

**GENERAL CERTIFICATE OF SECONDARY EDUCATION  
TWENTY FIRST CENTURY SCIENCE  
ADDITIONAL APPLIED SCIENCE A**

**A334/01**

Agriculture and Food  
(Foundation Tier)

**Thursday 15 January 2009  
Afternoon**

**Duration: 45 minutes**

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)



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- 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.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

**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.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	5	
2	10	
3	6	
4	9	
5	6	
<b>TOTAL</b>	<b>36</b>	

Answer **all** the questions.

- 1 There are not many cod fish in the North Sea.  
This is because of “over fishing”.

- (a) Cod fish are now being farmed by keeping them in sea lochs.  
They are fed on high protein pellet food.

What type of farming is being used?

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

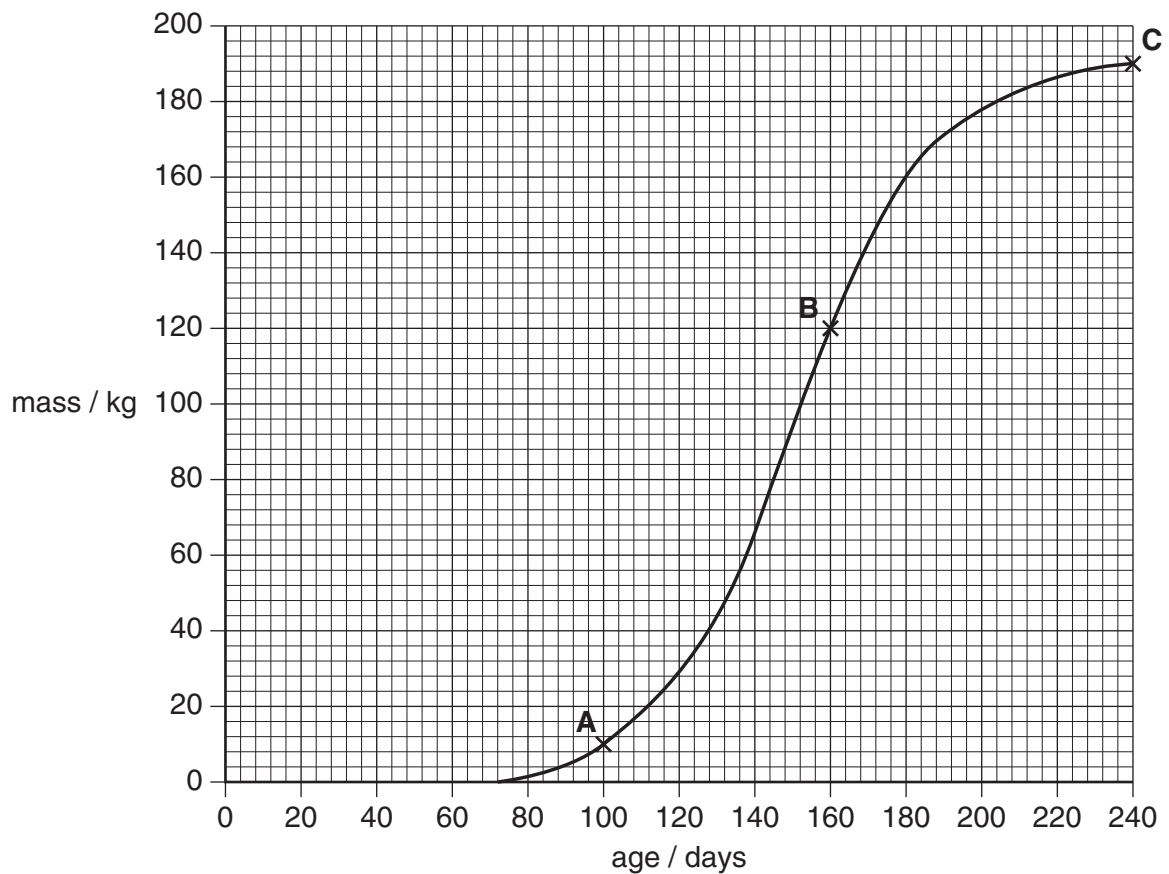
horticulture

intensive farming

hydroponics

[1]

- (b) The graph shows the growth rate of the cod.



(i) Use information in the graph to complete the table.

point on graph	age in days	mass in kg
<b>A</b>	100	10
<b>B</b>	160	
<b>C</b>	240	190

[1]

(ii) When are the cod growing the fastest?

Put a **ring** around the correct letter.

**A**                      **B**                      **C**

[1]

(iii) Write down **two** factors that affect the growth rate of fish such as cod.

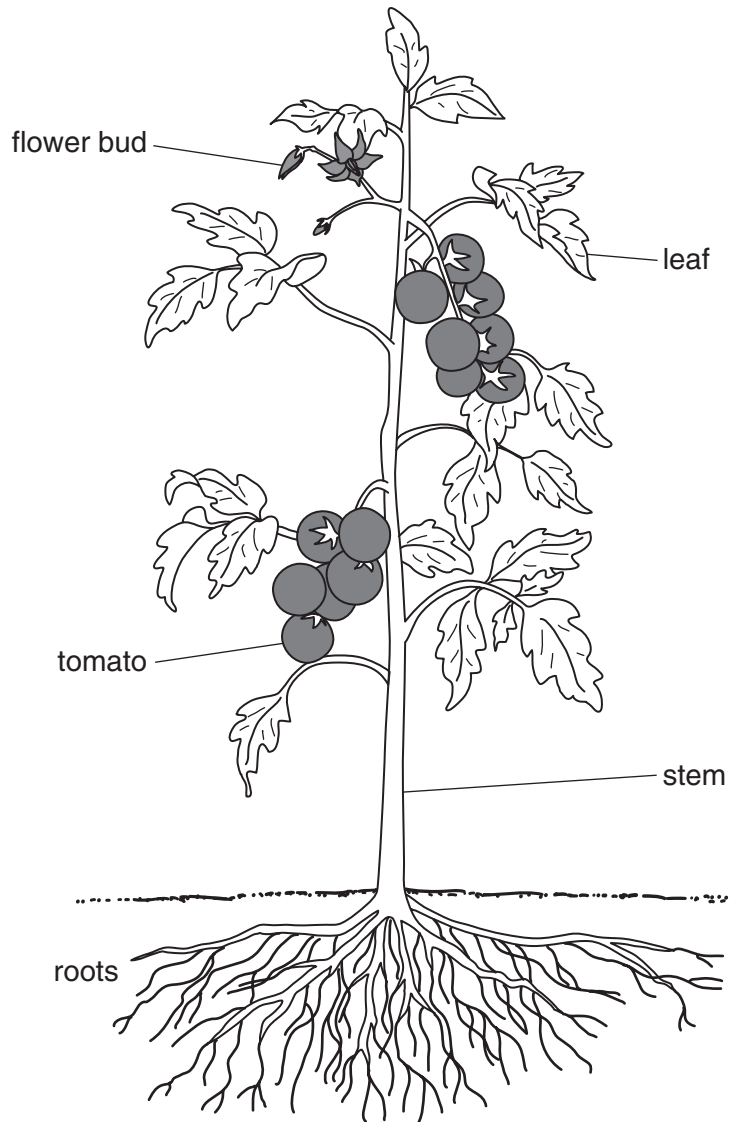
1 .....

2 ..... [2]

[Total: 5]

2 Lindsay wants to grow tomato plants from seeds.

(a) Look at the diagram of a tomato plant.



Put a ring around the part of the plant which contains seeds.

[1]

- (b) Lindsay buys a packet of tomato seeds. The seeds are sealed inside a bag. Why are the seeds sealed in a bag?

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

To stop them...

- photosynthesising
- being pollinated
- being fertilised
- germinating
- rotting

[2]

- (c) The packet of seeds has a label that states,

“Guaranteed 98% germination rate”.

Describe how Lindsay could test whether the germination rate was really 98%.

.....

.....

.....

..... [3]

- (d) Lindsay can grow the tomato plants in different ways.

Draw a straight line from each **growing medium** to the correct **advantage** and to the correct **disadvantage** of use.

advantage	growing medium	disadvantage
easy to control water and oxygen levels	garden soil	no support for growing plants
contains correct minerals	compost bought from a Garden Centre	expensive to buy in small sacks
free	using a hydroponics system	contains many pests

[4]

[Total: 10]

Turn over

3 Look at the information about the percentage of different types of farming in the UK.

type of farming	percentage%
poultry	4
horticulture	6
dairy	12
arable	23
cattle, sheep for meat	29
mixed farming	

(a) The list includes all types of farming.

Calculate the percentage of mixed farming in the UK.  
You must show your working.

% mixed farming = ..... [2]

(b) Suggest **one** advantage of having different types of farming on the same farm.

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

(c) Complete the sentences about types of farming.

Choose from,

**eggs      garden      plants      milk      sheep      wheat**

Dairy farming produces .....

Arable farming produces .....

Poultry farming produces .....

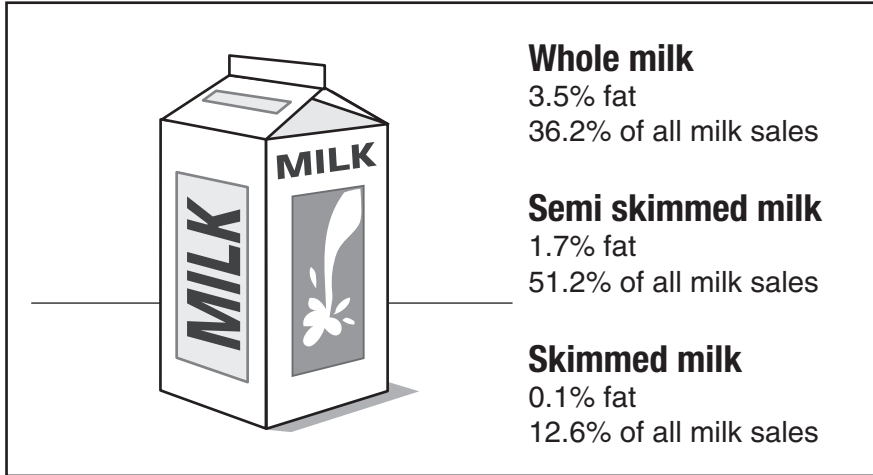
[3]

[Total: 6]

4 Cows produce milk.

(a) Look at the information about different types of milk.

Skimmed and semi-skimmed milk have different amounts of cream removed.



Semi-skimmed milk has the highest sales.

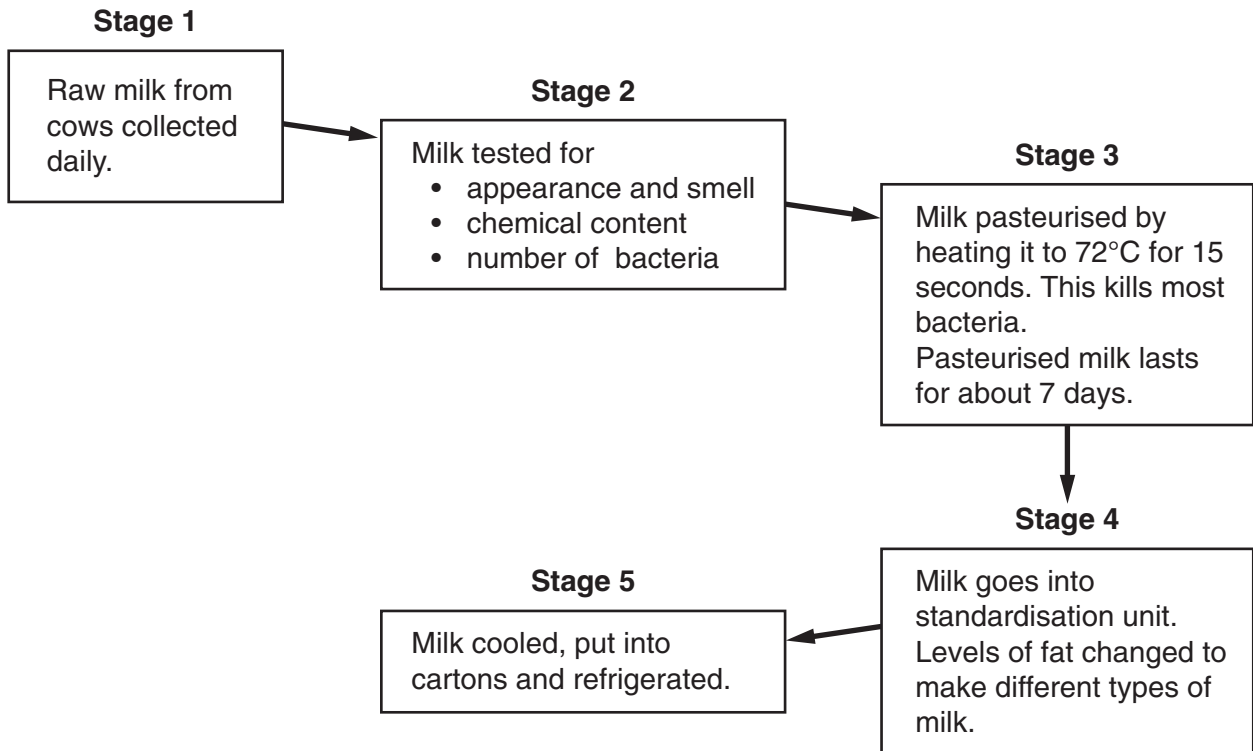
Suggest reasons why.

.....

.....

..... [2]

(b) Look at the information about how milk is processed.



(i) In **Stage 2** the milk is tested.  
Why is the milk tested?

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

- so that everyone can buy it
- to ensure food quality
- to make sure it is safe to drink
- to control its price
- to make the cow healthy

[2]

(ii) In **Stage 2**, which of the three tests is a **qualitative** test?

..... [1]



(iii) In **Stage 3**, milk is pasteurised.

Suggest why pasteurised milk only lasts about 7 days.

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

(iv) In **Stage 5**, the milk is cooled.

Explain why.

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

[Total: 9]

5 (a) DEFRA is an organisation that regulates agriculture.

(i) Write down the name of **one other** organisation that regulates agriculture.

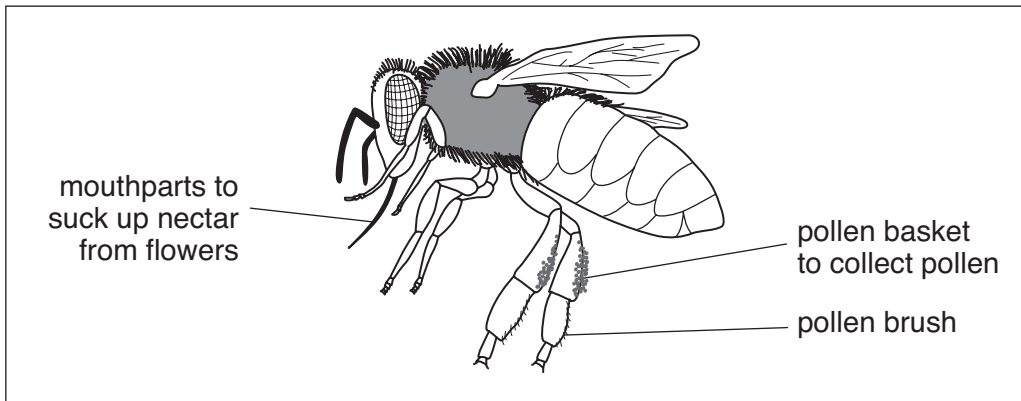
..... [1]

(ii) Write down the name of **one** organisation that supports the food industry.

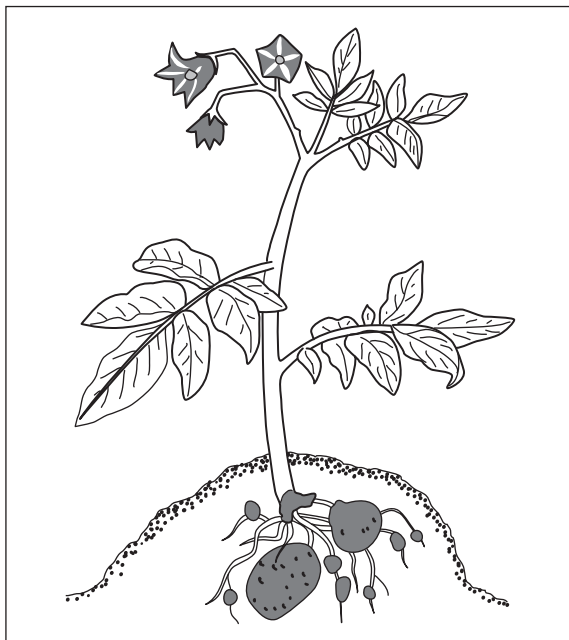
..... [1]

(b) DEFRA has recently delayed the planting of a GM potato crop. The field chosen for the GM crop was near fields used to grow borage. Borage is a useful crop plant.

Look at the information linking a potato crop, bees and borage.



**Bees collect pollen and nectar.  
They make honey in bee hives.**



**potato crop**



**borage plant**

(i) Why is it important for the borage plants to be pollinated?

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

(ii) The owners of the bee hives had refused to put their hives in the borage fields.

Suggest why.

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

(iii) The borage crop is used to make oil.  
An average borage oil crop is about 0.5 tonnes / hectare.  
The oil is sold for £2000 a tonne.  
A borage farmer has three fields, each of 6 hectares in size.

What would his total average borage crop be worth?  
You must show your working.

value of total borage crop ..... [2]

[Total: 6]

**END OF QUESTION PAPER**

**PLEASE DO NOT WRITE ON THIS PAGE**