

NOVEMBER 2002

INTERNATIONAL GCSE

MARK SCHEME
MAXIMUM MARK : 60
SYLLABUS/COMPONENT : 0600/3 AGRICULTURE (EXTENDED)



- 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]

- 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>

- (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

- (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]