Cambridge Assessment International Education

Cambridge IGCSE™

ENVIRONMENTAL MANAGEMENT **0680/11**

Paper 1 Theory **October/November 2023**

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 2023 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 descriptors 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.

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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.

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Question	Answer	Marks
1(a)	*any **three** from:* respiration; combustion / burning (fossil fuels/trees); decomposition;	**3**
1(b)	*any **three** from:* evaporation; transpiration; respiration;	**3**

Question	Answer	Marks
2(a)	volatile organic compounds (VOCs) / oxides of nitrogen / nitrogen oxides / nitrogen dioxides;	**1**
2(b)	heart problems / stroke / respiratory problems (asthma, bronchitis) / lung cancer / lung disease / lung damage / breathing problems / lung illness;	**1**
2(c)	cold air warm air cool air 1 or 2 correct; 1 mark All 3 correct; 2 marks	**2**

Question	Answer	Marks
3(a)	*habitat:* the home / environment / place / area of an organism; *niche:* the role of an organism within the community of an ecosystem;	**2**
3(b)(i)	pyramid shape / triangle shape / stepped triangle shape; correct order – producer, primary consumer, secondary consumer, tertiary consumer;	**2**
3(b)(ii)	the sun;	**1**

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Question	Answer	Marks
4(a)	*any **three** from:* people are warned / made aware (of the risk)/educated (on risk); to avoid, loss of life / injury / (risk of) drowning; people know / advised that there is a (evacuation) shelter / building / where the shelter is / for faster evacuation; people advised to get to high ground; people may not be able to read;	**3**
4(b)	*any **two** from:* can lead to water-borne disease; named disease, e.g. cholera, typhoid; people don't have enough water to drink/dehydrated; fields / crops, covered with, salt / contaminated water; leads to crop failure / lack of food; leads to illness / death when eating contaminated crops / drinking contaminated water;	**2**

Question	Answer	Marks
5(a)	3.0; (for 2 marks)	**2**
5(b)(i)	*any **two** from:* time consuming; need a lot of people / labour intensive / inefficient method; hard to see in the dark/lack of light; impossible to pick 80 million locusts / swarm too large; locusts can fly away / move / leave;	**2**
5(b)(ii)	Reduces cost / don't need to buy animal feed / can be sold to other farmers / no crops left so keeps livestock alive;	**1**
5(c)	*any **two** from:* affects non-target species; toxic (to humans / animals) / unsafe to eat; run-off / enters water sources; (locust) resistance;	**2**

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Question	Answer	Marks
5(d)	*any **four** from:* (stated method to get rid of locusts) such as buy insecticides / use of bio-control / nets; buy seeds / replant crops / insect resistant crops; buy fertiliser; install locust monitoring / early warning / preparedness systems / research; educate farmers / raise awareness; provide food aid; give hardship / compensation grants;	**4**
5(e)	*any **two** from:* enhanced greenhouse effect / climate change / global warming; increased rainfall / / longer rainy season / increased temperatures / improved conditions / optimal conditions; more habitable areas / countries (for locusts); increase in photosynthesis; more food available (for locusts); less predators;	**2**

Question	Answer	Marks
6(a)	*any **two** from:* noise pollution / noisy; visual pollution; covers a large area / habitat loss; threaten wildlife / kill birds (flying into the blades); too dependent on weather / cannot guarantee output / may not always be windy; don't think they can generate enough electricity (for a community's needs); short lifetime / efficiency decreases over time; doesn't create long-term employment;	**2**
6(b)(i)	turbine stopped working / damaged / switched off;	**1**
6(b)(ii)	2325;	**1**
6(b)(iii)	(output) decreases (over time);	**1**

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Question	Answer	Marks
6(c)(i)	10;	**1**
6(c)(ii)	*any **one** from:* average wind speed is generally higher at A; more fluctuation at B; range at A is smaller than B / quoted data range;	**1**

Question	Answer	Marks
7(a)(i)	*any **one** from:* population increase / population growth; increase in plastic use / greater demand; more plastic was manufactured; switch to plastic from other materials; more disposable income; increased consumption of bottled water;	**1**
7(a)(ii)	*any **three** from:* all strategies have increased; most plastic waste disposed of by landfill; landfill increased by lowest (percentage); recycling least used method; recycling increased by greatest (percentage);	**3**
7(a)(iii)	*any **one** from:* illegal waste disposal / littering / disposal in oceans; another method used; exported (overseas); reuse of plastic item / not designed for single use / plastic was still in use; not all data recorded;	**1**

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Question	Answer	Marks
7(b)	*any **three** from:* death / injury / suffocation / entanglement / swallowing by marine species; consumed/eaten/mistaken for food / starvation; toxic; bioaccumulation / build-up in organisms / build up in food chains; decrease biodiversity;	**3**

Question	Answer	Marks
8(a)	*any **three** from:* farming / agriculture / grazing / crop land / production of food; mining / mineral extraction; timber extraction / logging / paper / furniture; roads / infrastructure; settlements / urbanisation / industrialisation / building materials; dams / reservoirs / HEP; fuel;	**3**
8(b)	*any **seven** from:* habitat loss; loss of biodiversity / migration of species / extinction; soil erosion; soil washed away / water erosion; decreased soil fertility / loss of nutrients / reduced organic material; lower crop yields; (river) flooding; increased surface runoff / reduced infiltration rates; Drought / decreased rainfall; climate change / global warming / <u>enhanced</u> greenhouse effect; less carbon dioxide removed from atmosphere / more carbon dioxide in atmosphere; less carbon sinks / stores; (Human impact) relocation of indigenous people; food sources depleted / disruption to food chain; genetic depletion; no roots to bind soil; soil blown away / wind erosion; desertification / land degradation; trees act as wind breaks; lack of interception; more sediment carried by rivers; lower (evapo)transpiration rates; less photosynthesis; removal of livelihood / reduction of tourism;	**7**

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Question	Answer	Marks
9(a)	*any **three** from:* net has escape hole / hood; is big enough for dolphins; floats keep the escape hole open; grid prevents dolphins getting trapped in narrow part of net / directs dolphins to escape hole;	**3**
9(b)(i)	(boat) 2;	**1**
9(b)(ii)	DEDs reduce the number of dolphins caught / helps reduce bycatch;	**1**
9(c)	*any **three** from:* quotas / limit number of days / monitoring / enforcing legislation; closed seasons / restrictions in breeding season; protected areas / reserves / MPAs / banned in some areas; conservation laws / fines; international agreements; fish farming; pole and line fishing;	**3**

Question	Answer	Marks
10(a)(i)	20.0;	**1**
10(a)(ii)	axes labelled correctly: x-axis: % / percentage and y-axis: resources and bars named; sensible linear scale such that data occupies over ½ the plotted space; bars plotted correctly; bars of equal width;	**4**
10(b)(i)	*any **two** from:* fossil fuels often used to produce the high temperature; uses a lot of energy; (carbon dioxide) contributes to <u>enhanced</u> greenhouse effect / global warming;	**2**
10(b)(ii)	permeable AND erodes in acid rain ticked;	**1**

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Question	Answer	Marks
10(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. 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:* The need to use mineral resources for the present global population is more important than keeping mineral resources for future generations. *reasons for using resources for the present global population:* global population increasing cannot leave people with needs unmet (morally / ethically) differences between LEDCs and MEDCs idea of catch-up time for LEDCs new technology being developed	**6**

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Question	Answer	Marks
10(c)	in future, we will be able to extract difficult to access resources in future, we will be able to use different resources for current purposes alternatives aren't available can't be sure what future needs are *reasons for keeping resources for the future generations* It's our responsibility to preserve some resources for the future It will make life very difficult for future generations. idea of 'going back in technological time' if no resources available should be reuse, recycle, reduce Current resource usage is causing named effect, e.g. global warming, acid rain, etc. many of our 'needs' are really just 'wants'	

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