

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the May/June 2015 series

5014 ENVIRONMENTAL MANAGEMENT

5014/21

Paper 2, maximum raw mark 60

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- 1 (a) (i) damage to, crops; infrastructure; buildings; roads; communications; loss of products; unemployment; inability to trade e.g. tourism; AVP; such as too sick to work; [2]
- (ii) money sent back/e.g.; high costs of repair/recovery; [1]
- (b) (i) provides fertiliser/nutrients/minerals/named mineral; for (plant) growth; rapid root development; manure retains water/eq.; [2]
- (ii) increased density increases yield; increased yield decreases yield per tree; only by a small amount; doubling the number of trees does not double yield/eq.; use of figures to support any point; [3]
- (iii) high cost of labour; for digging holes; cost of manure/bone meal; cost of extra seeds/seedlings/trees; loss of soil quality; extra investment only gives small increase in yield; [3]
- (iv) intercropping/agroforestry/intensive; [1]
- (v) nitrogen fixed (from the air); so more (nitrogen for crop) growth; more crop to sell/eat; fodder for animals; increased fertility; [3]
- (c) (i) 253; [1]
- (ii) $253/385 = 65.7-66.0$ (%); [1]
- (iii) knife or spoon/scales/bowl/notebook and pen;
Four for two marks. Three or two for one mark. [2]
- (iv) care with knife/gloves to handle seed/wash hands; [1]
- (v) use seeds for new planting; composted (to make fertiliser); animal feed; [2]
- (d) (i) foreign currency helps balance of payments/eq.; more tax revenue; reduces poverty/improves standard of living; creates jobs/eq.; [2]
- (ii) high cost of fertiliser and/or insecticide; regular hurricanes could destroy crop; drop in world demand; risk of going bankrupt/eq.; [2]
- (iii) cross-breeding two varieties; selecting the offspring with desired characters; identify the allele/gene for large fruits; genetically engineer (a native variety); further detail of genetic engineering; ref. to grafting; [2]
- (e) (i) product lasts longer; can be exported all year round; exported when demand/prices high; lower transport costs; native plants need less care/eq.; makes use of native species; AVP;
First point for one mark, two or three points for two marks. [2]

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- (ii) large amount of raw material needed / eq.; high production cost; skilled labour needed; difficult to dry flesh in a tropical climate; cost of heating / eq.; [2]
- (iii) give grants / loans / subsidies for building ovens / buying gas; government education campaigns aimed at farmers / product promotion; [1]
- (iv) sustainable: less chemical inputs needed; low risk of pollution; lower costs of production; still part of the local ecology / eq.; AVP;
OR
not sustainable: too difficult to process / store dried fruit; need to produce more fruits; demand may drop; small fruits are easy to export when there is demand; AVP; [4]

- 2 (a) (i) one line in correct orientation; correct size each side of power line; [2]
- (ii) plan 3 is in the correct orientation but plan 1 is not;
plan 3 goes into the forest but plan 1 and 2 do not;
plan 3 is repeated; plan 3 can check the data; so can take an average; [3]
- (iii) line graph; correct orientation and both axes labelled; plots; [4]
- (iv) plant species increases; then decreases; [2]
- (v) person B is right with a reason, e.g. species diversity similar under lines and in forest; maximum diversity at the boundary; further detail may include use of data; [2]
- (vi) survey animals; more power lines; each year to measure changes; identify species; survey for named abiotic factors; [3]
- (b) (i) H.E.P. does not generate greenhouse gasses / eq.; acid rain; water is a renewable source; abundant supply; use as a reservoir; only a small amount of forest lost; AVP; [3]
- (ii) to pay for the building of the dam / turbines / eq.; [1]
- (iii) macaw not saved: as power for people more important than the habitat of one species / eq.; some loss of species has to be accepted;
OR
macaw saved: as if it becomes (locally) extinct (where will destruction stop); keeping biodiversity is important for the future / eq.; AVP; [2]
- (iv) silt builds up behind the dam; so less water held / flow of water reduced; turbines turn less / generate less electricity; [1]

AVP = Alternative Valid Point.

[Total: 60]