CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0680 ENVIRONMENTAL MANAGEMENT

0680/42 Paper 4 (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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

General notes

Symbols used in Environmental Management mark schemes.

/	separates alternatives for a marking point – other valid idea are also credited
;	separates points for the award of a mark
[3]	indicates the number of marks available
Italic	indicates that this is information about the marking points and is not required to gain credit italic text is also used for comments about alternatives that should be accepted, ignored or rejected.
ora	or reverse argument – shows that an argument from an alternative viewpoint will be credited
AW	alternative wording, sometimes called 'or words to that effect' – AW is used when there are many different ways of expressing the same idea
( )	the word / phrase in brackets is not required to gain marks but sets the context of the response for credit
<u>volcanic</u>	underlined words –the answer must contain exactly this word
ecf	error carried forward – if an incorrect answer is given to part of a question, and this answer is subsequently used by a candidate in later parts of the question, this indicates that the candidate's incorrect answer will be used as a starting point for marking the later parts of the question

1 **(a)** low cost(per tonne); efficient use of fuel; less emission of gr containers / bulky / heavy goods; worldwide transport;

(b) **(i)** $3.5 \times 40\,\% = 1.4$ (million);

(ii) 2500;
allow ecf from part **(i)**

(c) **(i)** adults are more tolerant to lead; not as easy to damage their brains / CNS / nerves (as they have already developed) / eq; ora; *reject refs to immunity/resistance* **[1]**

(ii) as age increases lead concentration decrease/converse; highest blood lead at 2yrs; slow decline after 2 years; **[1]**

(iii) most lead absorbed when very young / 0–2 yrs / eq; older children are not as exposed to lead; lead pollution has got worse; **[1]**

(d) **(i)** boys and girls in sample; each age group in sample; stratified sampling i.e. samples represent actual population; children sampled from all parts of the district; sample size up to10 % of sample size; **[2]**

(ii) both districts (2 and 3) lower than district 1; at all ages / eq; district one at 10yrs higher than highest value for 2 yrs in district 2 and 3; all results for 2 and 3 higher than any / all (age) results in 1; manipulated figures such as differences
14.0 – 9.6 =4.4 or 14.0 – 9.4 = 4.6 or 11.8 -9.6 = 2.2; **[2]**

(iii) pass laws to ban use of lead in pipes / paints; so less lead introduced into the environment; licences for battery factories and land fill sites; laws to control the quantities / location of lead pollution (ref to fines); use lead free petrol; tax products containing lead; any alternative use to cars; **[3]**

(e) stray dogs found in all districts of the city; stray dogs need to be caught anyway; no ethical problem taking blood sample from dogs; dogs bodies / metabolism similar to humans; suffer from lead poisoning before humans; so early warning; without alarming the people; **[2]**

(f) **(i)** *four relevant questions such as:*
finding out about number/age/health of children;
local industries; local health issues; layout;
four good questions = 4 marks
or three good questions and good layout for alternative answers to question = 4 marks
[4]

(ii) only ask adults (over 18yrs); equal numbers of males and females; every district needs to be sampled / eq; in the same way; ref to stratified sampling; ref to closed questionnaire; anonymous responses; **[3]**

(g) (i) need water to wash skins; easy to get rid of wastes; ref t

(ii) X downstream of all tanneries; (any position in the strea the first tannery from the sea)

(h) (i) highest rainfall in March and April / April is the wettest m becomes saturated / infiltration too slow to absorb all w credit good use of figures such as 205/916 × 100 = months or April 22 mm/March 21 mm more than next we

(ii) they are poor; so do not have to pay rent; it is the only place left to live; they live where the work is; fish for food/selling; water for domestic use; **[3]**

(iii) factors such as flooding risk; qualified; sewage/drainage; qualified; poor building; qualified; employment; qualified; population size; qualified; transport access; high levels of disease; **[max 4]**

(iv) most organisms / species died; number of species reduced; biodiversity reduced; biological groups reduced use of figures from table to support this (i.e. fig quoted or manipulated); **[2]**

(v) in B death of organisms is due to decomposition of organic matter by bacteria / biodegradable; leading to a reduction in oxygen; by sample point 3 organic matter all gone; bacteria then died; water became reoxygenated; so organisms can reproduce/increase in number / diversity;
in A death is due to chromium poisoning; Cr more difficult / cannot be removed / is a heavy metal; ref to bioaccumulation / biomagnification; **[3]**

[Total: 39]

2 (a) (i) they had to grow more to make the same profit as increased production would hold prices down/stop them r

(ii) increased production keeps prices down; demand stay than demand / eq;

(b) in any section award a mark once for increased yield/prod fertility; reduced use of fertilizer;
crop rotations – legumes used; higher nitrogen/nitrate level; g
mixed cropping – maintain ground cover/less risk of erosion; reduced evaporation from soil; reduce pests and diseases; some crops repellent to pests;
Accept legumes if not given in crop rotation
mixed farming – crop residues fed to animals; animal manure helps fertility; **[5]**

(c) (i) both axes labelled; plots;; key / eq; (allow one error only for each farm) (line graph max 2 for axes labelled and key) **[4]**

(ii) pepper; (accept garlic) **[1]**

(iii) squash, attacked by a pest or disease; planted out of sequence in a rotation / eq; AVP;**[1]**

(d) (i) table drawn; input and output headings; an example of an input cost; **[3]**

(ii) *advantages* – such as no use cost of fertilisers; less damage to environment / no eutrophication; hormones or chemicals; or pesticides; soil structure not damaged; possibly higher value of vegetables;

disadvantages – such as more labour needed; lower yields; takes time to convert; biological control of pests does not always work/more disease; less people prepared to pay more for organic food;
max 3 if only advantages or disadvantages considered. **[4]**

[Total: 21]