

**MARK SCHEME for the October/November 2010 question paper  
for the guidance of teachers**

**5014 ENVIRONMENTAL MANAGEMENT**

**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 must be read in conjunction with the question papers and the report on the examination.

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Page 2	Mark Scheme: Teachers' version	Syllabus
	GCE O LEVEL – October/November 2010	5014

- 1 (a) (i) push/pull factors/described e.g. find jobs/earn money to buy food; [1]
- (ii) animals die/do not grow/sold off for other food; [1]
- (iii) no ability to farm after drought without tools; ref to cost of tools after drought; [1]
- (b) (i) living hedge is thorny so cannot be eaten; no need to cut trees to make fence; ref to deforestation; ref to desertification; do not need to buy materials to make fence; AVP; [max 1]
- (ii) *advantage*: not cutting wood for fuel/renewable energy source/easy to gather/ash can be used as a fertiliser/do not need to buy fertiliser/fuel; *disadvantage*: less manure to ground/increased risk of crop failure/soil erosion/exhaustion/eq; [2]
- (iii) help to pollinate crops/described; honey is an extra food source; cash from selling honey for any valid purpose (i.e. school fees/medical bills/buying farm materials); [2]
- (iv) reduce the amount of disease; named disease; so less time of working/eq; not polluting well/drinking water; [max 2]
- (c)  $40 \times 10/10.3 = 38.8(\$)$ ; A working only; [2]
- (d) (i) sensible channels; connected to pump; [2]
- (ii) salinity/salinisation; described; depletion of nutrients/named nutrient; [3]
- (iii) more breeding grounds; mosquitoes lay eggs in water; longer to breed/eq; more mosquitoes to bite; [2]
- (iv) allow ditches to dry out between irrigations; so larvae die off/eq; ref to fast flowing water; [2]
- (v) oil on water; (impregnated) mosquito nets; repellents; other valid method; [2]
- (e) (i) for growth/repair/development/reproduction/muscles/immune system; [1]
- (ii) table drawn; suitable headings; correct rows; columns; [max 3]

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- 2 (a) (i) move to new pastures; live on animal products; ref to annual cycle of movement; e.g. do not cultivate crops; [2]
- (ii) soil remains protected/eq.; no overgrazing; so no deforestation; or desertification; max 2 [2]
- (b) (i) loss of grazing land; interfere with migration routes; have to keep less animals; not enough for survival/eq; [max 2]
- (ii) greenhouse effect; leading to climate change/global warming/described; high use of (fossil) fuel for heating; ref to acid gases from chimney; [max 2]
- (iii) carbon dioxide absorbed by plants; by photosynthesis; makes sugar cane grow faster; [max 2]
- (iv) 1: low costs; less coal/wood burnt; ash as fertiliser;  
2: used to run cars; other chemical processes;  
3: helps rate of growth; helps produce more food;  
any 4 [4]
- (c) (i)  $3.1 - 2.7 / 2.7 \times 100 = 14.8 / 15(\%)$ ; correct working only; [2]
- (ii) yes; because the extra yield is worth more than cost of irrigation; allow if qualified e.g. high environmental/social costs; [max 2]
- (d) (i) orientation; axes labelled;; plots; [4]
- (ii) plant roots fully established/eq; soil most fertile; more leaves/photosynthesis; [2]
- (iii) 7.2 – 5.8 (tonnes per hectare); [1]
- (iv) (after) year 3; [1]
- (e) (i) gloves/masks/goggles/overalls;; wash after use; breathing apparatus; do not pour chemical into water channels/water/eq; [max 3]
- (ii) *commercial*: more yield; more profit; more exports; low cost of new canes; high cost of further inputs to maintain old canes; [max 2]
- environmental*: less risk of pesticide pollution; poisoning workers; less fertiliser used; so less risk of pollution; more carbon dioxide uptake; [max 2]