

CANDIDATE  
NAME

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**AGRICULTURE**

**5038/12**

Paper 1

**October/November 2017**

**1 hour 45 minutes**

Additional Materials: Answer Booklet/Paper

**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 an HB pencil for any diagrams or graphs.  
Do not use staples, paper clips, glue or correction fluid.  
**DO NOT WRITE IN ANY BARCODES.**

**Section A**

Answer **all** questions.  
Electronic calculators may be used.  
Write your answers in the spaces provided on the Question Paper.  
You are advised to spend no longer than 1 hour on Section A.

**Section B**

Answer any **two** questions.  
Write your answers on the Answer Booklet/Paper provided.  
Enter the numbers of the Section B questions you have answered in the grid.

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.

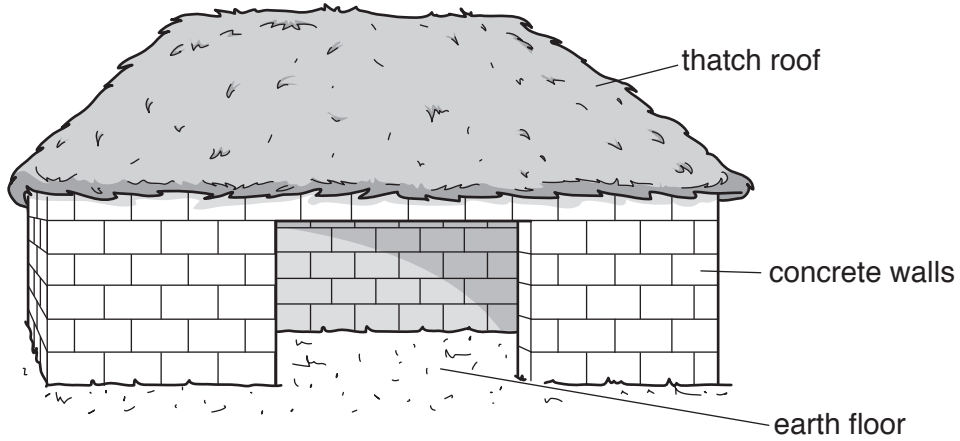
For Examiner's Use	
<b>Section A</b>	/
1	
2	
3	
4	
5	
6	
7	
8	
9	
<b>Section B</b>	/
<b>Total</b>	

This document consists of **15** printed pages and **1** blank page.

Section A

Answer **all** the questions in the spaces provided.

1 The diagram shows a house for a large animal.



(a) Give a different reason for each of the following construction choices.

(i) Concrete blocks are used for the walls.

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

(ii) Thatch is used for the roof.

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

(iii) Earth is used for the floor.

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

(b) Suggest **two** reasons why metal sheets were **not** used for the roof.

1 .....

.....

2 .....

.....

[2]

(c) Explain why a concrete floor might be better than an earth floor when housing large animals.

.....

.....

.....

..... [2]

[Total: 7]

2 The photograph shows farmers keeping goats for meat.



- (a) (i) Production records show that a goat was first weighed at 56 days old, when it had a mass of 6 kg. It was sent to market at 320 days old. The goat was sent to market at a mass of 14 kg.

Calculate the average growth rate per day for the goat from when it was first weighed to sending to market.

Show your working.

growth rate ..... [3]

- (ii) Suggest **three** additional production records which should be kept.

1 .....

2 .....

3 .....

[3]

- (b) Define the term *lactation*.

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

[Total: 7]

3 (a) Fungal diseases can damage crops and fruit.

(i) Name **one** example of a fungal plant disease.

..... [1]

(ii) Describe **three** harmful effects of this disease.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) State **two** methods of reducing fungal disease in a crop and explain how each of these methods work.

method 1 .....

.....

explanation .....

.....

.....

method 2 .....

.....

explanation .....

.....

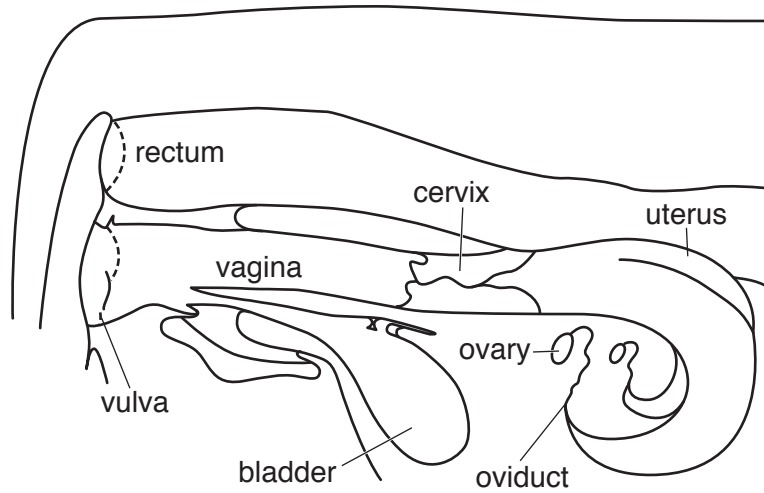
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[4]

[Total: 8]

4 The diagram shows part of a female farm animal.

(a) (i) Mark an **X** on the diagram to show where semen should be deposited during mating.



[1]

(ii) Describe what happens to the penis of a male farm animal before mating.

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

(iii) Castration involves the removal of testicles.

Suggest **two** reasons why some farmers castrate male animals.

1 .....

2 .....

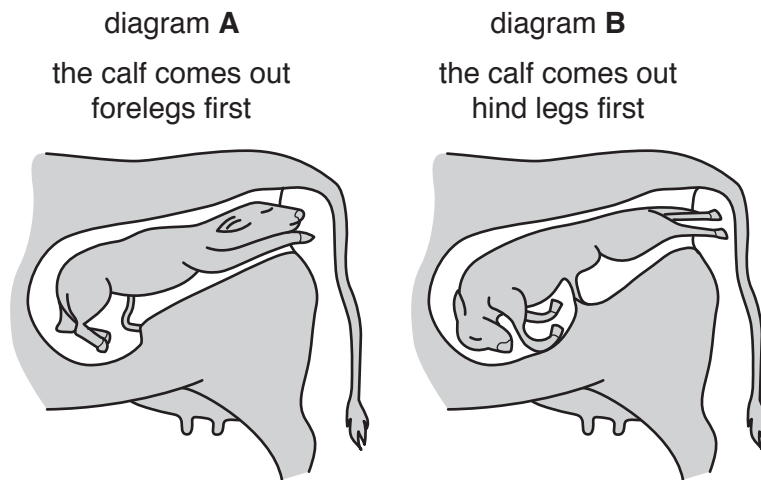
[2]

(b) Complete the table to describe what happens to mother and offspring mammalian farm animals during the stages shown.

stage	what happens
the day before birth	mother: ..... offspring: moves into birth position
at birth	mother: ..... offspring: offspring comes out
shortly after birth	mother: ..... offspring: .....

[4]

(c) The diagrams show two ways in which a mother can give birth.



Explain why there is a greater chance that the calf in diagram **B** will die.

.....

.....

.....

..... [2]

[Total: 10]

5 (a) The life cycle of a pest is shown in the diagram.

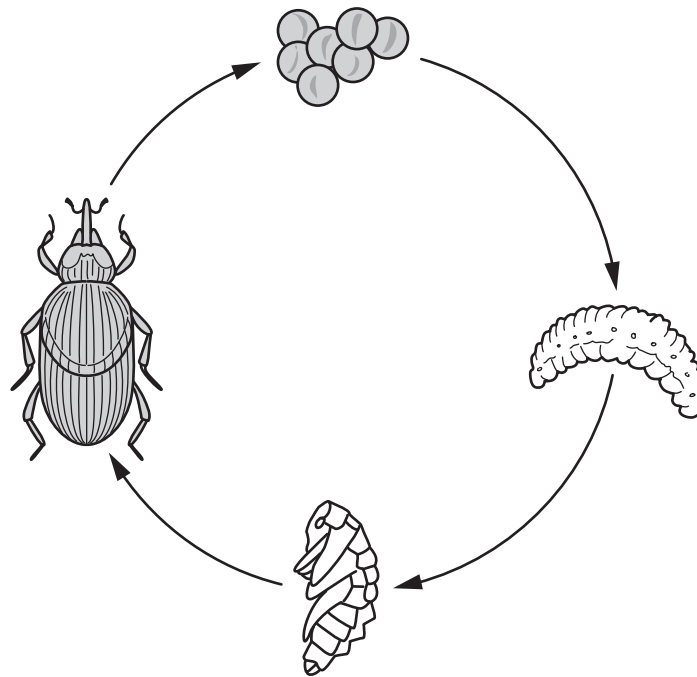
(i) Write each letter **A**, **B**, **C** and **D** once on the diagram to identify the following stages of the life cycle.

**A** adult

**B** egg

**C** larva

**D** pupa



[2]

(ii) Suggest which **two** stages of this pest's life cycle are **not** directly damaging to plants and give a reason.

stages ..... and .....

reason .....

.....

[3]



(b) (i) Name a piercing and sucking crop pest and give an example of the damage it causes.

pest .....

damage .....

.....

.....

[2]

(ii) Describe how this pest can be controlled.

.....

..... [1]

[Total: 8]

6 A mixed ration contains both forage and concentrates.

(a) State **three** benefits of feeding a mixed ration to farm animals.

- 1 .....
- .....
- 2 .....
- .....
- 3 .....
- .....

[3]

(b) The table shows the price of different animal feeds and some food conversion data for these animal feeds.

Complete the table to show the cost for a 5 kg gain in mass when feeding on grass.

Show your working.

	animal feed	cost /\$ per kg	food conversion /kg animal feed per kg gain in mass	cost for a 5 kg gain in mass /\$
<b>A</b>	concentrate	0.20	5.0	5.0
<b>B</b>	grass	0.04	8.0	.....
<b>C</b>	hay	0.10	6.0	3.0
<b>D</b>	succulent	0.06	7.0	2.1

[3]

(c) (i) State **two** reasons why the cost of hay is greater than the cost of grass.

1 .....

.....

2 .....

.....

[2]

(ii) Suggest why a farmer might add another foodstuff, such as vegetable waste, to the diet of an animal.

.....

..... [1]

(d) Describe **two** advantages of the ruminant digestive system compared to the non-ruminant digestive system.

1 .....

.....

2 .....

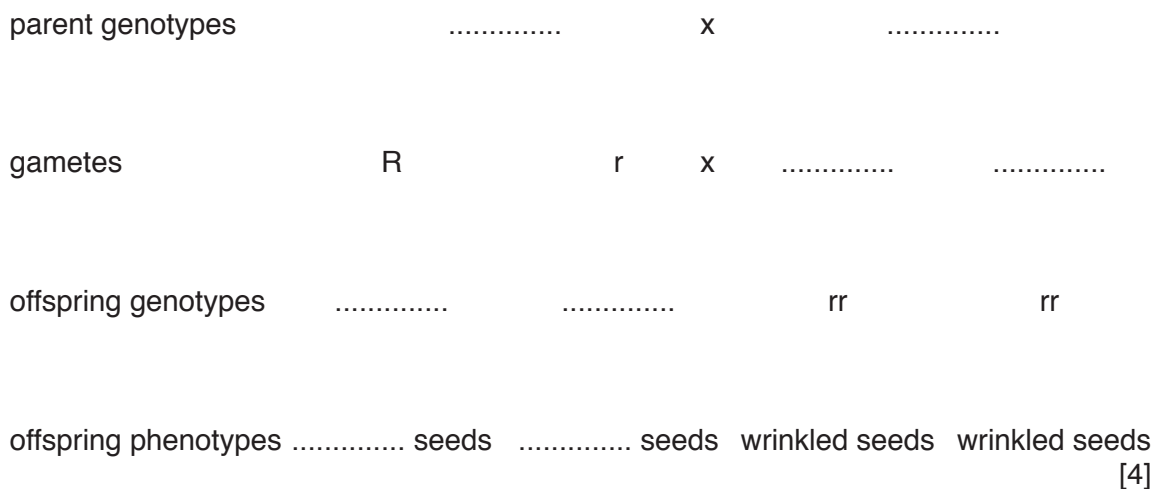
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[2]

[Total: 11]

7 A single gene controls whether seeds produced by a pea plant have wrinkled or smooth skin. Pea plants producing seeds with wrinkled skin have only the allele *r* of this gene. Plants producing smooth seeds have at least one copy of the dominant allele *R*.

(a) (i) Complete the diagram by adding the missing alleles and phenotypes.



(ii) State what is meant by the terms *heterozygous* and *phenotype*.

heterozygous .....

.....

phenotype .....

.....

[2]

(b) What is the expected percentage of offspring producing smooth seeds if parents carrying allele pairs *RR* and *Rr* are crossed?

- A 0%
- B 25%
- C 75%
- D 100%

Answer **A, B, C** or **D** ..... [1]

(c) Explain how artificial selection is used to create improved cultivars.

.....

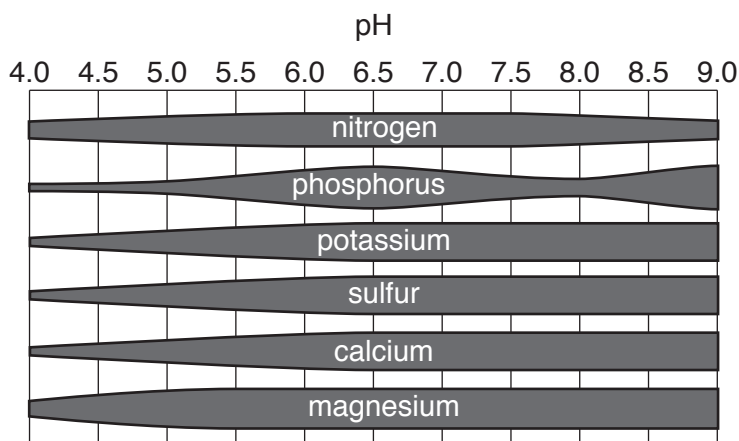
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.....

..... [2]

[Total: 9]

- 8 (a) The chart shows the availability of various nutrients to a crop at a range of pH values. The thicker the line, the more available the nutrient is at that pH.



(i) State which nutrient is least available between pH 7.5 and 8.5.  
 ..... [1]

(ii) From the chart, at which pH range are nutrients most available to this crop?

- A 4.0–4.5
- B 6.5–7.0
- C 7.5–8.0
- D 8.0–8.5

Answer **A, B, C or D** ..... [1]

(b) A field has an acidic soil.

(i) Describe **one** way to increase the soil pH of this field.  
 .....  
 ..... [1]

(ii) Explain why it is important to regularly test the soil pH of a field.  
 .....  
 ..... [1]

(iii) Explain why it is important to take several samples when testing the soil pH of a field.  
 .....  
 ..... [1]

[Total: 5]

9 There are many new methods of producing crops. One new method is hydroponics.

(a) Describe how hydroponics differs from traditional ways of producing crops.

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

(b) (i) Describe **two** benefits of producing crops using hydroponics.

1 .....  
.....  
2 .....  
..... [2]

(ii) Suggest **one** disadvantage of producing crops using hydroponics.

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

[Total: 5]

**Section B**

Answer any **two** questions.

Write your answers on the separate paper provided.

- 10** (a) State what is meant by the term *translocation*. [4]  
(b) Describe how plants make their own food. [5]  
(c) Explain how a plant absorbs the substances it requires for growth from the soil. [6]
- 11** (a) Describe signs of ill-health in livestock. [5]  
(b) Describe how diseases are spread between animals and how this can be avoided. [4]  
(c) Explain the problems which can be caused by livestock parasites. [6]
- 12** (a) State what is meant by the term *pollination*. [3]  
(b) Describe the structure and functions of the flowers of a maize plant. [6]  
(c) Explain how asexual reproduction and sexual reproduction differ in crops. [6]
- 13** (a) Describe how to cultivate a named crop. [4]  
(b) Name a species of weed, describe its harmful effects and how it spreads. [5]  
(c) Explain how weeds are controlled in crops. [6]
- 14** (a) Describe the properties of a clay soil. [4]  
(b) Describe ways soil structure can be improved. [6]  
(c) Explain why soil temperature affects plant growth. [5]

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