



Cambridge Assessment International Education
Cambridge Ordinary Level

ENVIRONMENTAL MANAGEMENT

5014/21

Paper 2

October/November 2018

MARK SCHEME

Maximum Mark: 60

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 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **9** 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 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.

PUBLISHED**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.

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Question	Answer	Marks
1(a)	<i>any two from:</i> overpopulation in urban areas; increase in disease related to overpopulation; unemployment; low wages; no / few, schools / hospitals; AVP, e.g. housing / infrastructure, cannot keep up with population growth / depopulation of rural areas / increase in a named pollutant;	2
1(b)(i)	23.4 / 23 ;; (if answer incorrect, allow one mark for 539 000 / 23 000 [1]);	2
1(b)(ii)	<i>any one from, farm workers:</i> make more money; more job opportunities; <i>any one from, the government:</i> government collect taxes; revenue spent on, infrastructure / services; goods for export; (increased) economic growth;	2
1(b)(iii)	<i>any two from:</i> low wages / seasonal work, in rural areas; poor standard of living in rural areas; converse in city; better (named) services in city;	2
1(c)(i)	27;	1
1(c)(ii)	185 ;; (if answer incorrect, allow one mark for 5000 / 27 [1]);	2
1(c)(iii)	sample, is not representative / is biased;	1

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Question	Answer	Marks
1(c)(iv)	<i>any two from:</i> no student bias as (selection is) random; several rows sampled; in different parts of the field; sample is representative (of whole field); AVP, e.g. largest fruits not chosen;	2
1(c)(v)	(<i>correct position indicated on diagram</i>) row 7, plant 3; (<i>correct position indicated on diagram</i>) row 8, plant 5;	2
1(c)(vi)	table drawn that can record all the data; correct headings including units; order of data entered;	3
1(d)(i)	6.6;	1
1(d)(ii)	<i>any two from:</i> warm enough for growth every month; and so flowering; and ripening; no frosts to kill plants; AVP related to temperature;	2
1(d)(iii)	November to April;	1
1(d)(iv)	trickle drip irrigation / AVP;	1
1(d)(v)	<i>any three from:</i> leaching; of mineral nutrients; increased evaporation; draw salts to the surface; salinisation; AVP, e.g. waterlogged soils lack oxygen for root growth;	3

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Question	Answer	Marks
1(d)(vi)	<i>any two from:</i> widespread crop failure; spread of insect pests and other diseases; reference to, need to use expensive treatments; nutrients used by crop need to be replaced; soil becomes, less fertile / infertile;	2
1(e)(i)	<i>any two from:</i> asthma; lung disease; breathing problems; burns; eye problems (from smoke); fire risk / described; AVP, e.g. particulates;	2
1(e)(ii)	22.76 / 22.8 / 23 (%) ;; (if answer incorrect, allow one mark for 28 million / 123 million [1]);	2
1(e)(iii)	<i>any two from:</i> cost; do not know how to use it; not traditional / do not want to change;	2
1(e)(iv)	<i>any two from:</i> promotion activities to show advantages and word of mouth; make the new stoves cheaper; lots of people now know how to use it; train people to use it; provide people with materials;	2

Question	Answer	Marks
1(e)(v)	<i>any three from:</i> reduces deforestation / habitat destruction; reduces air pollution; less carbon dioxide released; maintains species diversity; (reduces impact on) climate change / less global warming; AVP, e.g. less particulates;	3

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Question	Answer	Marks
2(a)(i)	<i>any two from:</i> only, small / single (hand-held) net; limit to how many fish can be caught by one person; lake has provided fish for many years;	2
2(a)(ii)	<i>valid collection method described keeping details the same at each sample point, e.g.</i> length of fishing / number of fish; size of net; mesh size; time of day; time of year; AVP, e.g. fish at the surface / at a specified depth;	4
2(a)(iii)	suitable linear scale; y axis fully labelled; x axis fully labelled; correct plots;	4
2(a)(iv)	F AND as it has lowest, number of different fish species / species diversity / number of charal fish;	1
2(a)(v)	<i>any five from:</i> eutrophication; increase in bacteria; bacterial respiration; use up oxygen; algal bloom; block light; death of plants; death of fish; disrupts, food chain / food web;	5

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Question	Answer	Marks
2(b)	<i>any four from:</i> do not allow development too close to the shoreline; to prevent / control, (land / water / air) pollution, e.g. litter; build sewage treatment plants; efficient rubbish collections; restrict visitors to some areas; restrict holiday activities such as, speed boats / tour boats; maintain local fishing activity; restrict vehicles near lake; advertise rules; implement fines / punishment, for abuse of rules; employ rangers to monitor, area / lake;	4