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**ENVIRONMENTAL MANAGEMENT**

**0680/43**

Paper 4 Alternative to Coursework

**October/November 2016**

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.

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(a)	<i>any 2 of:</i> increase direct employment; improve, foreign exchange / GDP; indirect employment;	<b>2</b>
1(b)(i)	Kenya;	<b>1</b>
1(b)(ii)	Burundi;	<b>1</b>
1(c)(i)	less fish in total; smaller, size / length / weight;	<b>2</b>
1(c)(ii)	<i>any 2 of:</i> being eaten by Nile perch; number dropped; not many adults left to breed;	<b>2</b>
1(c)(iii)	working to show increase as 64 000; 400%;	<b>2</b>
1(c)(iv)	fishermen: can sell all the fish / eq; guaranteed prices; AVP; Kisumu: more work in factory / more secondary employment / more money circulating in town / eq; greater supply of fish; AVP; government: more taxes / eq; more money to spend on other projects / eq; AVP; max 2 from any one group	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(d)(i)	<i>any 2 of:</i> cichlids not being, fished / caught; small fish pass through mesh; so can grow; and reproduce; so number remain high;	<b>2</b>
1(d)(ii)	both axes labels completed; appropriate scale (plots to cover at least half of the grid); one plotting error = two marks, two plotting errors = one mark;;	<b>4</b>
1(d)(iii)	it rises to a peak (2005) then declines / eq;	<b>1</b>
1(e)(i)	the large ones have all been caught / small ones caught before they can grow larger;	<b>1</b>
1(e)(ii)	mesh size smaller / change shape of mesh e.g. from diamond to square; so small fish can be caught;	<b>2</b>
1(f)(i)	14; 8 tally marks drawn;	<b>2</b>
1(f)(ii)	class sizes 0–15 and 16–20 and 21–30;	<b>1</b>
1(f)(iii)	<i>any 2 of:</i> sold to / eaten by, locals; used as bait for Nile Perch; (dried and) used as animal feed (e.g. for chickens); fertiliser; AVP;	<b>2</b>
1(g)(i)	all three axes correctly labelled with units; all plots correct; both lines extended as shown by the key;	<b>3</b>
1(g)(ii)	line drawn at 55 cm;	<b>1</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(g)(iii)	2.2 (2.15–2.25); allow ecf from (ii)	<b>1</b>
1(h)(i)	<i>any 4 of:</i> laws such as: fish less than 55 cm must be returned to the lake; further detail e.g. law broken then, fine / licence removed; reference to regulation of, mesh size / types of fishing gear; AVP;  enforcement such as: fishing patrols on lake; inspections at, beach / fish factory; AVP;	<b>4</b>
1(h)(ii)	<i>any 3 of:</i> other countries are also fishing; difficult to get all countries to agree; difficult to enforce laws; easy to fish beyond boundaries; illegally land fish; AVP;	<b>3</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(a)(i)	160; 1680;	<b>2</b>
2(a)(ii)	calculation to give 30 m <sup>2</sup> ; = 9.3 / 9.33;	<b>2</b>
2(b)(i)	July and August and September and October;	<b>1</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(b)(ii)	<i>any 3 of:</i> goats get food / eq; no cost of herbicides; no toxic effects on food chains; herbicide may affect natural vegetation / eq; herbicides not broken down in the environment / eq; can be done in any weather;	<b>3</b>
2(c)(i)	random / systematic; with correct further detail;	<b>2</b>
2(c)(ii)	<i>any 2 of:</i> number of meals per day; number of people eating meals; AVP;	<b>2</b>
2(c)(iii)	<i>any 2 of:</i> less CO <sub>2</sub> into atmosphere; year after year / eq; using firewood is sustainable / a source of biomass / carbon neutral;	<b>2</b>
2(c)(iv)	<i>any 3 of:</i> cost less; time saved; little / less, air pollution; no breathing problems; money saved can be spent on other things e.g. school fees / medical fees; AVP;	<b>3</b>
2(c)(v)	<i>any 3 of:</i> wood is renewable / eq / or converse statement; so never runs out / or converse statement; fossil fuels more expensive; fossil fuels may have to be imported; AVP;	<b>3</b>