



Cambridge International Examinations
Cambridge Ordinary Level

ENVIRONMENTAL MANAGEMENT

5014/22

Paper 2

October/November 2016

MARK SCHEME

Maximum Mark: 60

Published

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Page 2	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks
1(a)	it is the numbers / variety / eq; of different types / species / biological groups of living organisms / living things / plants and animals;	2
1(b)(i)	Tanzania;	1
1(b)(ii)	Rwanda; Burundi;	2
1(c)(i)	water would be contaminated after vehicle washing all day / eq / as a control / to compare results;	1
1(c)(ii)	41.6; 8.8;	2
1(c)(iii)	<i>any 3 of:</i> pH lower in all washing sites; phosphate higher; salinity higher; use of figures to support; ORA	3
1(c)(iv)	<i>any 2 of:</i> oil; petrol / eq; diesel; brake fluid; battery acid; shampoo / cleaning agents;	2
1(c)(v)	table drawn; headings; all data filled in a tally form;	3
1(d)(i)	<i>any 5 of:</i> fertiliser / phosphates / nitrates encourage algal growth / bloom; light cannot penetrate; so plants do not photosynthesise; algae / plants die; decomposed by microbes / eq; bacteria increase; oxygen used up / high BOD; (some) fish die / fish populations decrease;	5
1(d)(ii)	<i>any 1 of:</i> good source of, protein / omega oils / eq / vitamin A / vitamin D / iodine; helps children grow; maintains / boosts, immune system;	1

Page 3	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks
1(d)(iii)	<i>any 1 of:</i> unhealthy: because of levels of, phosphate / sewage / named pollutant e.g. heavy metal; or healthy: because only small change in phosphate / not much sewage contamination / good source of protein / omega oils / eq / vitamin A / vitamin D / iodine;	1
1(e)(i)	<i>any 2 of:</i> (plan two is better as) more sites so more representative / better average; numbers counted rather than, presence / absence; same fixed time for counting snails / eq;	2
1(e)(ii)	as there are no sites without washing; no comparison is possible no control sites / eq;	2
1(e)(iii)	6.4;	1
1(e)(iv)	<i>any 2 of:</i> defined size of quadrat / eq; same number at each sample site; random sampling;	2
1(e)(v)	bilharzia / schistosomiasis / blood fluke / katayama fever / eq;	1
1(e)(vi)	human waste goes into river / swimming stage can get to water snail / eq; swimming stage burrows into human skin / eq;	2
1(e)(vii)	<i>any 2 of:</i> vehicle washing reduces snail numbers / eq; so less snail eggs; not enough food for (young) fish; so less adults to reproduce;	2

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Question	Answer	Marks
1(f)(i)	B D A C; (any two correct = one mark) 4 correct = 2, 2/3 correct = 1	2
1(f)(ii)	<i>any 2 of:</i> ploughing down slope; run-off; no vegetation cover; wind erosion; animal wastes enter lake; overgrazing / over-cultivation; allow any suitable examples	2

Question	Answer	Marks
2(a)(i)	<i>any 1 of:</i> closest to lake / similar distance from lake / eq; two in wetland, two in savannah; so comparison possible / eq;	1
2(a)(ii)	<i>any 1 of:</i> at random from a list; every third house / eq; other valid sampling method;	1
2(a)(iii)	<i>any 2 of:</i> to collect data about all household activities / all points of view / division of labour / an example stated or described / eq; males not always head of household / eq; to avoid bias / incomplete data collection / eq;	2

Page 5	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks
2(a)(iv)	<i>any 2 of:</i> so all the questions asked were the same / eq; to record all the information; so results were reliable; could be processed / summarised;	2
2(b)(i)	key completed; both axes fully labelled with appropriate scale (plots to cover at least half of the grid); one plotting error = two marks, two plotting errors = one mark);;	4
2(b)(ii)	no large difference between any assets; two examples quoted from, graph / table;;	3
2(b)(iii)	<i>any 2 of:</i> more people need to buy food; and less food being taken, to market / for sale; reference to supply and demand; physical factors such as, drought / heavy rain; AVP;	2
2(b)(iv)	<i>any 2 of:</i> questions such as: which type of, crops / named crops (e.g. maize, beans, sorghum) do you grow?; how big are your fields?; when are your harvesting times?; how much do you harvest?; how valuable is your harvest?; do you sell crops?;	2
2(c)	<i>any 4 of:</i> any suitable ideas in these four areas: sustainable / environmental / social / financial. agricultural advisors; laws about pollution; subsidies / eq / for, drought / pest resistant / high yield seed; control of local industries; control of land ownership; AVP;	4