UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

5014 ENVIRONMENTAL MANAGEMENT

5014/21 Paper 21, maximum raw mark 60

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UNIVERSITY of CAMBRIDGE
International Examinations

1 **(a)** some products used for food/personal use; timber used for building; no spare products for export/eq; not profitable/not of high value; [2]

(b) country gains foreign exchange/revenue/eq;
can be used to pay for imports; sensible reference to balance of payments/controlling national budget/debt/company profits; helps government spending on infrastructure/eq; maintains/ creates jobs; [2]

(c) **(i)** 20 plants on each row (+/-1); even spacing; [2]

(ii) orientation; labelled axes (both, minimum yield/density); plots;; [4]

(iii) allow correct figure from drawn graph; (58–62 usually) [1]

(iv) no increase in yield compared to 70 thousand; so profits reduced/not profitable; more work for no return/eq; more work to harvest; more expensive to plant; [2]

(d) **(i)** as planting density increases reduction of soil erosion increases/eq; not much change in soil erosion between 60–80 planting density/eq; [2]

(ii) 50 or 60 max yield (per Ha)/profit compared to planting costs; nutrients retained to help yields/eq; [2]

(iii) removal of topsoil/eq; [1]

(iv) removal of plant cover; overcropping; loss of root binding; reference to lack of interception/described; infiltration/soil saturation; removal of topsoil/fertile layer; surface run-off; erosion by water; wind; reference to flooding; [4]

(e) **(i)** only two densities sampled; two pineapples not representative/eq; only diameter measured; [2]

(ii) suitable table, rows/columns for 25 items of data; densities/field number; and diameter headings; [3]

(iii) more measurements for each pineapple to see changes with density/type of growth/eq; several densities sampled to see pattern/could be presented as a graph; [2]

2 **(a)** **(i)** 4000;; [2]

(ii) so government could gain more revenue form HEP/eq; people would not object to scheme; [1]

(b) generate <u>more</u> power/electricity; unlikely to dry out/eq; allow one of – does not release carbon dioxide/so does not contribute to greenhouse effect/ low running costs/renewable source of energy; [2]

(c) so numbers of people fishing can be known/controlled; to prevent overfishing/eq; [2]

(d) **(i)** No, averages similar; for nitrate; and phosphate; idea that most readings close to average (0.2 difference); reference to figures; [3]

(ii) Sample point 1: nitrate/55; much higher than the others; a measuring error may have occurred; ignore this reading as it's the only one not in close agreement/eq; [2]

(iii) to make it more reliable; [1]

(e) algal bloom; blocks out light so plants die; bacteria multiply; use up oxygen; fish die; reference to eutrophication; [3]

(f) **(i)** overall bromacil passes through soil to water; 50 m in 60 days; breaks down in all soils after 180 days/eq; enters the water; from both fields; reference to figures to show absence; [3]

(ii) P – S cross *and* T tick; [1]

(iii) (even with a larger soil barrier) bromacil entered the water/lake; do not know what damage bromacil might do to water; not worth taking the risk; [2]

3 **(a)** **(i)** advantage must be a statement amplified in candidate's own words; [1]

(ii) disadvantage must be a statement amplified in candidate's own words; [1]

(iii) disadvantage must be a statement amplified in candidate's own words; [1]

(b) **(i)** non polluting/oxygen not a greenhouse gas/eq/uses renewable energy; [1]

(ii) *in favour*: could develop aluminium processing industries to create jobs; smelter creates jobs; raises standard of living; not polluting; transport by sea uses less fuel; may be able to use own bauxite later if price rises; AVP;

against: too much electricity used so not enough for the country; country will not make much money/company will make most money; country needs to invest heavily for several years/other things to spend money on; AVP;

MAX 4 for an argument only in favour or against [5]