Indicative content and subject-specific vocabulary may be limited or absent. Responses may lack structure or be in the form of a list. Evaluation may be limited or absent. No response or no creditable response [0 marks] *Indicative content for: '*Government money should be invested in protecting ecosystems that are not yet been damaged. Money should not be used on ecosystems which are damaged.' Agree: ecosystems are all being impacted more resources needed to protect ecosystems if resources are limited, the focus should be on those with less damage. some ecosystems cannot be restored some animals are functionally extinct in the wild Disagree ecosystems are linked damage to one ecosystem will impact others the long term impact of damage is not known ecosystems are not necessarily in small localities, may reach worldwide (e.g. oceans) all ecosystems should be invested in who decides which ones are worth saving?	