

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 max 3
income level
- [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]