

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge Ordinary Level

## **MARK SCHEME for the October/November 2014 series**

# **5014 ENVIRONMENTAL MANAGEMENT**

**5014/21**

Paper 2, maximum raw mark 60

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- 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)  $300 \times 1.75 = 525$ ;  
 $366 \times 1.50 = 549$ ; [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	2	3	4	5	6	7	8	9	10
•	•	•	X	•	•	•	•	•	•
11	12	13	14	15	16	17	18	19	20
•	X	•	•	•	•	•	•	•	•
21	22	23	24	25	26	27	28	29	30
•	•	•	•	X	•	•	•	•	X
31	32	33	34	35	36	37	38	39	40
•	•	•	•	•	•	•	•	•	•
41	42	43	44	45	46	47	48	49	50
•	•	•	•	•	X	•	•	•	•

[1]

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

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

1	2	3	4	5	6	7	8	9	10
•	•	•	•	•	•	•	•	•	•
11	12	13	14	15	16	17	18	19	20
•	•	•	•	•	•	•	•	•	•
21	22	23	24	25	26	27	28	29	30
X	•	•	•	•	•	•	•	•	•
31	32	33	34	35	36	37	38	39	40
•	•	•	•	•	•	•	X	X	•
41	42	43	44	45	46	47	48	49	50
•	•	•	•	X	X	•	•	•	•

- (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)  $4.32/7.2 (\times 100)$ ;  
 $= 60(\%)$ ; [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]

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- (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]

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- 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]