UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

0680 ENVIRONMENTAL MANAGEMENT

0680/41 Paper 41 (Alternative to Coursework), maximum raw mark 60

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 must be read in conjunction with the question papers and the report on the examination.

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

(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;

(d) **(i)** No, averages similar; for nitrate; and phosphate; idea that most readings close 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]