CAMBRIDGE
International Education

Cambridge IGCSE™

ENVIRONMENTAL MANAGEMENT **0680/23**

Paper 2 Management in Context **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.

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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	'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.

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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.

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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
	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

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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
✓ 1	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

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Mark Scheme Abbreviations

Abbreviation	Meaning
;	separates marking points
/	alternative responses for the same marking point
R	reject the response
A	accept the response
I	ignore the response
ecf	error carried forward
AVP	any valid point
ora	or reverse argument
AW	alternative wording
underline	actual word given must be used by candidate (grammatical variants excepted)
( )	the word / phrase in brackets is not required but sets the context
max	indicates the maximum number of marks that can be given
M1, **M2** …	marking point reference

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Question	Answer	Marks	Guidance
1(a)	M1 0.4 × 5.2 OR 2.08 ; M2 2.1 ;	**2**	Correct answer gets 2 marks M2 ECF on M1 correct rounding to 1 decimal place M2 **accept** round up or round down from 5 from ECF
1(b)(i)	(overall) decrease / fluctuates / goes up and down ;	**1**	**ignore** quoted data
1(b)(ii)	*any two from:* M1 birth rates decrease / less births ; M2 death rates increase / more deaths / death rate exceeds birth rate ; M3 population decrease ; M4 fewer people of working age / less workforce (in future) ;	**2**	**ignore** references to economy e.g. taxes, as answer must relate to graph **ignore** migration **ignore** infant mortality rate **ignore** less young people / more old people / older people are dying / old people not working

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Question	Answer	Marks	Guidance
1(b)(iii)	*any two from:* M1 education, use or access to or lower cost of, birth control / contraceptives ; M2 infant mortality rate ; M3 traditional / cultural, reasons ; M4 stated or described government policy that limits or discourages number of children born e.g. anti-natalist ; M5 education / opportunities or jobs for women ; M6 idea of change healthcare ; M7 change in availability of stated resource e.g. food, (clean) water ; M8 disease ; AVP;	**2**	**ignore** birth rate has fallen / less children / less births / delay in having families / younger children more likely to get ill **ignore** not enough money unqualified / cost of living/ economy **ignore** migration **ignore** people don't want to have more children ORA M1 **guidance**: education on contraceptives is not the same as general education M1 **allow** family planning / sex ed / availability of abortion M2 **accept** pronatalist M3 **accept** religious reasons / early marriage / have children to work / need for a workforce / have child to look after parents when they are older / idea of change in societies or cultural views M5 **allow** people focusing on careers M6 **allow** increase or decrease of healthcare/ poor healthcare M7 **allow** lack of or less stated resource **AVP: allow** impact of wars **AVP: allow** impact of natural disasters

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Question	Answer	Marks	Guidance
1(c)	Lower / decrease density or distribution, (in west) AND *any two reasons:* M1 difficult to access / difficult to get, infrastructure to mountains / named infrastructure e.g. roads / transporting materials ; M2 difficult to build houses / construction ; M3 risk of landslides ; M4 limited opportunity to grow crops ; M5 limited communications e.g. internet, mobile phone signal etc.; M6 Lack of access to stated service e.g. schools, hospitals etc.;	**2**	No mark for stated impact e.g. lower density **allow** impact in a reason OR reasons in the impact **allow** lower by itself **not** higher density **Max 1** for ref for incorrect impact but both reasons need to be correct **ignore** harsh living conditions unqualified / less job opportunities / less amount of building M1 **accept** stated reason why being in mountains is a challenge e.g. lack of oxygen / too cold / snow M3 **accept** other stated risk e.g. avalanche / flooding
1(d)(i)	sedimentary ;	**1**	
1(d)(ii)	5%	**1**	
1(d)(iii)	slate ;	**1**	**allow** other examples e.g. gneiss, schist, **ignore** marble, quartzite

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Question	Answer	Marks	Guidance
1(d)(iv)	*Any four from:* M1 rock is weathered / eroded / broken down ; M2 is moved/transported by wind or ice or water or sea: M3 sediment <u>deposited / accumulates</u>, (in layers) / sedimentation ; M4 is compact / put under pressure ; M5 process takes <u>millions</u> of years ;	**4**	**ignore** organic material unqualified **ignore** rocks get destroyed / sediment sticks together / crumble M1 **allow** physical, chemical, biological weathering M1 **allow** precipitation of dissolved materials out of solution in water M4 **allow** cementation / lithified M4 **CON** heat
1(e)(i)	reduced ;	**1**	**ignore** crops cannot grow **allow** plants won't grow properly / crop yield decreases
1(e)(ii)	*any three from:* M1 add chemical / inorganic, fertilisers ; M2 add organic fertilisers / e.g. manure / compost / humus / bone meal ; M3 stated example of positive sustainable agriculture technique e.g. <u>improved</u> irrigation ; M4 stated example of agriculture technique to avoid e.g. avoid monocropping / prevent overgrazing / reduce overcultivation ;	**3**	**ignore** NPK unqualified **ignore** biological control e.g. insects M1 M2 **allow** fertiliser unqualified **once only** M1 **accept** named ions e.g. phosphate / nitrates / potassium / ammonium M1 **accept** formula PO_4^{3-}, NO3–, K, NH_4+ M1 **accept** artificial fertilisers M2 **allow** green manure / mulch M3 **allow** crop rotation / planting legumes M5 **allow** adding lime (limestone)
1(f)(i)	M1 data from graph: 66.3 and 62.9 ; M2 3.4 ;	**2**	ECF on M1 values Correct answer gets 2 marks

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Question	Answer	Marks	Guidance
1(f)(ii)	*any one from:* M1 house building / urbanisation / infrastructure ; M2 food imported ; M3 stated impact of lack of money e.g. unable to purchase seeds, machinery etc.; M4 change in population ; M5 decrease in soil quality or fertility or stated example ;	**1**	**ignore** climate change **ignore** land left fallow / crop rotation **ignore** soil erosion unqualified **ignore** industrialisation M4 **allow** decrease or increase in population M6 natural disasters or stated e.g. volcanic eruption, flooding, tropical storms, wildfires;
1(g)	M1 arable: producing crops ; M2 subsistence: producing food consumed by the farming household ;	**2**	M1 **CON** animals M2 **allow** not for profit (farming)
1(h)(i)	*any three from:* M1 soil is not, washed away / washed down hill ; M2 furrows follow curves or contours of land / furrows are not up and down slope / land ploughed perpendicular or at right angles to slope ; M3 ridges enable water to be collected / slow down the movement of water / creates a barrier to <u>water</u> / reduces run off ;	**3**	**ignore** reduces soil erosion **allow** contours or ridges or trenches for furrows or furrows described
1(h)(ii)	a wall of, (earth or soil or rocks or stones) ;	**1**	**ignore** fence / bump / mountain / vertical structure **allow** small wall / barrier

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Question	Answer	Marks	Guidance
2(a)	*any two from:* M1 higher labour costs / more specialist knowledge needed ; M2 (cost) of building tunnels / building of deep tunnels ; M3 tunnels need ventilation or air supply ; M4 safety considerations ; M5 minerals have to be brought to the surface ; M6 specialist machinery / technology required / more machinery ;	**2**	**ignore** cost unqualified M4 **accept** idea of health insurance / compensation / training or health and safety M5 **accept** difficulty of transporting machinery into tunnels
2(b)	*any one from:* M1 idea that mining company needs roads to transport minerals ; M2 more electricity/ water supply etc ; M3 (more workers in area) so more facilities needed e.g. schools, health clinics, fire station ; M4 idea of increase in local economy ;	**1**	M4 **accept** multiplier effect
2(c)	mine closes / reduction in extraction / loss of jobs / reduction in profit ;	**1**	**accept** sell more AND therefore extract more
2(d)(i)	*any one from:* M1 reduce visual pollution / screens the mine from view ; M2 to minimise impact on tourism ; M3 capture particulates or dust ; M4 to take in carbon dioxide produced by the mine / bioremediation ; M5 roots of trees prevent soil erosion ;	**1**	**ignore** air pollution / air quality M6 **allow** reduces noise pollution M7 **allow** increase in biodiversity / increase habitat
2(d)(ii)	*any one from:* M1 transport; M2 (mining) machinery / conveyor belts ; M3 explosions from extractions / blasting ;	**1**	**ignore** digging M2 **accept** elevators / drills / drilling

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Question	Answer	Marks	Guidance
2(d)(iii)	*any two from:* M1 bioremediation / treat the waste to remove toxic chemicals ; M2 idea of recycling / double processing to remove missed minerals (to reduce mineral waste) ; M3 put back into mine when finished / move to a landfill site ; M4 cover with soil and plant trees (on the waste heaps) ; M5 use in construction industry ;	**2**	**ignore** re-use
2(d)(iv)	*any two from:* M1 failure of walls ; M2 heavy rainfall / flooding / idea of contaminated water spilling ;	**2**	**ignore** passes through the soil M3 to M5 **ignore** an explanation that doesn't include correct terminology M3 **allow** infiltration / percolates M4 **allow** through-flow M5 **allow** leaching / run-off
2(e)(i)	no new product is needed / reduces waste ;	**1**	**ignore** biomass is renewable / no other use for it / it is a waste product / recycling
2(e)(ii)	(effective because) M1 reduces concentration ; M2 reduces to zero / removes all the zinc ions ; M3 works quickly ; M4 manipulated data e.g. within 2 minutes of contact time ;	**2**	No mark for effectiveness by itself **ignore** data quotes
2(f)(i)	control / to see the water quality before or upriver from the mine ;	**1**	**allow** idea of comparison **reject** to control variable

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Question	Answer	Marks	Guidance
2(f)(ii)	*any one from:* M1 to see a trend / pattern ; M2 to see if the water quality changes from B to E / to detect changes in water quality ; M3 to have representative data / have enough data for a conclusion ;	**1**	**ignore** accurate / precise / reliable / valid / to have more information
2(f)(iii)	*any two from:* M1 volume of water collected ; M2 depth of sample collection ; M3 number of samples collected ; M4 day (of week) of collection ; M5 time of collection ;	**2**	**ignore** length of collection time **ignore** climatic conditions **ignore** information taken from the question e.g. 9 am etc M1 **allow** amount of water collected
2(f)(iv)	*any one from:* M1 identifies, anomalous results or outliers / reduces impact of anomalies ; M2 enables a trend or pattern to be identified ; M3 improves, reliability / validity (of results) ;	**1**	**ignore** average / mean, calculated **ignore** accuracy / precision / credibility / control **ignore** identifies errors or mistakes / reduces bias / representative data / enough data to reach a conclusion **ignore** to see changes **ignore** comparison unqualified M2 **accept** check result is not a one-time result / repeatability of results / checks that results are the same every time / confirm results / consistency of results
2(f)(v)	*any one from:* M1 rainfall washes zinc ions into water ; M2 dilution of zinc ions ; M3 change in river volume ; M4 speed of water flow changes ; M5 check the turbidity of the water ;	**1**	**ignore** amount of pollution / overflow **ignore** changes in concentration of pollution

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Question	Answer	Marks	Guidance
3(a)(i)	Nitrate ;	**1**	**allow** nitrogen / phosphate / phosphorus
3(a)(ii)	M1 (sun)light can't reach plants ; M2 plants cannot photosynthesise (without light) ;	**2**	**ignore** plants can't make their own food **ignore** sun unqualified
3(a)(iii)	*any three from:* M1 eutrophication ; M2 dead plants decomposed by microbes / bacteria ; M3 microbes / bacteria, use oxygen ; M4 (microbes) during respiration ; M5 fish suffocate / no oxygen for fish to respire ;	**3**	M5 **allow** fish cannot breathe
3(b)(i)	<u>energy</u> flow or movement or transfer ;	**1**	**accept** how energy is transferred between organisms / energy moves through a food chain / energy moves between trophic levels
3(b)(ii)	*any one from:* M1 eagles eat fish AND eagles have less food ; M2 fish take up toxins or stated toxin e.g. microplastics AND toxins build up in eagles ; AVP ;	**1**	**allow** idea of fish are dying due to algal bloom so less food M2 **allow** algae take up microplastics AND (plastics) biomagnified or bioaccumulate in eagles M2 **allow** algae for fish and bioaccumulation / biomagnification (in eagles) AVP **allow** stated pollution event that relates to stated food chain disturbance e.g. oil spill
3(c)(i)	*any two from:* M1 replaces chicks that die ; M2 reduces genetic depletion / reduces inbreeding ; M3 increasing population / re-populate / reproduction ; M4 idea that eagles don't all die at same time e.g. eagles of different ages ;	**2**	**ignore** extinction

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Question	Answer	Marks	Guidance
3(c)(ii)	*any one from:* M1 fit a tracking device ; M2 aerial photographs ; M3 observation / people survey eagles ; M4 tag or fit leg rings to eagles ;	**1**	**ignore** people <u>monitor</u>
3(d)(i)	*any three from:* M1 competition for food / nutrients ; M2 competition for space / habitat ; M3 reproduce faster than native species ; M4 spread disease ; M5 no natural predators ;	**3**	**ignore** harm / disrupt **ignore** migration / relocation **ignore** alter or disrupt food chain / kill native species, unqualified **allow** <u>competition / outcompete</u> unqualified for max [1] if M1 and M2 not awarded **allow** predation (on native species) M1 **accept** consume or eat native species or other animals M2 **ignore** homes M2 **accept** take over a habitat/ alter habitat
3(d)(ii)	*any one from:* M1 attached to boats ; M2 released by people / former pets ; M3 attached to animals ;	**1**	
3(e)(i)	**X**;	**1**	
3(e)(ii)	*any two from:* M1 small, so easy to miss in a count ; M2 difficult to count, a large sample or 200 000 ; M3 time consuming ;	**1**	
3(f)(i)	28 ;	**1**	
3(f)(ii)	21 ;	**1**	

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Question	Answer	Marks	Guidance
3(g)	M1 **maximum** number of organisms ; M2 that a habitat or resources can support ;	**2**	

Question	Answer	Marks	Guidance
4(a)	*any four from:* M1 (stored) water, in reservoir / behind a dam or wall ; M2 water flows down / flows from a high to low level ; M3 (blades of) <u>turbine</u> turns or rotates ; M4 (turbine causes) <u>generator</u> turns or rotates ;	**4**	**max [2] if other methods of electricity generation described e.g. geothermal** M2 **accept** has gravitational potential energy; M2 **accept** water flows downwards / water passed down M3 M4 **ignore** move / drive / runs (for rotates) M5 **ignore** mechanical energy / movement energy M5 **allow** idea of conversion of kinetic to electric(al) energy M5 **allow** electromagnetic induction occurs
4(b)	68 400 ;	**1**	
4(c)	*any one from:* M1 connects different populations ; M2 gives access to food source ; M3 allows access to breeding grounds ;	**1**	**ignore** population increase **ignore** safe place
4(d)(i)	biofuels 20% **AND** other 34% **AND** labelling ;	**1**	20% = 10 squares 34% = 17 squares
4(d)(ii)	solar / geothermal / tidal / wind / waves ;	**1**	**ignore** HEP, biomass **reject** non-renewables

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Question	Answer	Marks	Guidance
4(e)	*any three from:* M1 large amount of, non-renewable resources / coal / oil / (natural) gas / fossil fuels, in the country ; M2 infrastructure for existing resources already in place ; M3 cost qualified e.g. of investing in renewables ; M4 lack of expertise or knowledge (of workers) / lack of technology or machinery ; M5 idea of lack of natural resources to support renewables e.g. not enough sunshine hours / low wind speed ; M6 country has other priorities e.g. drought / famine / disease / education ; M7 stated environmental concern from use of renewables e.g. habitat loss with wind farms ; M8 concern that renewables will not meet energy needs ; M9 exporting existing energy resources increases GDP / oil extraction is main economic activity / idea of fossil fuels employ a lot of people ; M10 no available land ; M11 low demand and stated reason e.g. low population	**3**	**ignore** doesn't want to invest unqualified **ignore** low population unqualified **M1 ignore** no need for renewables unqualified **M1 allow** enough of other energy resources **M1 allow** use more non-renewable resources **M3 ignore** LEDC **M4 ignore** lack of workforce unless qualified with lack of knowledge

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