

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;
- (ii) linear y-axis sale;
axes labelled;
plots;
- (iii) price increases to a peak (July/610)/eq. and then steadily drops/eq.;

[3]

[4]

[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]

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(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]