

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

**NOVEMBER 2002**

**INTERNATIONAL GCSE**

**MARK SCHEME**

**MAXIMUM MARK : 60**

**SYLLABUS/COMPONENT : 0600/3**

**AGRICULTURE**

**(EXTENDED)**



UNIVERSITY of CAMBRIDGE  
Local Examinations Syndicate

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