UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

0680 ENVIRONMENTAL MANAGEMENT

0680/41 Paper 4 (Alternative to Coursework), maximum raw mark 60

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1 (a) (i) loss of plant cover; roots pulled out; no roots to hold soil; loss of interception; erosion by wind; by rain; loss of minerals/nutrients/fertility; difficult for plants to regenerate; [3]

(ii) same conditions; similar pastures/similar farms; same soil type; soil pH; same climate; same rainfall; [2]

(iii) fair test/comparison idea [1]

(iv) age of sheep/ size/type of pasture/farm/ AVP; [max 1]

(v) Sardi, more milk; and lambs;
OR Timahdit, more meat; more wool; (max one if both types discussed) [2]

(b) (i) lambs 20(%); ewes 30(%); [2]

(ii) extra feed in the dry season/eq so more growth/milk production/less disease as better fed; [1]

(iii) only need to plant it once/ it is self seeding/ no need to plough; [1]

(c) (i) 242; [1]

(ii) driest July; AND wettest March; [1]

(iii) drought causes a big decline in Medicago yield/not much difference between weedy and Medicago/eq; (allow Medicago still does better in drought years) [1]

(iv) repeat the trial/eq; [1]

(d) (i) **plan A** sheep might starve/overgrazing/eq; [1]

(ii) **plan B** more food for sheep/eq; so survive drought; in non drought more sheep products to sell/eq [2]

(iii) **plan C** more cash crops/income; not as reliant on one crop/more variety of crops; any disease would do less damage to yield/income; ref to crop rotation; ref to (beans)improved fertility/manures/sheep dung; [max 2]

(e) (i) (description of) some crop rotation; intercropping; prevents soil erosion/water loss; suggest a specific cash crop; use of sheep manure; rotational grazing; ref to changes in year two; and three; AVP; such as ref to leguminous plants/N fixation [4]

(ii) Soil fertility – organic matter not washed away/combined with soil; minerals not washed out/prevents/reduces leaching;
Soil erosion – less surface runoff; so less soil washed away/no gulley formation/eq; [4]

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2 **(a)** **(i)** phosphate; [1]

(ii) 99 million (US$); [1]

(b) **(i)** most harmful minerals: lead; cobalt;

reasons: both have 4 health risks/; least harmful mineral zinc as only one health risk; lead has risk of blood poisoning; cobalt has risk of skin irritation; [max 4]

(ii) draw arrows pointing right; [1]

(iii) lowest: algae highest: large fish;
Algae short lived; only absorbs from water/eq; fish long lived; metal not excreted; bioaccumulates/stored in body; [max 3]

(c) **(i)** 5(times more); [1]

(ii) 5 x 100 x 1 = 500 (m^3) [1]

(iii) added value; control of market; more employment; reduced transport costs; increased agricultural output; improved infrastructure; [max 1]

(iv) orientation; labels on axes (units on at least one axis);; plots (no errors); [4]

(v) increase in growth/eq;
steady/no further increase/eq; [2]

(vi) 18kg, as no further increase in yield/eq; [1]

3 **(a)** uses waste from coal burning; for 30 years;
no need to transport tonnes of waste/low transport costs;
reduce need for waste storage; export gives Govt money for infrastructure/eq; [max 2]

(b) carbon dioxide released; leads to greenhouse effect/described/global warming;
sulphur dioxide released; acid rain; [max 2]

(c) no need to import coal; energy source is free; will never run out/sustainable/renewable/eq; ref to energy security; pollution free/eq; [max 2]

(d) idea of no further building of coal fired power stations/use alternative energy sources;
do not want to convert to oil/gas for electricity generation;
solar power can be carried out in desert/unproductive land;
can invest in solar slowly as demand increases; could sell surplus electricity to nearby countries;
so workers experienced/trained;
will need help from firms outside Morocco to start with;
AVP; such as desert sparsely populated/eq [max 4]

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