

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

**NOVEMBER 2002**

**INTERNATIONAL GCSE**

|   |
|---|
| <b>MARK SCHEME</b>  |
| <b>MAXIMUM MARK : 60</b>  |
| <b>SYLLABUS/COMPONENT : 0600/3</b><br><b>AGRICULTURE</b><br><b>(EXTENDED)</b> |



|        |                                    |              |
|--------|------------------------------------|--------------|
| Page 1 | Mark Scheme                        | System Paper |
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- 1 (a) (i) 1600 kg/ha; 1  
(ii) chemical fertiliser; 1  
(iii) yellow; 1  
(iv) stunted/yellow; 1  
(v) nodules;  
containing microorganisms ( bacteria)  
turn nitrogen;  
into protein;  
decomposition of legume plant ( protein)  
releases ammonia;  
(turned into) nitrates (accessible to plants) max 4
- (b) (i) cheaper;  
available; easy to apply (does not need experience  
organic;  
improves soil structure; max 2
- (ii) smell / storage problems/consistency / weeds 1  
[11]
- 2 (a) 3 appropriate labels  
A = any cell with chloroplasts;  
B = any white space between cell inside leaf;  
C = only cell with bold outline in upper part of vascular bundle; 3
- (b) (i) carbon dioxide and water sunlight glucose and oxygen  
chlorophyll 2
- (ii) collect / absorb light; 1
- (c) movement of carbohydrate / sugar / sucrose;  
soluble;  
from (e.g. leaf, food store in root);  
to (e.g. growing point / food store in root);  
sieve tubes / phloem; max 3
- (d) store energy / respiration;  
for growth / repair;  
for (seed / fruit) production; max 2  
[11]

|        |                                    |          |
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- 3
- (a) single parent; no fusion; no fertilization;  
genetically identical;  
ref. mitosis; max 2
- (b) adds up costs; supply / demand; quality  
by-products;  
ref. to yield; ( e.g quantity) 3
- (c) price;  
competition;  
population of consumers;  
similar products / supply  
quality / taste / consumer preference  
income level max 3
- [8]**
- Total for section A 30**

4

|   |   |                       |
|---|---|-----------------------|
| <p>(a) NAMED DISEASE<br/>eg. <b>Newcastle</b></p> <p>drop in egg production;<br/>mis-shapen eggs/ soft shelled;<br/>paralysis/ twisted neck;<br/>gasping;<br/>mucus discharge from nostrils;<br/>yellow;<br/>evil smelling diarrhoea;</p> | <p>eg. <b>Coccidiosis</b></p> <p>diarrhoea;<br/>with blood stains;<br/>listless;<br/>ruffled feathers;<br/>pale comb;<br/>death;<br/>loss of appetite;</p>                      | <p>0</p> <p>max 5</p> |
| <p>(b)</p> <p>cleaning x3;;;<br/>isolate new stock;<br/>isolate sick animals;<br/>ventilation;<br/>vaccines;<br/>sterilise offal; report to the Vet</p>   | <p>cleaning x3;;;<br/>isolate new stock;<br/>isolate sick animals;<br/>coccidiostats;<br/>sulphur-drugs;<br/>method of applying; report to the Vet or<br/>Extension officer</p> | <p>max 7</p>          |

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- (c) service provided eg AI; quarantine; parturation; dystokia; disease outbreak  
 service provided eg Vaccination / medicines;  
 advice/information;  
 location / distance; 3
- [15]**
- 5 (a) quality of diagram;;  
 (if answer without diagram, marks for linkage between components to  
 show relative positions) 2
- cloud;  
 precipitation;  
 run-off;  
 infiltration;  
 water table;  
 river;  
 lake/sea;  
 evaporation; drinking / urine;  
 transpiration / water absorption max 8
- (b) (i) increased transpiration;  
 pollination;  
 seed dispersal;  
 evaporation of water from soil surface / irrigation systems;  
 physical damage; removal of top soil ( nutrients) leading to poor growth max 3
- (ii) reduce photosynthesis;  
 reduce transpiration;  
 slower respiration / chemical processes in plant;  
 slow germination / slower growth; reduce evaporation max 2
- [15]**
- 6 (a) quality of diagram;; 2
- gullet / oesophagus  
 stomach;  
 pancreas;  
 gall bladder;  
 sphincter;  
 duodenum; ileum ( small intestines)  
 colon; rectum ( large intestines)  
 appendix;  
 anus; max 7

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(b) (enzymes) break down;  
 large insoluble molecules; ( food)  
 into small soluble;  
 e.g. of enzyme and substrate (e.g. amylase and starch);  
 (micro-orgs) break down cellulose;  
 because mammal cannot / A W;  
 into simple sugar ( substances)  
 for absorption; max 6

[15]

7 (a) chromosome- hereditary material AW;  
 found in nucleus;  
 DNA;  
 genotype the genetic make-up of an organism /  
 the genes an organism has;  
 the alleles (of a gene) present;  
 may be homozygous or heterozygous;  
 e.g. (could be AA, Aa or aa); max 4

(b) quality parent 1;  
 (crossed with) quality parent 2;  
 select best of F1 generation;  
 cross F1 with F1 / A W;  
 select, best offspring / depending on phenotype of offspring;  
repeat for many generations / A W; max 4

(c) Appropriate symbols chosen (same letter, capital for dominant, small for recessive);  
 Parents correctly represented as homozygous, and crossed (e.g. AA X aa);  
 Gametes correctly represented (A and a);  
 F1 generation heterozygous (Aa);  
 Cross / self, F1 generation (Aa x Aa);  
 Gametes correctly represented (A a and A a);  
 Punnet square used / lines accurately drawn to show fertilisation of all possible  
 combinations of gametes from both F1 parents;  
 F2 generation 1 homozygous dominant / AA;  
 2 heterozygous / Aa;  
 1 recessive homozygous / aa;  
 AA and Aa both have dominant phenotype; 7

[15]