

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

Agriculture and Food (Foundation Tier)

FRIDAY 18 JANUARY 2008

Afternoon
 Time: 45 minutes

Candidates answer on the question paper.

Additional materials (enclosed):
 None

Calculators may be used.

Additional materials: Pencil
 Ruler (cm/mm)



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Candidate
 Forename

Candidate
 Surname

Centre
 Number

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Candidate
 Number

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INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or 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.
- Do **not** write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 36.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	7	
2	7	
3	8	
4	7	
5	7	
TOTAL	36	

This document consists of **8** printed pages.

Answer **all** the questions.

- 1 There are many different types of cheese.
 Cheese is produced from milk.
 Cows eat grass and produce milk.
 The milk is collected from the farm by refrigerated tankers.
 The milk is made into cheese at a creamery.
 The cheese is left to mature.
 Lorries deliver it to shops to be sold.

(a) Draw a straight line from each stage of the **food production chain** to the correct description in **cheese production**.

food production chain

growing/producing

collecting

processing

storing

delivering

cheese production

milk collected by refrigerated tankers

cows produce milk

lorries deliver cheese to shops

cheese is left to mature

the creamery makes milk into cheese

[4]

(b) A factory inspector visits the creamery.
Suggest a reason for the visit.

.....
[1]

(c) The Milk Development Council supports the milk industry.
It advertises the benefits of eating dairy products.
Name **one** other organisation that supports a food product.

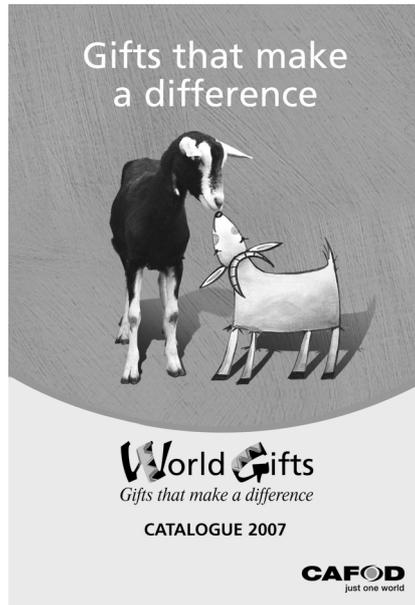
.....[1]

(d) Some foods have a **quality mark**.
Write down **one** advantage of having a quality mark.

.....[1]

[Total: 7]

- 2 Ashraf is looking at a World Gift catalogue.
World gifts help people in developing countries.
Ashraf chooses the gift of a goat.



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- (a) (i) Name **two** things a goat can provide a farmer.

1

2 [2]

- (ii) Explain how your answers in (a)(i) can help the farmer in a developing country.

.....

.....

..... [2]

- (b) The gift also provides training for the farmer to keep the goat in good health.
Write down **three** factors which could affect the health of a goat.

1.....

2.....

3..... [3]

[Total: 7]

3 Joe grows tomato plants.
 He grows five plants in his garden and five plants in his greenhouse.
 He plants the same type of tomato plant.
 He weighs the tomato crop.

(a) He gets 0.5kg of tomatoes from each plant grown in his garden.

(i) What is the total mass of his garden crop of tomatoes?
 Show your working.

.....kg [1]

(ii) Joe's total crop from his greenhouse tomato plants is 20 kg.
 What is the average weight of tomatoes from **one** plant?
 Show your working.

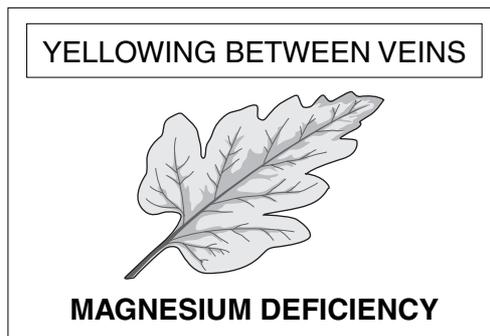
.....kg [1]

(iii) Joe gets a better crop from his greenhouse tomato plants than from his garden tomato plants.
 Suggest **two** reasons why.

1

2 [2]

(b) His outdoor tomato plants have yellowish leaves.
 He tests what is wrong by looking this up in a book.
 He finds out that they need more magnesium.



(i) What type of test is Joe using?
 Put a tick (✓) in the correct box.

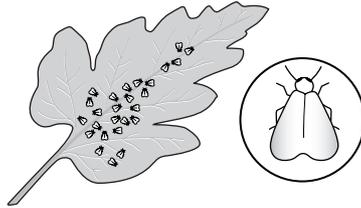
qualitative

semi-quantitative

quantitative

[1]

(ii) His greenhouse tomato plants have whitefly under their leaves.



GREENHOUSE WHITEFLY

Joe could use a chemical or a predator to control these whitefly pests.
Write down **one** advantage of each type of control.

using a chemical

.....

using a predator

.....[2]

(iii) He uses the internet to search for a predator organism to kill the whitefly.
What is the best word to type into his search engine?
Put a **ring** around the best word.

biocontrol

biofly

bionet

bioorganism

bioplant

[1]

[Total: 8]

- 4 Joe's school has closed because of an outbreak of food poisoning. The source of the outbreak has been traced to a butcher's shop in the town. The food poisoning was caused by the harmful microorganism *E. coli*.



- (a) The *E. coli* outbreak may have been caused by microorganisms in the raw meat contaminating the cooked meat.

Write down **two** precautions that would prevent this contamination.

- 1.....

 2.....
 [2]

- (b) Microorganisms can grow very quickly.

They need energy to grow.

Finish the word equation showing the release of energy in aerobic respiration.



- (c) *E. coli* microorganisms grow by dividing into two every 20 minutes.

Joe bought a sausage roll at 9.00am.

Work out how many *E. coli* microorganisms there would be at 11.00am if there was one at 9.00am.

Show your working.

number of *E. coli* = [2]

- (d) *E. coli* is a harmful microorganism.

Name a microorganism which is **useful** to us.

..... [1]

[Total: 7]

5 Henry breeds beef cattle for meat.
He wants to quickly produce meat with a low fat content.
He uses selective breeding to choose the characteristics of rapid weight gain and low fat content.

(a) Selective breeding programmes in cattle can take a long time.
Suggest why.

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

(b) Describe how selective breeding can improve productivity on Henry's farm.

.....
.....
.....
.....[3]

(c) Henry uses artificial insemination techniques with his cattle.

(i) What do you understand by **artificial insemination**?

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

(ii) Write down **two** advantages of using artificial insemination.

1

2[2]

[Total: 7]

END OF QUESTION PAPER

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