CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the November 2004 question paper

0600 Agriculture

0600/02 **Paper 2 (Core), maximum mark 80**

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

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 November 2004 question papers for most IGCSE and GCE Advanced Level syllabuses.

Grade thresholds taken for Syllabus 0600 (Agriculture) in the November 2004 examination.

	maximum mark available	minimum mark required for grade:			
		A	C	E	F
Component 2	80	N/A	37	26	19

The threshold (minimum mark) for B is set halfway between those for Grades A and C.
The threshold (minimum mark) for D is set halfway between those for Grades C and E.
The threshold (minimum mark) for G is set as many marks below the F threshold as the E threshold is above it.
Grade A* does not exist at the level of an individual component.

NOVEMBER 2004

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 80

SYLLABUS/COMPONENT: 0600/02

AGRICULTURE
(Core)

UNIVERSITY of CAMBRIDGE
International Examinations

1 (a) 1 transport/leather/ploughing;

2 wool/pelt; **R** Skin

3 feathers; A manure once only **3**

(b) (i) mainly cattle/livestock;

less than 5%/small proportion of crops; **2**

(ii) meat, as only 2.5% income is milk; (A mark for both answer and reason) **1**

(c) carry out more intensive farming/soil improvement (fertilisation)/irrigation;

use higher yielding animals/crops;

use animals/crops resistance to disease/pests;

use animals/crops adapted to the climatic conditions; **any 2** **2**

Total 8 marks

2 (a) (i) river flow;

rain and CO_2;

heat/rock expansion and shrinking; **R** Types of weathering; chemical, biological, physical

tree roots; **any 3** **3**

(ii) living organisms/fungi/bacteria;
humus/organic matter; **R** compost and manure **2**

(iii) equal mix of sand, clay and humus;

good water holding/aeration;

has crumb structure;

good drainage;

pH reference e.g. not extreme AW; **max 3** **3**

(b) structure improved by: air spaces/better drainage/better soil crumbs;

fertility improved by: mixing soil with organic matter/promoting microbe activity/nitrates from legume crop; **2**

(c) x = absorption/uptake;

y – plant protein; **R** plant only

z = denitrification **3**

Total 13 marks

3 (a) (i) by insect/pollen taken from anther to stigma; **1**

(ii) starch; **R** carbohydrates/sugar **1**

(iii) runners form;

leaves and tuber form at node;

separation as runner withers;

new plant established; **max 3** **3**

(b) (i) water/radiant energy/light;

oxygen; **2**

(ii) increased temperature/increased light intensity; **1**

(iii) provides energy; **1**

(iv) movement of ions/molecules;

down a concentration gradient; (high to low) AW **R** across/along **2**

Total 11 marks

4 (a) (i) digging/forking/plough;

raking/harrow;

removal of debris -stones or weeds;

rolling/levelling;

liming/manuring/fertilising; **max 3** **3**

(ii) because potash already present in ash from burning;

R potassium already present **1**

(b) (i) suitable for geographical area/e.g. maize/millet/sorghum - summer crops wheat - summer/winter **1**

(ii) appropriate fertiliser and timing/e.g. kraal manure - before planting; **2**

(iii) appropriate disease and symptoms;

e.g. **(a)** maize - rust (red/brown patches on leaves)

mosaic (leaf patches)

streak (leaf patches)

(b) wheat - stem rust (dark swellings/patches on the stem leaf) **2**

Total 9 marks

5 **(a)** carbohydrates;
vitamins;
fibre; A answers in any order **3**

(b) **(i)** specific concentrate e.g. fish meal/meat and bone meal/groundnut cake meal/cotton seed cake;

(ii) roots/mangolds/swede/cassava; A milk/young grass for either **2**

(c) what - level of intake for basic metabolism/needed to keep animals healthy and alive;

when - animal is not in/production/pregnant/milking;

A all the time if implied that production ration is added **2**

(d) e.g. foot and mouth/newcastle/anthrax;

selective breeding/AW **2**

Total 9 marks

6. **(a)** **(i)** X = sperm duct/vas deferens;

Y = testes/testis; **2**

(ii) rapid penetration; **1**

(b) **(i)** genes/alleles; **1**

(ii) short hair is dominant/long hair recessive **1**

(iii) correct crossing; (1 mark)

correct offspring genotype; (1 mark) **2**

OR correct explanation e.g. recessive can come together/homozygous recessive long haired

(c) internal;

where sperm meets egg;

method of sperm travel;

sperm penetrates egg membrane; **max 3** **3**

Total 10 marks

7 **(a)** **(i)** open or close sluice; A ref. to overflow pipe **1**

(ii) internal joiner;

clamps; **2**

(iii) furrow; **R** flood **1**

(iv) better control/even distribution/less space taken/less erosion; **1**

(v) pump to water tower/tank in pipes; **1**

(b) method of weed suppression

provide level base;

ratio of sand to cement to aggregate e.g. 4: sand
2: gravel
1: cement

method of shuttering;

finishing;

ref. to appropriate tool; **max 3** **3**

Total 9 marks

8 **(a)** **(i)** appropriate weed for crop, e.g. maize/millet/sorghum – cynodon/star grass/wondering jew/spear grass; **1**

(ii) appropriate tool, e.g. long handled hoe/dutch hoe; **1**

(iii) correct use, e.g. hoeing/uprooting; **R** cultivation/tillage **1**

(b) **(i)** not specific/environmental damage/operator harm; **R** cost **1**

(ii) locked up; **R** safely

containers labelled;

cool/dry; **any 2** **2**

(c) higher pH;

encourages microbe activity;

grass takes up more minerals;

promotes greater variety of pasture species; **any 2** **2**

(d) (i) named organism: caterpillar/grasshopper/locust/leaf miner;
R biting and chewing **1**

(ii) less photosynthetic area;

water loss;

allows disease entry/harmful micro-organisms;

consumes soluble carbohydrates; **any 2** **2**

Total 11 marks

TOTAL 80