

Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

A334/01

**TWENTY FIRST CENTURY SCIENCE
ADDITIONAL APPLIED SCIENCE A**

Unit 2: Agriculture and Food (Foundation Tier)

WEDNESDAY 9 JUNE 2010: Afternoon

DURATION: 45 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

**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)

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer ALL the questions.
- 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).

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.

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Answer ALL the questions.

1 Charlotte grows strawberry plants.

She picks the strawberries from the plants.

This is called a GATHERED HARVEST.



(a) What is meant by a GATHERED HARVEST?

Put a tick (✓) in the box next to the BEST description.

machines are used to gather the harvest

only the fruits are harvested

the whole plant is harvested

[1]

(b) (i) What would be the best way of finding the strawberry crop YIELD?

Put a tick (✓) in the box next to the BEST method.

counting the strawberries

looking at the crop

measuring the size of each strawberry

weighing the strawberries

[1]

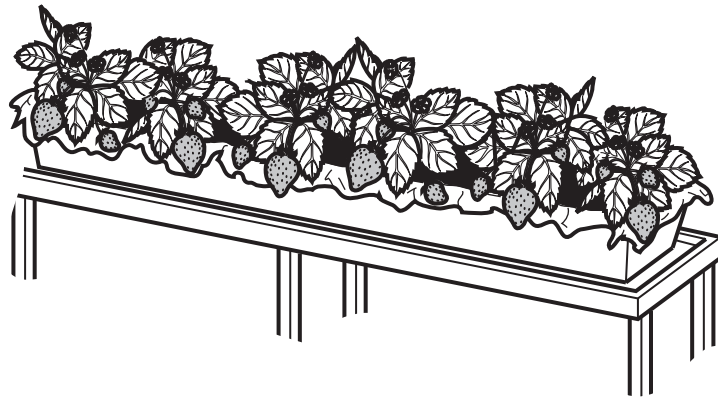
(ii) Which of these four methods is a QUALITATIVE method?

_____ **[1]**

(c) Charlotte grows the strawberries in a different way.

The strawberry plants are grown in plastic bags.

The plastic bags are placed on a framework above the ground.



The soil in the plastic bags is watered automatically.

This new system of growing strawberry plants produces a better crop.

Suggest TWO reasons why.

1 _____

2 _____ **[2]**

(d) The chain of food production for making strawberry jam includes a number of stages.

The stages are given in the list below. They are in the wrong order.

A process

B plant

C grow

D transport to factory

E deliver to shops

Put the stages A, B, C, D and E in the correct order.

The first one has been done for you.

B				
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[2]

(e) Charlotte finds out that many strawberries are spoiled after a few days.

(i) Which TYPE of microorganism is most likely to cause this damage?

_____ [1]

(ii) Suggest TWO ways that fresh strawberries could be stored to reduce this damage.

_____ [2]

[Total: 10]

2 Ben works in a research laboratory.

He uses microorganisms.

(a) Ben can use different methods to measure the population growth of microorganisms.

Draw a straight line from each METHOD to its correct DESCRIPTION.

METHOD

DESCRIPTION

colony counts

how cloudy the liquid is

turbidity

total mass of organisms

biomass

number of bacterial colonies growing on agar

[2]

(b) (i) The microorganisms are grown using aseptic techniques.

What is meant by ASEPTIC?

_____ [1]

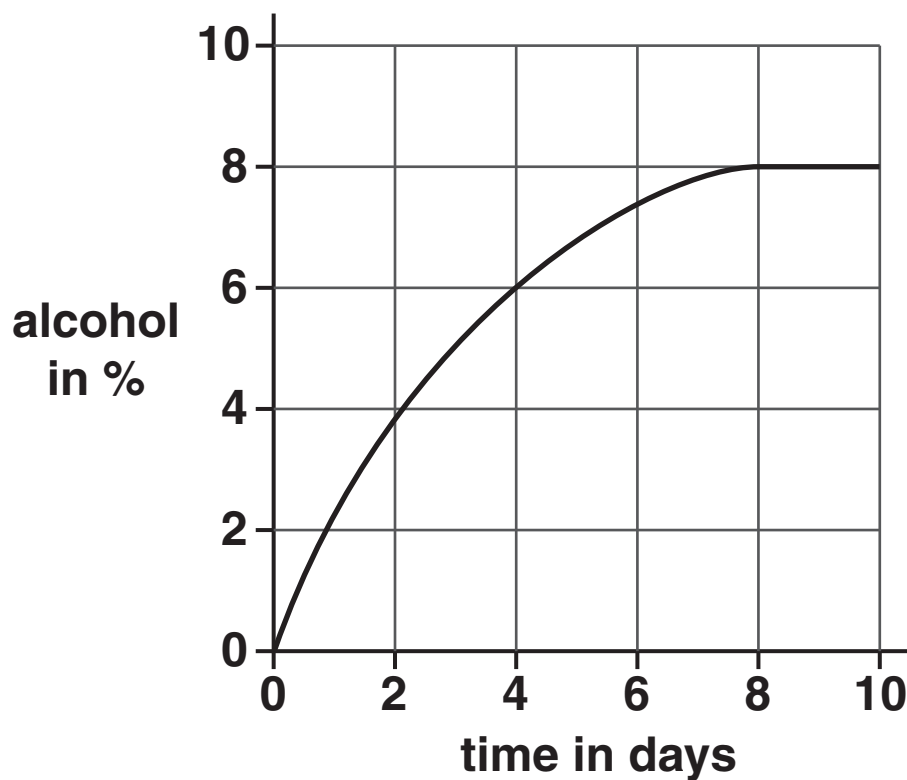
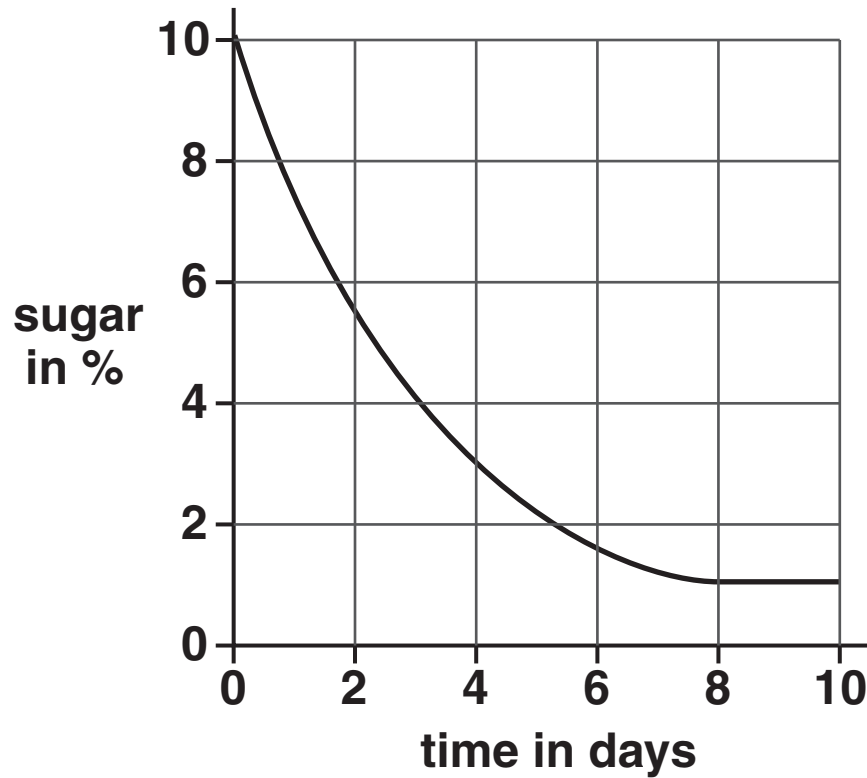
(ii) Why must Ben be very careful when using microorganisms?

_____ [1]

(c) Ben uses yeast to ferment sugar. Alcohol is produced.

He measures the amount of sugar and alcohol over 10 days.

The graphs show his results.



(i) State what happens to the amount of sugar

from 0 to 8 days _____

from 8 to 10 days. _____ **[2]**

(ii) Suggest why the level of alcohol does not increase after 8 days.

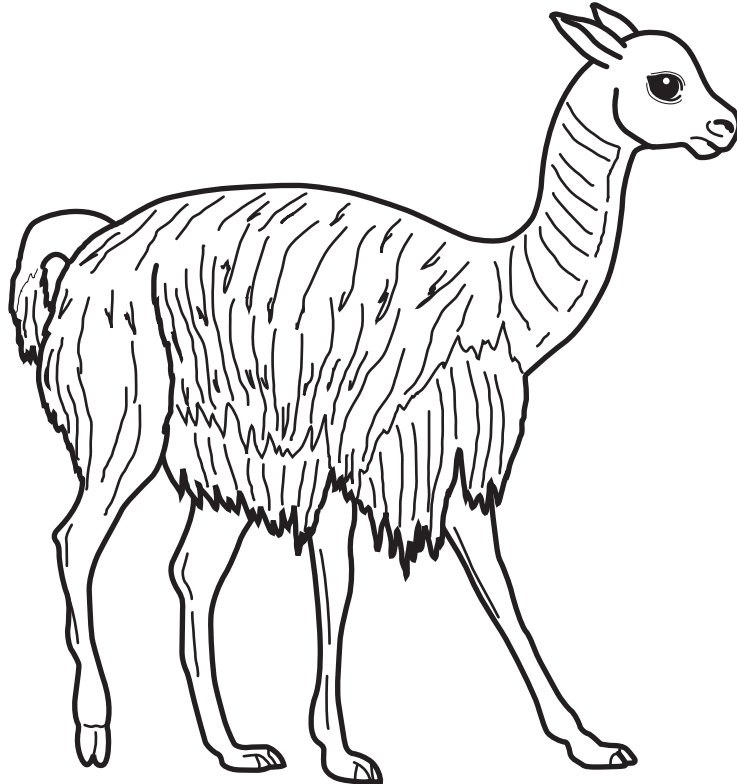
_____ **[1]**

[Total: 7]

3 Vicunas live in the mountains of South America.

In 1960 there were very few vicunas left in the wild.

Vicuna wool produces light but warm clothing.



(a) Suggest ONE useful NON-woollen product from vicunas.

_____ [1]

(b) A special technique is used to increase the numbers of vicunas.

Put a tick (✓) in the box next to this technique.

artificial insemination

batch culture

organic farming

tissue culture

[1]

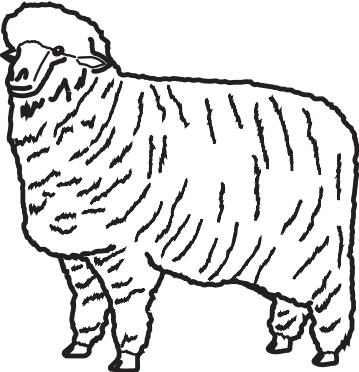
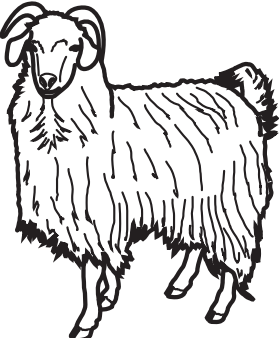
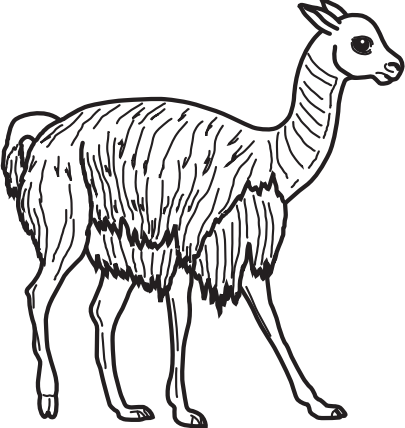
(c) Suggest THREE factors that could affect the growth of a vicuna.

1 _____

2 _____

3 _____ **[2]**

(d) Look at the information about three different types of wool.

	how often wool is collected	amount of wool from one animal in grams
MERINO SHEEP WOOL 	every year	6800
CASHMERE GOAT WOOL 	every year	190
VICUNA WOOL 	every 2 years	190

- (i) Which type of wool shows the LOWEST yield per year?

Explain your answer.

[2]

- (ii) A sweater made from vicuna wool fibres costs about £2600.

Suggest reasons why a sweater made from vicuna wool is very expensive.

[2]

[Total: 8]

4 Many types of product can be made from plants.

(a) Draw a straight line from each TYPE OF PRODUCT to an EXAMPLE of the product.

<u>TYPE OF PRODUCT</u>	<u>EXAMPLE</u>
fuel	biodiesel
food for farm animals	flour
food ingredient	silage
fibre	linen

[3]

(b) Complete the sentences about the life cycle of a flowering plant.

Choose from the following words.

DISPERSAL

FERTILISATION

GERMINATION

LEAF

POLLINATION

ROOT

SEED

Many plants have colourful flowers.

The transfer of pollen from one flower to another is called _____ .

The fusion of a pollen nucleus and an egg cell nucleus is called _____ .

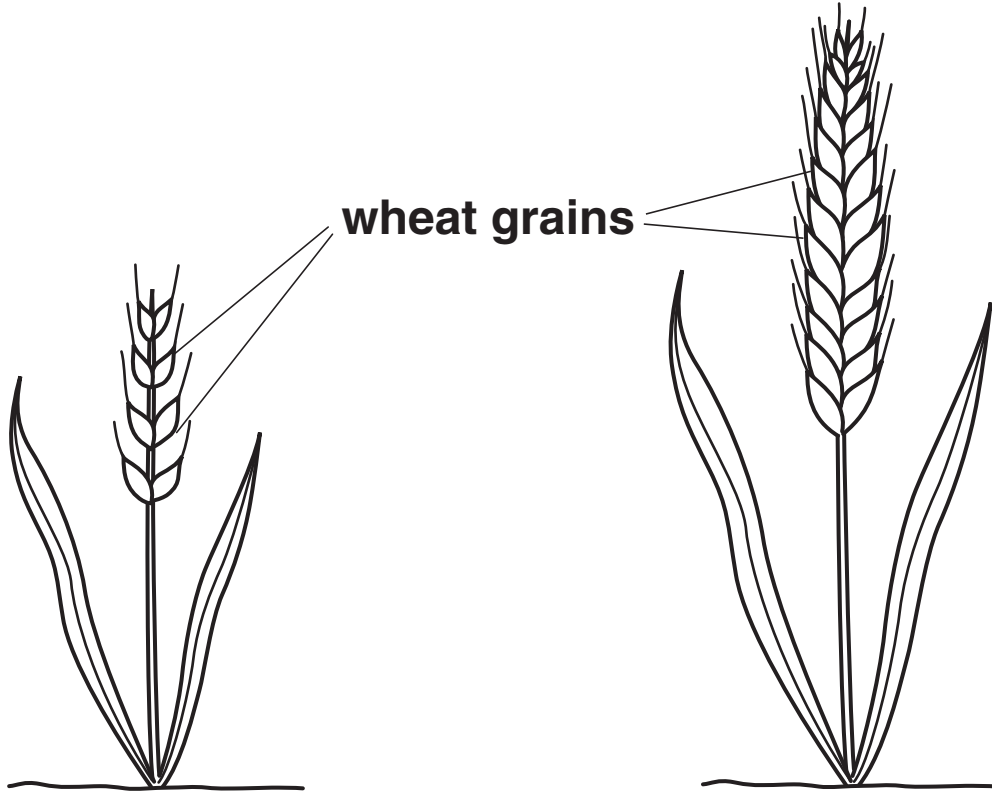
This process results in the formation of a

_____ .

[3]

(c) Wheat plants produce wheat grains which can be ground to make flour.

Wheat plants grown now are very different from those grown hundreds of years ago.



wheat plant hundreds of years ago

wheat plant grown today

(i) Write down TWO reasons why more flour is produced from a plant grown today.

1 _____

2 _____ **[1]**

- (ii) Modern wheat plants have been developed over many generations.**

Which technique has been used?

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

artificial insemination

batch culture

organic farming

selective breeding

[1]

(d) Wheat grains can be ground to make flour.

Flour is used to make bread.

Some bread is made using yeast.

Yeast uses both AEROBIC and ANAEROBIC respiration.

(i) Look at the four word equations.

A sugar \rightarrow carbon dioxide + alcohol

B sugar + carbon dioxide \rightarrow oxygen + alcohol

C sugar + water \rightarrow oxygen

D sugar + oxygen \rightarrow carbon dioxide + water

Which equation, A, B, C or D, shows AEROBIC respiration? _____

Which equation, A, B, C or D, shows ANAEROBIC respiration? _____
[2]

(ii) Explain why bread rises when yeast is added.
_____ [1]

[Total: 11]

END OF QUESTION PAPER

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