CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0680 ENVIRONMENTAL MANAGEMENT

0680/41 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.

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CAMBRIDGE
International Examinations

1 **(a)** their land will be taken away / forced to migrate;
lose their livelihood / jobs;
will not get fair price for land;
do not have the skills to work in new industries / eq.;
farm workers attracted to new industries;
ref. pollution in context of impact on farming; [2]

(b) **(i)** 366; [1]

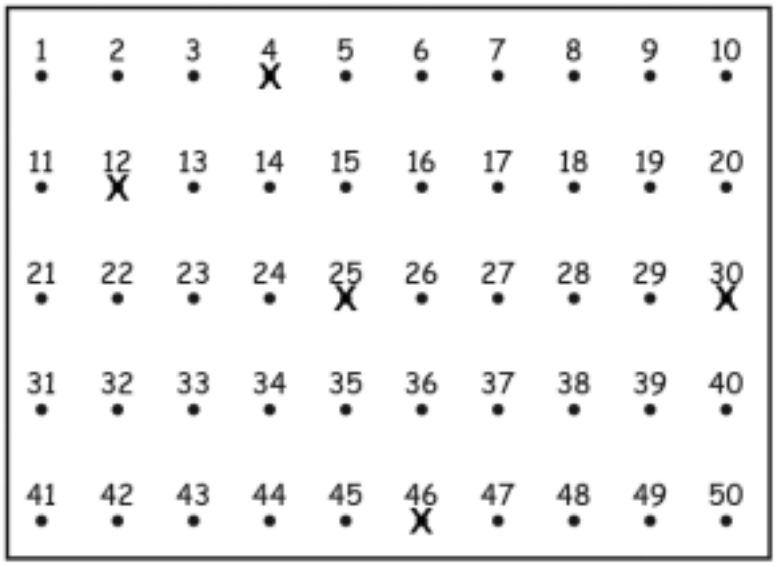
(ii) 300 × 1.75 = 525;
366 × 1.50 = 549; [2]
Allow one mark for correct calculation even if answer incorrect.

(iii) Bana produces more nuts per tree;
lowest Bana tree (68) still more than highest Tahaji (65) / eq.;
Tahaji give more kg of nuts / eq.;

	Tahaji (first farmer)	Bana (second farmer)
nuts	largest 1.75 OR	smallest 1.50
yield	not biggest 525 OR	biggest 549
no. of nuts	not most 300 (54–65) OR	most 366 (67–82)

[3]

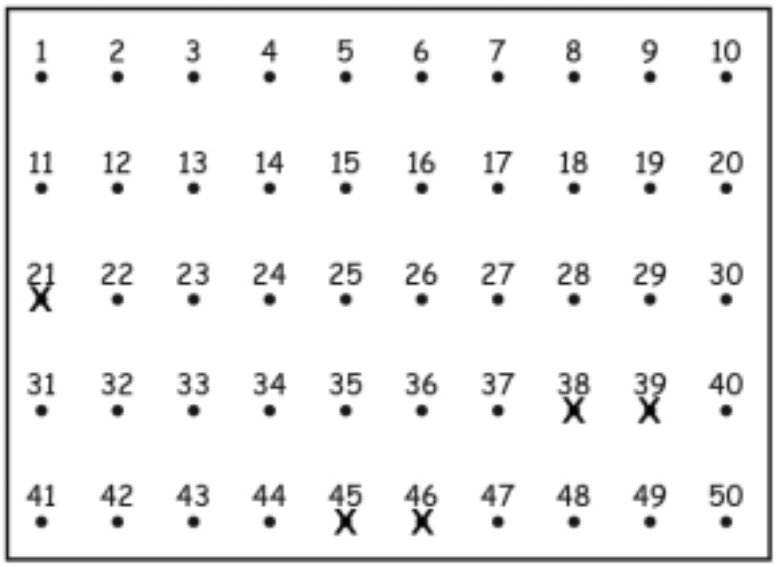
(c) **(i)** Five correct trees marked;



[1]

(ii) (21, 39) 38, 45, 46; [2]
One mark for two correct, two marks for three correct.

(iii) correct trees as stated in part **(ii)** marked.
Ignore 21 and 39. [1]



(iv) the trees were selected at random / not student's choice / unbiased selection; [1]

(v) repeat the survey (in more gardens);
for more than one year;
use more (than 5) trees;
ref. different sampling method with detail (e.g. every third tree) / ref. control variables with detail; [2]

(d) (i) 4.32 / 7.2 (× 100);
= 60(%); [2]

(ii) both need to make profit to stay in business so minimum price (thus cost);
investment in product / coconuts;
transport cost (stallholders only);
labour costs;
storage costs;
rent / licence (both) for market stall / warehouse;
power costs;
ref. tax once;
Max three for points about wholesalers or market stall holders. [4]

(e) (i) garden divided into a minimum of three sections;
labels / instructions to show sequence of harvesting;
workable plan (supply every week) / further useful detail / idea of six trees per week; [3]

(ii) linear y-axis sale;
axes labelled;
plots; [4]

(iii) price increases to a peak (July / 610) / eq. and then steadily drops / eq.; [1]

(iv) July, January; [1]

(v) shortage of supply / increases the price / in June;
overproduction / lack of demand decreases price / in January;
ref. to more or less demand for export; [2]

(f) (i) How many people do you support?;
How many trees do you have? / eq.;
or a yes / no question, e.g. Do you intend to carry on coconut farming?;
Are prices fair?;
Have you other jobs?;
Do you eat coconuts yourself?;
What variety do you grow?;
Do you use fertilisers?;
How much do you earn from selling coconuts?;
Credit other suitable questions. [2]

(ii) select a reasonable / large number of farmers i.e. more than 10 (no more than 50 or 50% of a quoted number or all farmers coming to wholesaler sampled);
system for deciding who to ask (systematic, e.g. age-related / gender-related / where they farm, zone / type of coconut); [2]

(iii) idea that:
most have small gardens / less than 0.5 ha;
as their main source of income;
with less than 40 nuts per tree;
the income is not enough to support their family; [4]

(g) (i) table drawn;
table able to record data for three plots (with headings);
table able to record data for five crops (with headings); [3]

(ii) legumes fix nitrogen;
because bacteria in their roots;
so soil more fertile / has nutrients added to it by them;
coconuts / all plants will grow more; [2]

(iii) plot 2 has higher planting density;
light can reach all the plants;
so more photosynthesis;
leading to better / eq. growth; [2]

2 **(a)** yes
ref. to carbon neutral;
the carbon dioxide released will be absorbed by photosynthesis / growing the next crop of coconuts;
cannot release more carbon dioxide than was absorbed;
renewable resource AVP;

no
still causes pollution;
ref. to non-carbon dioxide based pollutants / smoke;
might lead to lack of food; [3]

(b) (use some profit to) invest in increasing intercropping;
especially nitrogen fixers / legumes;
as this will increase yields;
of all plants;

remove some old palms;
use / sell them for fuel;
replace with (small number of) hybrids;
but can only afford a small number of hybrids;
so need to do it step by step;

advantage is they give higher yield / more nuts;
less labour as easier to pick / need less pesticides / pest resistance;

ref. to other techniques such as adding organic fertiliser; [4]

(c)

in favour	against
very good use of coal reserves within the country / eq.;	the new jobs encourage people to give up farming / ref. to pull factor / visual pollution;
less pollution from vehicles with new diesel;	coal waste / ash needs to be disposed of;
so lower contribution to climate change / greenhouse effect;	does not use up much land;
creates jobs;	what happens when the coal runs out;
so do not need to import as much coal / diesel;	not enough local people with the skills for the new plant;
ref. to GDP / balance of payments;	destroys farmland;
ref. to improved infrastructure;	rejected coal will still cause pollution;
does not use up much land;	possible risk of water pollution;
highly skilled / high salary jobs / able to support families;	80 000 barrels a day unlikely to satisfy (future) demand / only a small proportion of fuel consumption;
some carbon dioxide captured / eq.;	destroys traditional way of life;
ref. to advantages of water recycling;	
AVP;	AVP;

[6]

AVP = Alternative Valid Point.

[Total: 60]