UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

8319062707

AGRICULTURE **0600/02**

Paper 2 **October/November 2007**

1 hour 15 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total	

This document consists of **20** printed pages.

1 **(a)** What is meant by *shifting cultivation*?

.....

..... [1]

(b) Fig. 1.1 shows a recently settled family farm.
Oxen are kept together with cattle for meat and milk.
Maize is grown with Leucaena – an evergreen, nitrogen fixing tree.

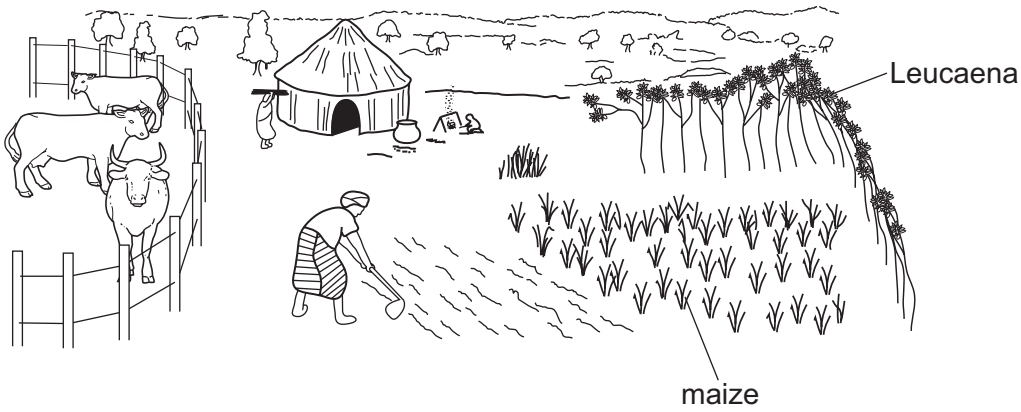


Fig. 1.1

(i) What other use are oxen to the farmer?

..... [1]

(ii) State a reason for planting Leucaena.

..... [1]

(iii) State **two** reasons for carrying out mixed farming.

1 .....

.....

2 .....

..... [2]

(c) As the population of a settlement increases more land is used for huts and less for farming.

(i) Name a type of livestock which provides meat and milk that could be kept on a reduced area of land.

..... [1]

(ii) Suggest **two** ways by which the yield of crops can be maintained on less land.

.....

.....

..... [2]

[Total 8]

2 **(a)** Table 2.1 lists organic and inorganic sources of plant nutrients.

Complete table 2.1

Table 2.1

plant nutrient	organic source	inorganic source
N	animal manure	.....
P	.....	super-phosphate
K	.....	.....

[4]

(b) For what purpose do plants use magnesium?

..... [1]

(c) A farmer wishes to test the pH of the soil in a garden plot. Fig. 2.1 shows the order in which the soil samples were taken from the plot.

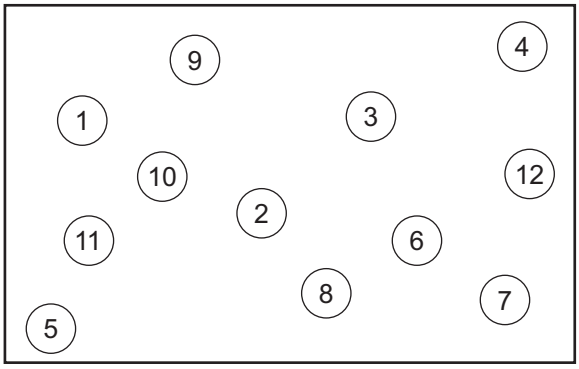


Fig. 2.1

(i) Explain why the samples are collected in this way.

.....

..... [1]

The samples are then shaken with distilled water in a tube.

(ii) Why is distilled water used rather than rain water?

.....

..... [1]

(iii) Describe a method for finding the pH value of the sample in the tube.

.....

.....

..... [2]

(iv) Suggest how the result obtained in **(iii)** would differ if lime had recently been added to the plot.

.....

..... [1]

[Total 10]

3 **(a)** Fig. 3.1 shows a stack of soil sieves used to separate the parts of a soil sample. Soil needs to pass easily through the mesh when the sieves are shaken.

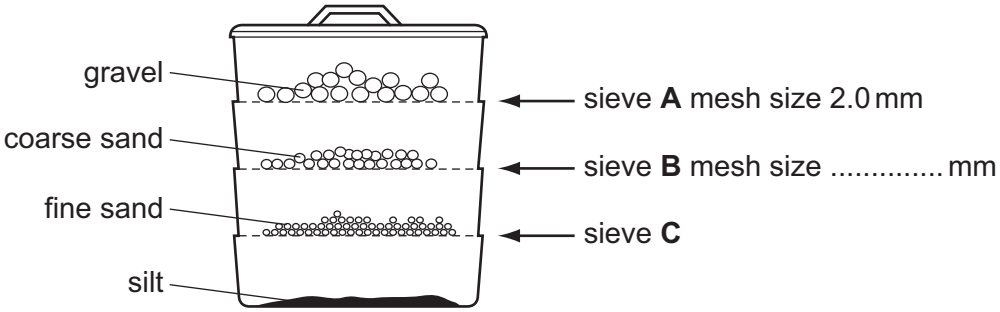


Fig. 3.1

(i) State how a soil sample should be treated before it is put into the top sieve.

..... [1]

(ii) Label the size of mesh in sieve **B**. [1]

(iii) Name **one** component of soil, apart from gravel, that would remain in sieve **A**.

..... [1]

(iv) Name the soil type from which the sample in Fig. 3.1 was taken.

..... [1]

(b) State **two** characteristics of sandy soil.

1 .....

2 ..... [2]

(c) Describe the effects a mulch of FYM (kraal manure) could have on sandy soil.

.....

.....

.....

..... [2]

[Total 8]

4 **(a)** **(i)** For a named cereal crop state how to recognise that it is ready for harvesting.

name of crop .....

..... [1]

(ii) State **one** environmental condition needed for the storage of cereal crops.

..... [1]

(b) Fig. 4.1 shows a storage building for a cereal crop.

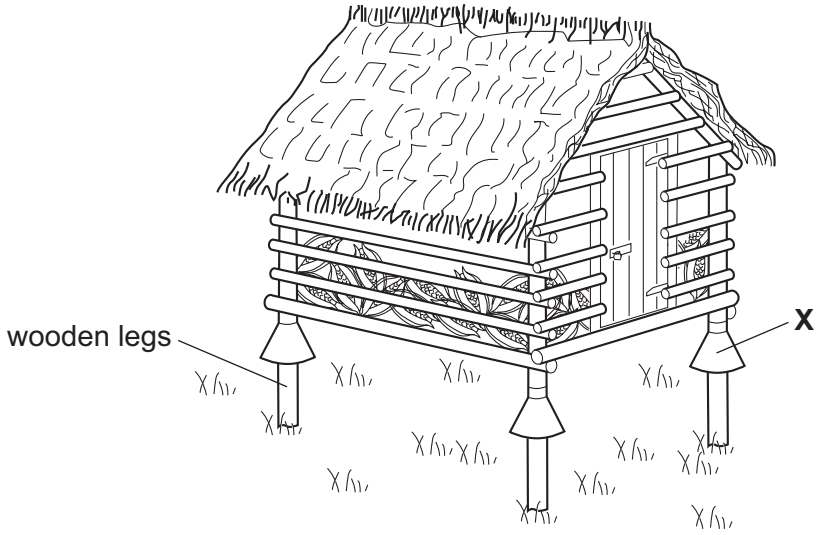


Fig. 4.1

(i) What is the purpose of the part labelled **X**?

..... [1]

(ii) The roof is thatched.

State a possible disadvantage of the thatched roof.

.....

..... [1]

(iii) Suggest how the process of rotting in the wooden legs can be prevented.

.....

..... [1]

[Turn over

(c) Crop pests have to be controlled.

(i) Give an example of biological pest control.

..... [1]

(ii) Explain why crop rotation helps to control pests.

.....

..... [1]

Table 4.1 shows the effect of different pest control treatments in a polytunnel.

Table 4.1

	Biological control		Chemical control using a spray		Chemical control using vapour	
	average number of pests on plant		average number of pests on plant		average number of pests on plant	
	before treatment	after treatment	before treatment	after treatment	before treatment	after treatment
aphid	155	78	150	7	157	150
stalk borer	10	8	12	1	11	3
leaf miner	54	50	49	7	60	40

(iii) State **two** conclusions that can be made from Table 4.1 about the different pest control treatments.

.....

.....

..... [2]

[Total 9]

5 **(a)** Name the process by which a plant takes up water through roots.

.....

[1]

(b) Water then passes through a plant and is lost through the leaves. This is called transpiration.

Fig. 5.1 shows a simple method for measuring transpiration.

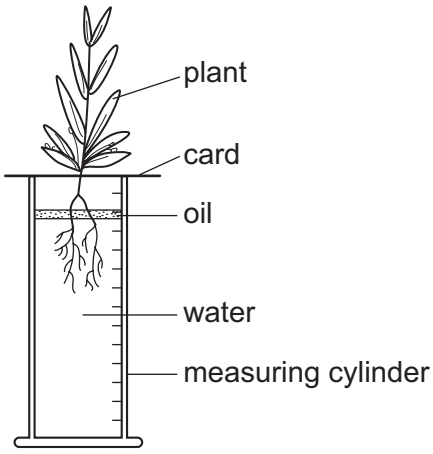


Fig. 5.1

(i) What will happen to the level of water in the measuring cylinder?

.....

[1]

(ii) Why was oil placed on the surface of the water?

.....

[1]

(iii) How would putting a fan that blew air over the plant affect the amount of water lost through the leaves?

Give a reason for your answer.

.....

.....

.....

[2]

(c) (i) What causes crop plants to wilt?

.....

[1]

(ii) Suggest how wilting could be controlled in a field crop.

.....

.....

.....

[2]

[Total 8]

6 **(a)** Fig. 6.1 shows the digestive system of a donkey.

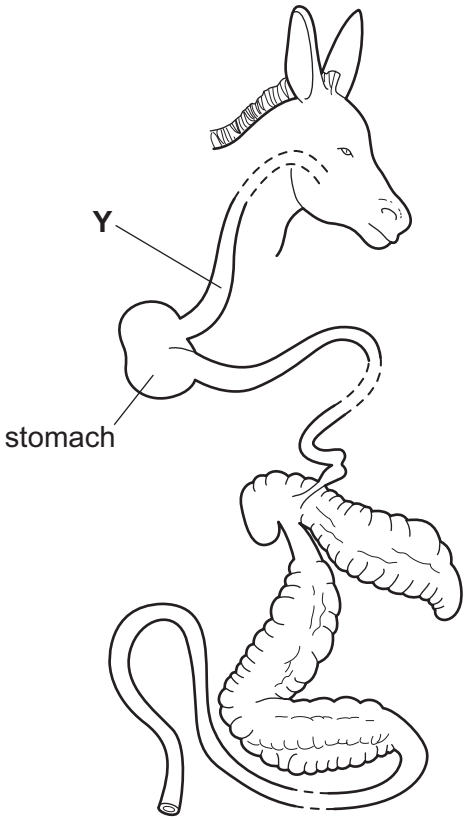


Fig. 6.1

Name the part labelled **Y**.

..... [1]

(b) State **two** reasons why animals chew their food.

1 .....

.....

2 .....

..... [2]

(c) When donkeys are working they should be fed a production ration.

Briefly describe what this ration should include.

.....

.....

.....

.....

..... [3]

(d) Fig. 6.2 shows a loaded donkey cart.

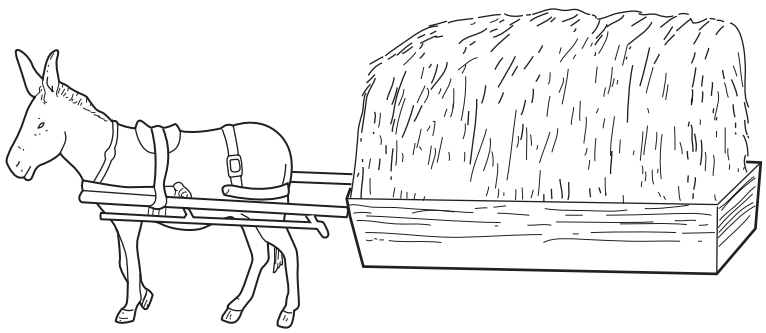


Fig. 6.2

(i) Draw a wheel on Fig. 6.2 in the position that would make it easiest for the donkey to pull the load. [1]

(ii) Ropes can be used to secure the load.

What should be added to the cart to allow for securing the ropes?

..... [1]

(iii) Fig. 6.3 shows four knots.

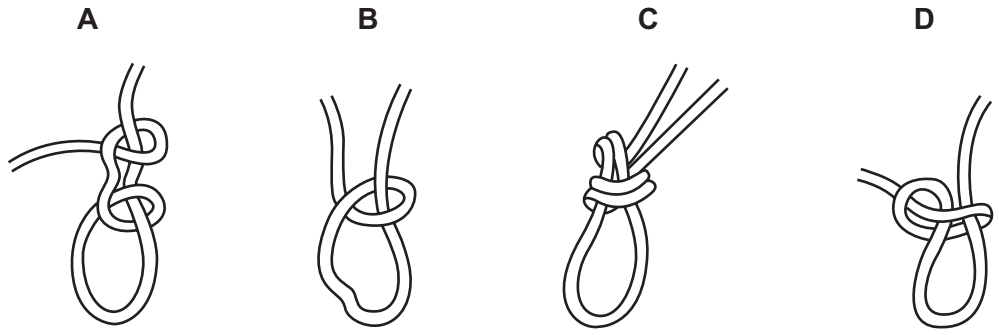


Fig. 6.3

Which knot should be used for securing the load?

.....

State a reason for your answer.

.....

..... [1]

[Total 9]

7 **(a)** The boxes below give stages in the reproduction of a farm animal and descriptions of what these are.

Draw a straight line to match each stage with its correct description. One has been done for you.

stages	description
fertilisation	coming together of male and female
gestation	moment of birth
lactation	penetration of egg by sperm
mating	period when female is pregnant
weaning	separation of young from mother
	period when female gives milk

[4]

(b) Fig. 7.1 shows the inheritance of horns in two generations of sheep.

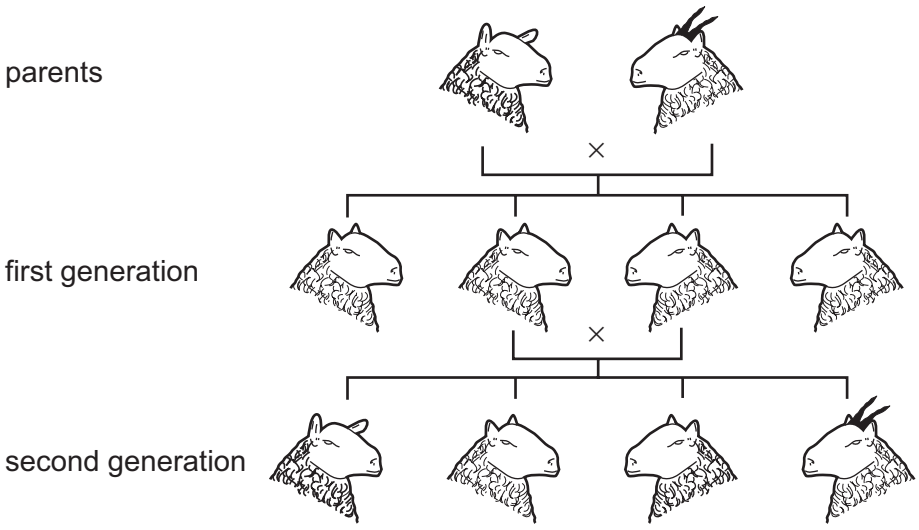


Fig. 7.1

(i) Is the presence of horns dominant or recessive?

.....

Give a reason for your answer.

.....

..... [1]

(ii) Describe how features are passed from generation to generation.

.....

.....

.....

.....

..... [3]

(c) Fig. 7.2 shows two rams.
They are of the same breed and age. They are used to sire lambs for meat.

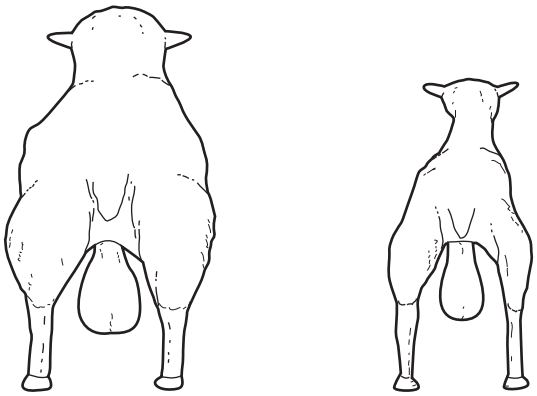


Fig. 7.2

(i) Suggest **two** reasons for the differences in the rams in Fig. 7.2.

1 .....

.....

2 .....

..... [2]

(ii) What records would be useful when selecting a ram to use for producing lambs for meat?

.....

.....

..... [2]

[Total 12]

8 **(a)** Fig. 8.1 shows a sweet potato plant.

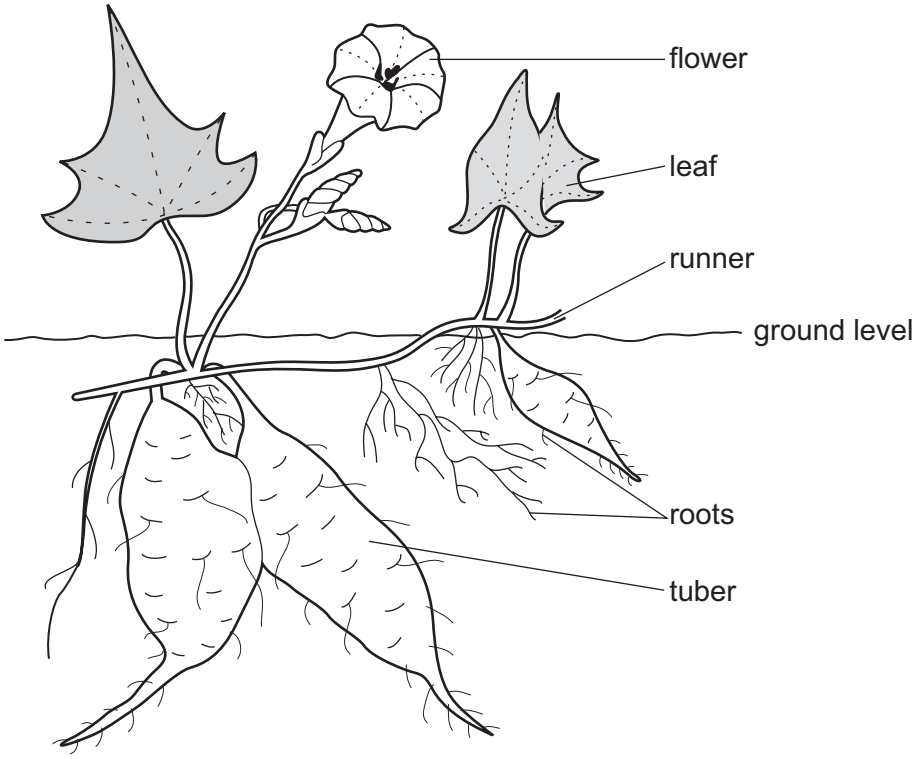


Fig. 8.1

(i) What method of pollination is suggested by the flower?

.....

Give a reason for your answer.

..... [1]

(ii) The sweet potato also reproduces asexually.

Explain what this means.

.....

.....

..... [2]

(b) A scientist in Malaya carried out an experiment on the growth of sweet potatoes. The aim of the scientist was to compare:

- the yield from different varieties;
- the yield from different growing methods.

Four varieties were grown, three up a frame, and one along the ground.
All other conditions were kept the same.

Table 8.1 shows the results.

Table 8.1

variety	growing method	yields (tonnes / ha)
Ubi Telor B	upwards on a frame	16.2
Ubi Mera	along the ground	0.9
Ubi Telor A	upwards on a frame	11.2
Ubi Sungei Liang	upwards on a frame	17.4

(i) Suggest a reason for the better yield from the plants on the frame.

.....

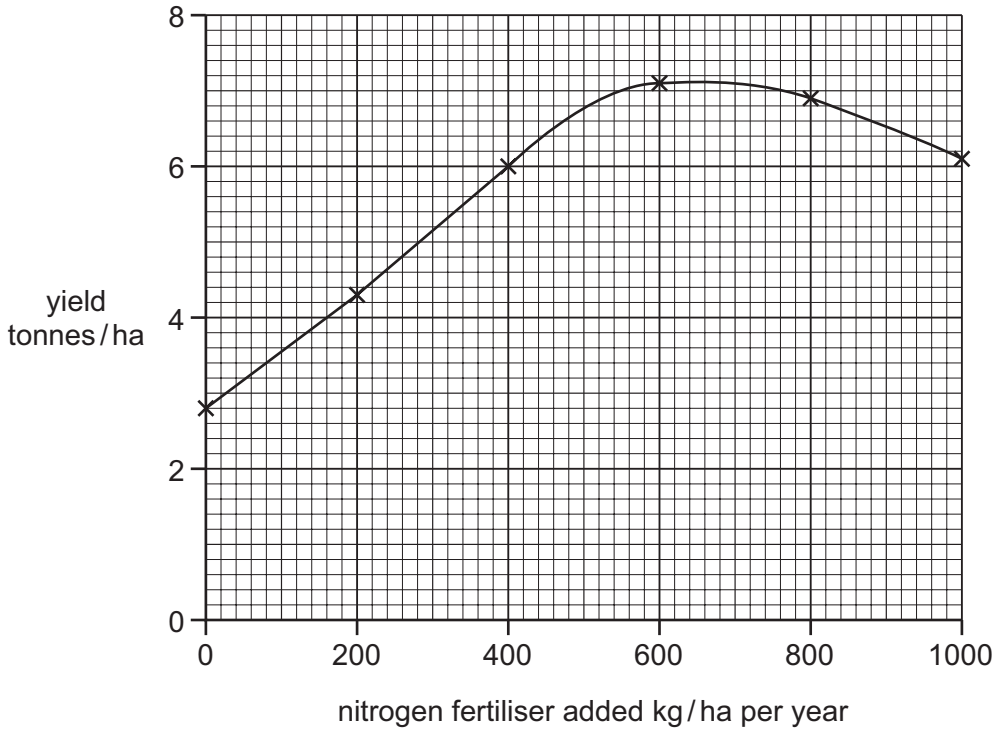
..... [1]

(ii) Suggest a reason why this experiment is not a fair test.

.....

..... [1]

(c) In Sierra Leone the sweet potato is also grown for leaf production.
The graph compares the relationship between yield and the amount of nitrogen fertiliser added to the soil.



(i) Explain how the use of a nitrogen fertiliser produces better growth of leaves.

.....

..... [1]

(ii) What principle does the graph illustrate?

.....

Explain your answer.

.....

.....

..... [2]

[Total 8]

9 Fig. 9.1 shows a worker using a sprayer to control pests on maize.

Fig. 9.1

(a) (i) State **two** reasons why the worker is at risk.

1 .....

2 ..... [2]

(ii) State a precaution that should be taken when the sprayer is cleaned, once spraying is completed.

..... [1]

(b) Pastures can be improved by drainage.

Explain how drainage benefits the pasture plants.

.....

.....

..... [2]

[Turn over

(c) The stocking rate is the amount of land available for one livestock unit (LSU). One livestock unit = a cow or 6 sheep or goats.

(i) State what is meant by carrying capacity.

.....

..... [1]

(ii) In south east Botswana the stocking rate is 0.2 ha / LSU and the carrying capacity is 12 ha / LSU.

Is this area of Botswana overstocked or understocked?

.....

Give a reason for your answer.

.....

..... [2]

[Total 8]