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**ENVIRONMENTAL MANAGEMENT**

**0680/41**

Paper 4

**May/June 2018**

MARK SCHEME

Maximum Mark: 60

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**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.

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**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.

**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.

Question	Answer	Marks
1(a)	(Oahu island and Laysan island) 1600 (km); (Hawaii island and Kure island) 2800 (km);	2
1(b)(i)	1 481 200;	1
1(b)(ii)	67.8(%) ;;  <i>(if answer incorrect, allow one mark for <math>1\,003\,700 \div 1\,481\,200 \times 100</math> [1]);</i>	2
1(b)(iii)	<i>from highest to lowest:</i> Oahu, Hawaii, Maui, Kauai ;;  <i>4 correct [2] 2-3 correct [1] 1 correct [0]</i>	2
1(c)(i)	table drawn; <i>headings:</i> (three) days; (number of) fish / (blue) marlin caught;	3
1(c)(ii)	(to get results they can) compare / unbiased / valid; (quantitative data so) means / averages, can be calculated;	2
1(c)(iii)	<i>any two from:</i> not enough females to breed; males cannot find female to mate with; less eggs / young fish, produced; so population, reduced / decreases / die out;	2
1(c)(iv)	large fish increase <b>and</b> small fish decrease; as less large fish eaten by marlin; more large fish to eat small fish;	3

Question	Answer	Marks
1(c)(v)	<i>any five from:</i> <i>control of,</i> number of boats / people; limited fishing days; quotas; landing checks; licences; enforce laws / fines; closed season; avoid breeding season; temporary fishing bans; no fishing zone; fish finding / attracting, devices not allowed; control of bait, type / size; AVP, e.g. education / making fisherman aware / catch more males;	<b>5</b>
1(d)(i)	<i>any two from:</i> far away from most diving sites; (long way to go so) not many divers visit site 20; long way / about 40 km, from state capital / Honolulu; the site may only have limited species to see;	<b>2</b>
1(d)(ii)	the number of different species;	<b>1</b>
1(d)(iii)	fish rot down / used as compost; to release, nutrients / mineral / named mineral; increase, organic matter / humus;	<b>2</b>

Question	Answer	Marks
1(d)(iv)	<p><i>any three from:</i></p> <p><i>bad strategy</i> no control over total number caught; no records kept; could easily cause other problems by lots of spear-fishing;</p> <p><i>good strategy</i> it does give some control of the grouper; it only controls the target species; helps farmers / increases crop yield; allows young fish to, grow / mature / become future breeding stock / maintains population of other fish species; allows biodiversity to recover;</p>	<b>3</b>

Question	Answer	Marks
2(a)(i)	<p>37;</p> <p><i>from 53 to 101 and from 10 to 85;</i></p>	<b>2</b>
2(a)(ii)	<p>x axis labelled islands; y axis labelled average; linear scale and plots; key;</p>	<b>4</b>
2(a)(iii)	<p>more plastic pieces (at Kure island); more mass of plastic (at Kure island);</p>	<b>2</b>
2(b)(i)	<p>10.48(%) ;;</p> <p><i>(if answer incorrect, allow one mark for <math>(27.4 - 24.8) = 2.6</math> [1]);</i></p>	<b>2</b>

Question	Answer	Marks
2(b)(ii)	<i>any two from:</i> use more energy flying; use more energy finding food / harder to find food; so less energy / food reserve for, mating / laying eggs; AVP;	<b>2</b>
2(b)(iii)	<i>any one from:</i> <i>reference to</i> climate change; more energy distributed from equator to poles;	<b>1</b>
2(c)(i)	<i>any two from:</i> bottle tops made of thicker plastic; a different plastic that breaks down more slowly; more bottles are removed by people than bottle tops;	<b>2</b>
2(c)(ii)	systematic;	<b>1</b>
2(c)(iii)	<i>working to show,</i> (south beach) 400 g (in 1 m <sup>2</sup> ) / (north beach) 900 g (in 1 m <sup>2</sup> ); (south beach) 600 (kg); (north beach) 2025 (kg);	<b>3</b>
2(c)(iv)	the wind blows from, the north / north east / towards the south / south east (plastic blown onto north beach from sea);	<b>1</b>
2(c)(v)	<i>any one from:</i> plastic waste cleared from (south) beach / collects on north beach; more people visit north beach;	<b>1</b>
2(c)(vi)	landfill; burning;	<b>2</b>
2(d)	<i>any three from:</i> microplastics eaten; some absorbed into tissues; cannot be, broken down / excreted / (microplastics) remain in food chain; organisms at the top of the food chain keep eating doses of microplastics; more plastic is being disposed of;	<b>3</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(e)	<i>any four from:</i> increase in demand for plastic; difficult to get agreements between countries; difficult to enforce international agreements; difficult to identify the source of some plastics / plastics come from many different sources; different levels of development; poor waste management / lack of money to reduce the problem / too expensive to deal with; generations / decades, of accumulation in the ocean, will not break down / already there; no alternative to plastic / cost of product; difficult to remove;	<b>4</b>