CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the May/June 2015 series

5014 ENVIRONMENTAL MANGEMENT

5014/22 Paper 2, 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 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

CAMBRIDGE
International Examinations

1 (a) (i) peak harvest and demand coincide; so no drop in price / price may increase / more (money / profit); all crop sold / no crop wasted; have money for any household expense / food / hospital / school fees; have money for farm costs;
standard of living; [2]

(ii) 58, 62, 80%;
All three for two marks. Two for one mark. [2]

(iii) as a control / idea explained / idea of comparison; [1]

(iv) cost (of acids); do not know how to use them / suspicious of using them;
extra time / work and not worth extra seedlings; ref. to acid contamination of soil;
ref. to contamination of water; ref. harm to humans; low / unavailability of acids; [2]

(b) (heavy) metal poisonous / toxic; ref. contamination of (soil) water; absorbed by plants; not broken down / excreted (by animals); so accumulates in (animal / plant / organism) body; builds up / passes) along food chain; kills top predators; bioaccumulation; biomagnification; [3]

(c) (this / resting) restores nutrients / minerals / named mineral / ref. clover etc.;
crops grow better / less fertiliser needed; allows pests / diseases to die out / fewer pests; crops grow better / yield not decreased; [2]

(d) (i) to check for (error / reliability) / can find a mean / backup if one tray fails; [1]

(ii) comparing 3 to 1: (more / 2) trays so reliability (can be checked); can find a mean / back up if one tray fails; [3]

comparing 3 to 2: because result measured twice / at 20 and 25 days;

allows (greater chance) of full germination / more accurate estimation of germination rate;

(iii) size of tray; volume (amount) of soil; depth of soil; type soil; pH of soil;
temperature; (volume / amount) of water; (amount) of light; type / variety of seed;
seed age; [3]

(e) (i) orientation of line graph only (not if bar chart);

axes labelled;
plots; [4]

(ii) increase then plateaus / levels off / cuts off / evens out / eq.; [1]

(iii) do not plant more than 200 per tray / do plant (between 150 and 200);
above this seeds wasted / no further yield of seedlings / no money wasted / eq.; [2]

(f) (i) (25 °C–22 °C =) 3 °C; [1]

(ii) (weather / rain / temperature) conditions remain constant / eq.; temperature always warm enough / 15 °C–20 °C; sufficient water; [2]

(iii) spread of plant disease / fungal infection; surface run-off; soil erosion; loss of topsoil; nutrient leaching; spread of (water-related / eq.) disease; crop damage / loss; [3]

(g) (i) selective breeding; best plants have good alleles (accept genes) / eq.; best plants pass on good alleles (accept genes) to next generation / eq.; further detail; [2]

(ii) genetic engineering; transfer of genes (for high yield); further detail; cloning / tissue culture / micropropagation; [2]

2 (a) still rely on imports / depend on Mexico / money going to Mexico; greenhouse gases / named greenhouse gas; leading to global warming / greenhouse effect / eq.; (finite / unsustainable) supply; costs of supplying more electricity increase; acid rain; H.E.P. more land flooded / relocation; AVP; [4]

(b) very remote / far away; difficult terrain; too far for effective powerlines; few power plants / power stations far away; ref. to cost of powerlines; not many people live there / (so) low demand; [2]

(c) (i) systematic sampling;

at noted location, use of compass; layout transect line (with tape); from powerlines into forest; secure with pegs / eq.; placing quadrat at intervals; identify species with book; record number of different species (in quadrat); in notebook; repeat;

OR

random sampling;

detail of quadrat placing (throw quadrat / layout grid); under powerlines and in forest; identify species with book; record different species in quadrat; in table in notebook; repeat; AVP; [5]

(ii) repeat on other sites (when repeating keep variables constant) / compare with similar studies; [1]

(d) (i) 0100–0400 (or within this range); [1]

(ii) getting dark; more home; cooking; AVP; [2]

(iii) cheaper to invest in reducing demand; sustainable reductions / better use of resources; new power plants not sustainable; less reliant on imports; cheaper electricity / spending less on electricity helps GDP / eq.; environmental reasons; human health reasons; AVP; [4]

(e) (i) by using diesel generators / solar panels / water wheel / wind turbine; [1]

(ii) each of three questions about small-scale generation; layout;

such as:
Do you know how to run a generator / do you have the money to buy a generator?
Do you know anything about small wind turbines / could you pay for one?
Have you seen small solar panels working? [4]

AVP = Alternative Valid Point.

[Total: 60]