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**ENVIRONMENTAL MANAGEMENT****5014/22**

Paper 2

**May/June 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)	<p><i>any 3 of:</i>  more jobs / reduces unemployment;  people earn more money;  learning new skills;  more exports;  more money, qualified;  maintain standard of living / reduce poverty;  more taxes;  to pay for more infrastructure;  AVP e.g. an example of a business / diversity of business;</p>	<b>3</b>
1(a)(ii)	<p><i>any 2 of:</i>  coastal location;  most / all producers are near the plant / eq;  low transport costs / eq;  use of scale on map to provide figures;</p>	<b>2</b>
1(a)(iii)	<p>to see how much the processing will affect the environment / eq; any consequence;  e.g. budget constraints / change site of processing plant;</p>	<b>2</b>
1(a)(iv)	<p><i>any 3 of:</i>  <i>supply of water</i>  supply-seawater / desalinated water;  method-piped / pumped to plant;</p> <p><i>supply of electricity</i>  supply-solar / tidal / wind / nuclear / coal / oil / gas / geothermal power;  method-power station / generator / turbine / power lines;</p>	<b>3</b>
1(a)(v)	<p>4400;  25;</p>	<b>2</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(b)	<i>any 2 of:</i> collected in large tanks / eq; processed so they do not harm environment / underground / eq; export / sell wastes to other processing plants / for other uses; put in landfill sites / eq; AVP;	<b>2</b>
1(c)	<i>any 3 of:</i> more employment; more trade; so more taxes; taxes pay for other infrastructure;	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(a)	<p><i>any 3 of:</i>  ref to low total rainfall / eq;  no rainfall for four months / eq;  quoted data;  too hot for plants to survive;  so evaporation / transpiration fast;  wilting described;</p>	<b>3</b>
2(b)(i)	<p>higher temperatures / heat energy evaporates more water;  so cooler air cools plants;</p>	<b>2</b>
2(b)(ii)	<p><b>YES</b>  the yield will remain high;  after construction house should last for many years;  solar powered so no pollution;  AVP e.g. saves space / soils;</p> <p><b>NO</b>  energy input required;  minerals must be supplied;  water supply qualified;  high skills needed;  AVP e.g. cost qualified;</p>	<b>3</b>
2(b)(iii)	<p><i>any 2 of:</i>  provides vitamins / ref to vitamin deficiency e.g. scurvy; minerals / named mineral;  fibre / roughage / prevents constipation / digestive disorder;  AVP e.g. ref to any other health benefit e.g. low in fats;</p>	<b>2</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(a)(i)	mass and length decrease ( with increase in salinity);; diameter no real change /eq;	<b>3</b>
3(a)(ii)	<i>any 1 of:</i> number of fruits per tree; sugar content of fruits; acidity /pH taste: colour; storage time; AVP e.g. volume;	<b>1</b>
3(a)(iii)	<i>any 3 of:</i> same soil type; same nutrients; soil pH; soil structure / drainage; one aspect of same climate described; to compare in context / fair comparison/test;	<b>3</b>
3(a)(iv)	21.8;	<b>1</b>
3(a)(v)	11–19.6 / 8.6; 19.4–24.5 / 5.1;	<b>2</b>
3(b)(i)	axes fully labelled; plots;; scale;	<b>4</b>
3(b)(ii)	A D; give low yields;	<b>2</b>
3(c)(i)	<i>plan three</i> has as a control dish / for comparison / eq; with and without salt / eq;	<b>2</b>
3(c)(ii)	table drawn one column for days and three columns for salt concentrations; headings with units for salt; enough space for 10 days;	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(c)(iii)	find the mass; measuring volume; dissolving / eq; count the seeds; use of two pieces of equipment; the sequence works;	<b>6</b>
3(d)(i)	<i>any 2 of:</i> nitrate increases yield; no need for fertiliser; so more profit / less expense; some N left in soil for next crop;	<b>2</b>
3(d)(ii)	<i>any 2 of:</i> to keep DNA / genes / alleles from wild plants; in case they become extinct; can be reintroduced to wild; used for research / described; protect biodiversity; AVP e.g. to develop drugs;	<b>2</b>
3(d)(iii)	<i>any 2 of:</i> grow some into adult plants to make more seed; selective / cross breeding by pollination; to produce hybrids; with desirable qualities / described; gene transfer; AVP e.g. other method of transferring genetic material;	<b>2</b>