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

0680/42 Paper 4 (Alternative to Coursework), maximum raw mark 60

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1 (a) (i) world recession/lack of demand/product substitution/Ni surplus/eq; [1]

(ii) to keep the price high/help price recover/eq; to maintain profit/reduce costs; (allow metal ore to last longer/eq) [2]

(b) (i) 15 (tonnes); reject Kg or other units [1]

(ii) large amount of overburden/soil needs to be moved/stored/noise pollution/visual pollution/dust released/habitat destruction/eq; reject pollution unqualified [1]

(c) wear masks/eq; protective clothing/gloves/washing facilities/eq; (allow ref to controlled working hours/exposure time) [2]

(d) (i) very few female miners/eq; [1]

(ii) to give diseases time to develop/eq; [1]

(iii) measure health/other causes of death in miners/non miners/eq;
record different numbers of deaths from lung cancer in miners/non miners; [1]

(iv) longer time; more participants; compare smoking miners with non smoking miners/smokers with non smokers; include women; record for younger age group(s); record time in mining industry; [2]

(e) (i) **B**, longest contact/closest to mine and/ or mine waste; [1]

(ii) heavy metals (normally) bio accumulate/bio magnify/accumulate;
heavy metal passes up food chain(s)/eq;
some small fish may die; so less food for large fish; so large fish starved/poisoned/do not reproduce; [2]

(iii) bar graph plotted; label axes (number of mayflies/**A B C D E**);; plots;
(allow population for number) [4]

(iv) mayflies increase further away from the mine/converse statement/eq; mayflies poisoned by nickel; [2]

(f) saves energy; less pollution/damage to the environment; mining reserves last longer; reduces cost of mining/cheaper than mining; [2]

(g) (i) high level of pollution at the start/after one year;
pollution reduced at ten years/reduces over time;
still some pollution after ten years/eq; [2]

(ii) *advantage* fast; fast/easy/cheap/ no skill needed/ no special equipment needed;
disadvantage not a specific response to Ni/ no concentration measured/do not know how much Ni is present/ref to validity; [2]

(iii) more than 10 yrs/11+yrs; [1]

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(h) **(i)** plant Euphorbia in soil; extract water and grow mung beans/use same method;
measure root growth of mung beans; [2]

(ii) could become a dominant/invasive plant/outcompetes native plants/reduces biodiversity;
could alter food chains/webs/eq;
genes may pass to local plants/ hybridise with local euphorbs; could introduce a new pest/disease; [2]

(iii) *for*: very valuable export; not highly dangerous to humans;
or environment; provides jobs/income to people/country;

against: destroys farmland; toxic to humans/livestock/eq; and environment;
does not employ many people; (max 2 if both for and against arguments given) [3]

2 **(a)** **(i)** October, February; [1]

(ii) Nov–April; [1]

(iii) 112 (days); [1]

(b) **(i)** 1. lower no. of plants; less cell division/growth;
2. fewer leaves; so less photosynthesis/growth;
3. fewer flowers; so fewer seeds/ less reproduction; (max 4)

(ii) (lower number/absence of) flowers; [1]

(iii) do weevils infect other plants/crops/alter food chains/can weevils survive/eq; [1]

(c) **(i)** three valid points related to source eg:
medium/high milk yield; medium/high growth rate; low stress at high temperatures; ref to disease resistance; [3]

(ii) table drawn; suitable headings(milk yield/days); for 7 days; [3]

(d) **(i)** no (income from) milk; cost of buying new animals;
chickens not enough of a substitute food source/eq;
not much to sell; only cassava to eat; so have to buy in food; [2]

(ii) better because using WH to keep/feed cattle; so milk all year;
WH a source of food for chickens; can sell chickens/eggs; [2]

(iii) more crops/food sources grown; so always something to eat; or to sell/more income;
beans are N fixers; beans are a high protein food; tomatoes are a source of vitamins;
storing dry WH helps keep cattle/milk production; [2]

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(e) good ideas such as:

1. cattle by channel, qualified;
2. WH dried on field edges;
3. chickens can be moved to any field to eat crop wastes;
4. cattle can be fed crop wastes;
5. a rotation idea;
6. further detail of rotation; e.g. leave a field fallow
7. beans fix N;

8. and 9. AVP;; such as ref to irrigation/water supply, chickens close to farmhouse for security, tomatoes need water, so in fields1/2/3, keep chickens away from beans and tomatoes [4]

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