

MARK SCHEME for the October/November 2007 question paper

<p>0600/03</p>	<p>0600 AGRICULTURE Paper 3 (Extended Theory), maximum raw mark 80</p>
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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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2007 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

Page 2	Mark Scheme	Syllabus
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- 1 (a) (i) legume; (ii) nitrogen fixing provides nitrates; detail mark; leaves drop and decay; any two [2]
- (b) use more fertiliser/grow higher yielding varieties/improve pest-disease control/ crop rotation/land management. any two [2]
- (c) deplete nutrients in soil/exposes land to erosion/lowers biological diversity/ pollution stated/requires energy sources that release greenhouse gasses/ loss of hedgerows or field margins/lowers recycling; any four [4]
- [Total: 9]**

- 2 (a) sandy/sandy loam; [1]
- (b) would reduce water loss/improve mineral content/provide better structure/ nutrients to soil OWTE; any two [2]
- (c) advantages: specific for weed type; can translocate to kill underground rhizomes etc.; can be selective – only affect broad leaves; disadvantages: can leach into water courses; remain in soil; expensive; any four, but must include one contra. [4]
- [Total: 7]**

- 3 (a) use distilled water/add barium sulphate/add soil indicator (accept universal)/ reference to amount of soil etc./shake or leave (only credit here)/ compare to colour chart;/use distilled water/insert probe/read off pH meter/ reference to colour linked to pH; each correct step = 1 mark. Max 2 unless procedure would give an accurate result [3]
- (b) (i) 4–6; 1 mark
7.5–8.5 above 7.5 1 mark
[Max 2]
- (ii) H⁺ affects solubility of nutrients/base ion exchange/no bacterial action; [2]
- [Total: 7]**

Page 3	Mark Scheme	Syllabus
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- 4 (a) (i) size of product/appropriate colour for crop/a plant withering/
soil change around root/leaves fall, colour change;
- (ii) dry/good air flow/frost free;
- (b) (i) waterproof/from rain;
air vent/wire windows;
prevention for rats/vermin/birds entering described; [3]
- (ii) availability;
extra costs such as transport/painting or preservatives; durability/pest resistant;
cost qualified, i.e. decision between cheap but needs replacing
with expensive and long lasting;
strength of materials/suitability for purpose; any four [4]

[Total: 9]

- 5 (a) (i) lack of water/less water being taken in than lost; [1]
- (ii) exosmosis/plasmolysis;
causing lack of turgor;
water lost in transpiration; [2]
(idea of more water out faster than in; max 1 mark)
- (b) cooling;
transport of minerals;
idea of reduce damage to the plant [2]
- (c) hairs/thick cuticle/deep roots/leaves as rosette close to ground/
leaf loss or die back; [1]
- (d) (i) goats most effective at controlling bushes/number of bushes decline/
constantly low from 2000; [2]
- (ii) seeds grow back after fire so young plants survive as fire is a one off;
goats destroy both adult and growing bushes, grazing continuous; [2]

[Total: 10]

Page 4	Mark Scheme	Syllabus
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- 6 (a) (i) non ruminant as single stomach/
gullet/large caecum; R does not chew cud
- (ii) stomach/small intestine;
- (iii) caecum; [3]
- (b) to obtain mirco-organisms; [1]
- (c) 1 high protein/example of such a food stuff;
additional Ca/minerals; R increased amount of food;
- 2 high carbohydrate/example of such a food stuff;
- Reasons for food groups worth 1 mark for each [3]
- (d) (i) mixture 2 has grass and hay rather than Acacia pods/
mixture 2 has binding agent;
mixture 1 has acacia pods but mixture 2 does not/
mixture 2 has grass and hay but mixture 1 does not
accept any alternative linked to data in chart [2]
- (ii) source of minerals/provides binding; [1]
- [Total: 10]**
- 7 (a) 1 fusing of male and female gametes;
- 2 artificially inseminating a female with collected sperm; [2]
- (b) same letter and correct use of upper and lower case;
correct genotype and phenotype for parents, hornless HH x horned hh;
correct genotype and phenotype for first generation hornless Hh;
correct genotype and phenotype for second generation hornless,
HH, Hh Hh and horned, hh;
if genotype correct in all diagrams; 2 marks
if phenotype correct in all diagrams; 2 marks [Max 4]
- (c) (i) D because of good muscling and early maturity;
others list only non meat characteristics; [2]
- (ii) details of the bull's parents or progeny; [1]
- [Total: 9]**

Page 5	Mark Scheme	Syllabus
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- 8 (a) (i) diminishing returns;
more fertiliser added does not result in higher yield;
- (ii) nitrates used for making amino acids - protein that is used for growth;
nitrates used to make chlorophyll which enables photosynthesis for energy capture; [2]
- (b) starch to soluble sucrose;
translocated in phloem;
mass flow/energy requiring process;
stored by active transport;
idea of named product moving down
- 1 mark
any three [3]
- (c) grow on a trellis; enables more light for photosynthesis/
avoids ground pests eating leaves; or grow in mounds;
creates greater soil depth for tubers/idea of space/
growth with legumes/sandy soil linked to better growth in tuber; [2]
genetic asexual reproduction one mark two if explained.

[Total: 9]

- 9 (a) legumes provide nitrates/source of more minerals/
varied or palatable diet for grazers/roughage/
deep roots aid soil stability/shade/stop erosion; any two [2]
- (b) (i) the correct stocking rate for an area/ 1 mark
area of land to support one LSU without long term damage to the area; 1 mark
(second mark only for *without damage to the area*) [Max 2]
- (ii) overstocked – 5 LSU per ha when it should be .08 LSU per ha; [1]
- (c) (i) two services given with appropriate prevention statement;
e.g. blood testing service for TB prevention;
vaccination, isolation of sick stock;
issue of movement licence; any relevant service [2]
- (ii) 1 antibiotics to cure bacterial infection;
e.g. mastitis; prevent wound infections; R vague illness
- 2 disinfectants to prevent infection;
e.g. use to clean dairy and teats before milking/foot bath
clean wounds;
- 3 treat fungus infection of skin or named fungus disease
e.g. Ringworm any three [3]

[Total: 10]