

GENERAL CERTIFICATE OF SECONDARY EDUCATION
TWENTY FIRST CENTURY SCIENCE
ADDITIONAL APPLIED SCIENCE A
Agriculture and Food (Foundation Tier)

A334/01

Candidates answer on the question paper.
A calculator may be used for this paper.

OCR supplied materials:
None

Other materials required:

- Pencil
- Ruler (cm/mm)

Wednesday 15 June 2011
Morning

Duration: 45 minutes



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

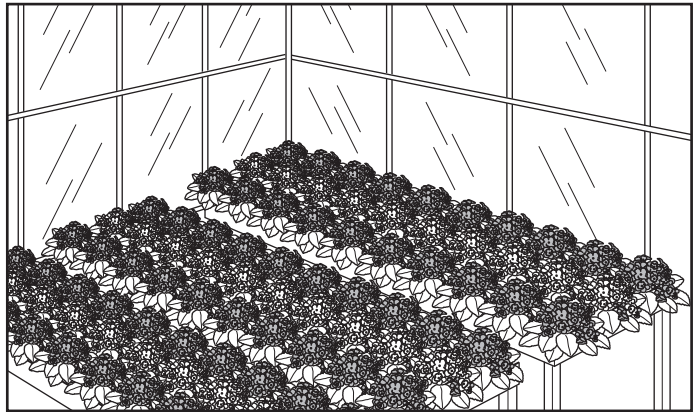
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **36**.
- This document consists of **12** pages. Any blank pages are indicated.

Answer **all** the questions.

- 1 Rick grows many different types of plants in his glasshouse.



- (a) What type of farming is this?

Put a tick (✓) in the box next to the correct answer.

- arable
- dairy
- poultry
- horticulture

[1]

- (b) Rick knows there are many insects that can damage his plants. What damage can insects do to plants?

..... [1]

- (c) Insect pests can be controlled by the use of chemicals.

- (i) Which **chemicals** are used to kill insects?
Put a tick (✓) in the box next to the correct answer.

- herbicides
- hormones
- insecticides
- insectivores

[1]

(ii) Complete the sentences describing **chemical control** of insects.
Draw a **ring** around the correct word(s) in each sentence.

different

Chemical control will usually kill **only one** type(s) of insects.

only large

very quickly.

Chemical control usually acts **at random.**

very slowly.

[2]

(iii) Write down one **disadvantage** of using chemicals to control insects.

..... [1]

(d) Many insects can be useful to plants.

Describe how insects are useful to plants.

.....
.....
..... [2]

[Total: 8]

2 Read the newspaper story about “mini-cattle” in America.

Size matters!

Many American farmers are keeping mini-cattle which are about half the size of normal cattle.

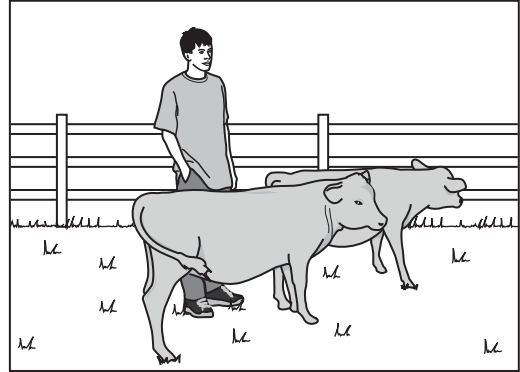
The farmers say that the mini-cattle eat about half the amount of food that normal cattle eat. Smaller and leaner joints of meat are produced.

The mini-cows produce a smaller amount of milk than a normal cow. This makes it a perfect “family cow”.

It’s not all good news.

Some farmers have had to buy new milking machines and put up different sized fences.

Some British farmers think that the mini-cattle may not be a success in Britain.



- (a) Flo is a farmer. She reads the story and thinks about keeping mini-cattle.

Write down **two** advantages of keeping mini-cattle instead of normal sized cattle.

- 1
- 2

[2]

- (b) Write down one **gathered harvest** and one **whole organism harvest** from cattle.

gathered harvest

whole organism harvest

[2]

- (c) Flo thinks about using **intensive farming** to keep her mini-cattle. There are advantages and disadvantages of using intensive farming methods.

- (i) Put a tick (✓) in the box next to **one advantage** of intensive farming.

- encourages spread of diseases
- GM contamination
- drug free produce
- high yield

[1]

(ii) Put a tick (✓) in the box next to **one disadvantage** of intensive farming.

encourages spread of diseases

GM contamination

high quality produce

high yield

[1]

(d) Some British farmers decide that keeping mini-cattle will be expensive.

Suggest why keeping mini-cattle could be expensive.

..... [1]

(e) Flo thinks that the temperature in Britain could affect the growth of the mini-cattle.

Which two other factors will **directly** affect their growth?

Put ticks (✓) in the boxes next to the **two** correct answers.

amount of sunlight

availability of food and water

electric milking machines

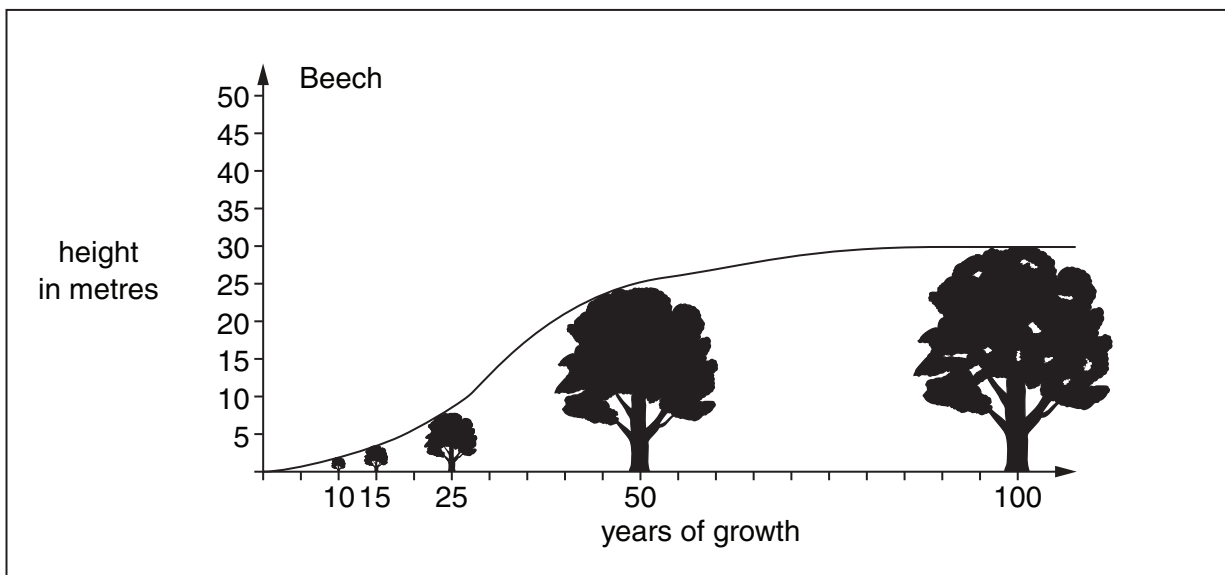
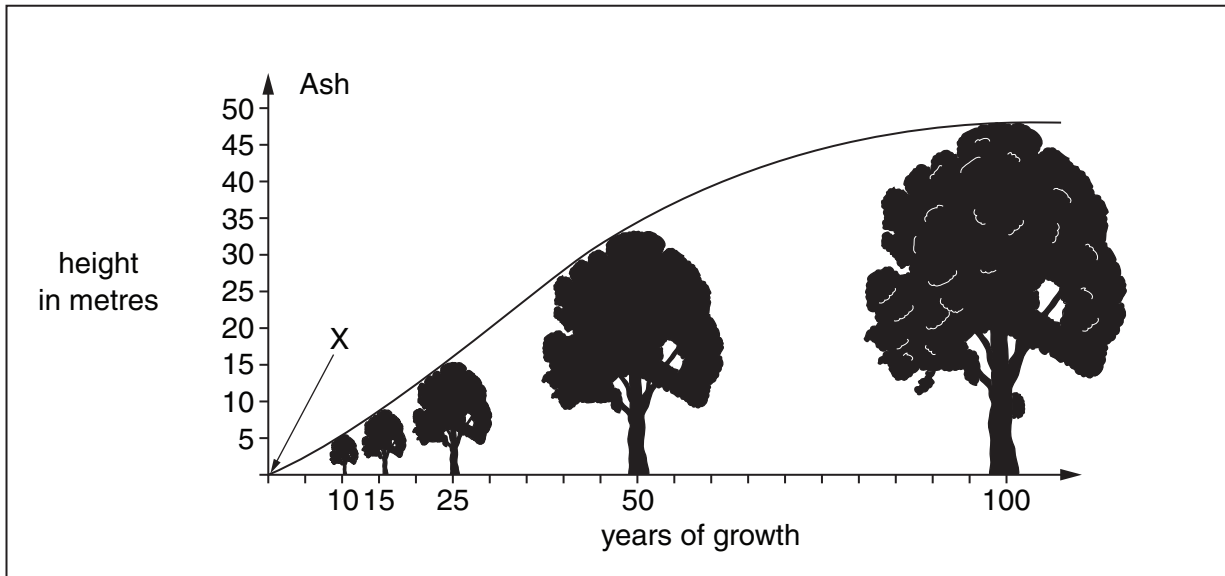
pests and diseases

use of fertilisers

[2]

[Total: 9]

- 3 Luke works for the Forestry Commission. He records the height of ash and beech trees.



- (a) Which stage in the tree's life cycle takes place at X?

Draw a ring around the correct stage.

dispersal fertilisation germination pollination

[1]

(b) Luke compares the growth rates of ash and beech trees.

Put ticks (✓) in the boxes next to **two** correct statements.

After 50 years beech is taller than ash.

During the last 50 years the ash increased in height more than the beech.

At 50 years of age, ash is about 25m tall.

In the first 25 years, ash grows more quickly than beech.

[2]

(c) The average growth rate of ash for the first 100 years is 0.45m per year.

Use the graphs to work out the average growth rate of beech for the first 100 years.

answer m per year [1]

(d) Luke decides to harvest beech trees when they are 50 years old.

Use the graph to explain why.

.....
..... [1]

(e) Luke finds that, in some forests, the tree harvest is less than expected.

Suggest **two** reasons why.

1.....
2 [2]

(f) Measuring height is one way of measuring tree growth.

Write down **one other** way of measuring tree growth.

..... [1]

(g) Trees are grown mainly to produce wood.

Put a tick (✓) in the box next to the **one** other useful product from trees.

cotton

leather

paper

wool

[1]

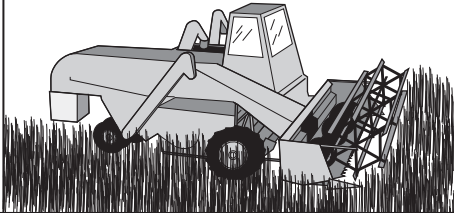
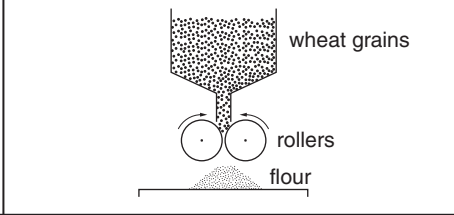
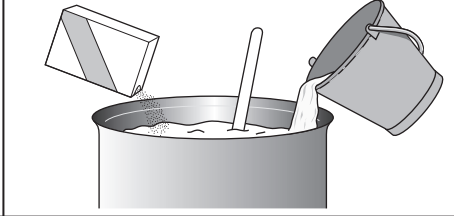
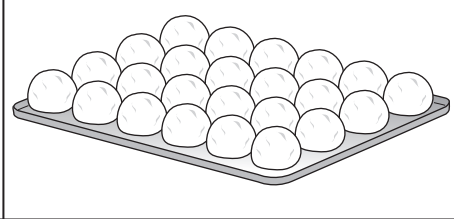
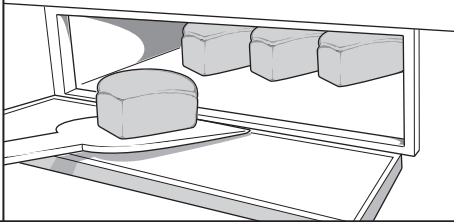
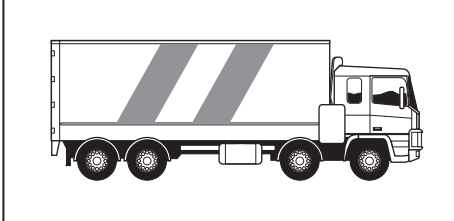
[Total: 9]

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PLEASE TURN OVER FOR QUESTION 4

4 These are some of the steps in bread making.

<p>Step 1</p>		<p>Wheat is grown and harvested. Wheat needs sunlight, water and carbon dioxide.</p>
<p>Step 2</p>		<p>Wheat grains are ground down to flour.</p>
<p>Step 3</p>		<p>Yeast, salt and water are added.</p>
<p>Step 4</p>		<p>Dough is kept at 25°C.</p>
<p>Step 5</p>		<p>Dough is baked at 200°C.</p>
<p>Step 6</p>		<p>Bread is taken to shops.</p>

(a) Here are four stages in the chain of food production.

growing → transporting to factory → processing → delivery to shops

Which stage is **not** shown in the diagrams of bread making?

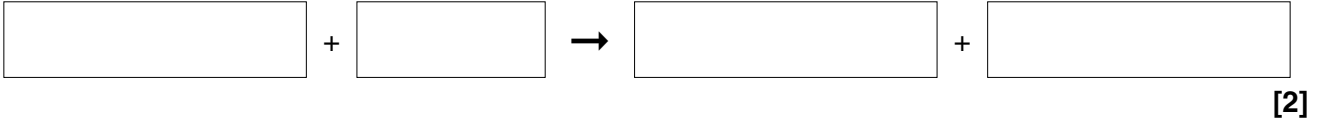
..... [1]

(b) Wheat plants use sunlight, water and carbon dioxide to make food.

(i) Write down the name of this process.

..... [1]

(ii) Complete the word equation for this process.



(c) Which part of the wheat plant is used to make bread?

Put a tick (✓) in the box next to the correct answer.

- flowers
- seeds
- stems
- roots
- whole plant

[1]

(d) Yeast is a microorganism.
It is added to dough to make it rise.

Explain how the yeast makes dough rise.

.....
.....
..... [2]

(e) In step 5, the dough is baked.
What happens to the yeast when the dough is baked?

..... [1]

(f) The price of bread can change during the year.

Suggest why.

.....
.....
..... [2]

[Total: 10]

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