

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**ENVIRONMENTAL AND LAND-BASED SCIENCE**  
Livestock Husbandry (Higher Tier)

**B495/02**

Candidates answer on the question paper.

**OCR supplied materials:**  
None

**Other materials required:**

- Electronic calculator
- Pencil
- Ruler (cm/mm)

**Friday 27 May 2011**  
**Morning**

**Duration: 45 minutes**



Candidate forename		Candidate surname	
-----------------------	--	----------------------	--

Centre number						Candidate number				
---------------	--	--	--	--	--	------------------	--	--	--	--

**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 **16** pages. Any blank pages are indicated.

Answer **all** the questions.

- 1 (a) The picture shows the F<sub>1</sub> generation piglets produced by crossing two different breeds of pigs.



The F<sub>1</sub> generation is always:

- A a hybrid
- B faster growing
- C dominant
- D recessive

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

- (b) Which one of the following is the correct definition of **hybrid vigour**?

- A The mating of two different pure breeds.
- B The mating of two closely related animals.
- C The physical improvements produced by crossing two genetically different parents.
- D The physical improvements produced by crossing two genetically similar parents.

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

2 A range of different foods are used to feed farm animals.

Examples are shown in the photographs below.

**A** hay



**B** silage



**C** calf pellets



**D** apple pulp



Complete the table by matching the different foods, **A**, **B**, **C** or **D**, and the class of food to its description.

Use each term and each letter only once.

One has been done for you.

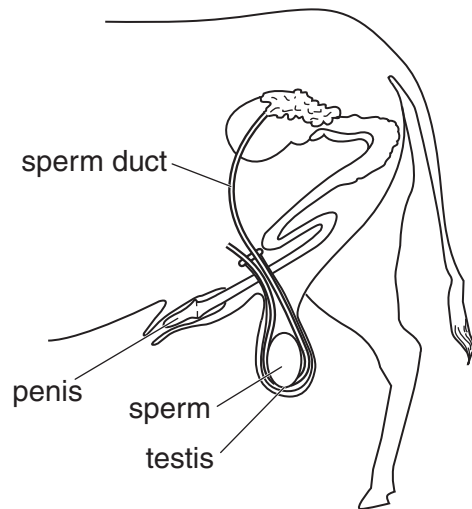
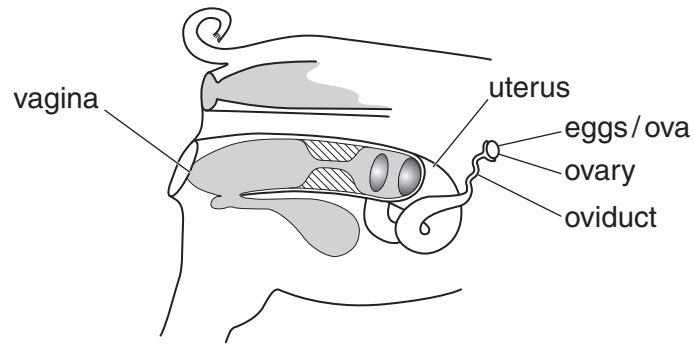
**class of food**

- bulk feed
- concentrate feed
- roughage
- succulent

example of this food	description of food	class of food
<b>B</b>	low nutrient content, high volume	bulk feed
	high in fibre	
	high in water	
	high nutrient content, low volume	

[2]

3 The diagrams below show male and female reproductive systems.



Which of the following **produce** gametes (sex cells)?

Put **ring**s around the **two** correct answers in the list below.

**egg**

**ova**

**ovary**

**oviduct**

**penis**

**sperm**

**sperm duct**

**testis**

**uterus**

**vagina**

4 The photograph shows a poultry house used for intensive production.



Which of the following is **not** true of intensive production?

- A food can be organic
- B food can be produced cheaply
- C less labour is needed
- D less energy is used

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

5 Hormones control many processes within animals.

(a) Which of the following is a hormone that is involved in reproduction in female animals?

- A adrenalin
- B oestrogen
- C pheromone
- D thyroxine

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

(b) Sheep normally have lambs in the spring.

Suggest how this is controlled by the environment.

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

6 Parasites are an important economic concern for farmers.

(a) Which of the following is a sign that an animal has parasites?

- A eating less and gaining weight
- B eating less and losing weight
- C eating more and gaining weight
- D eating more and losing weight

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

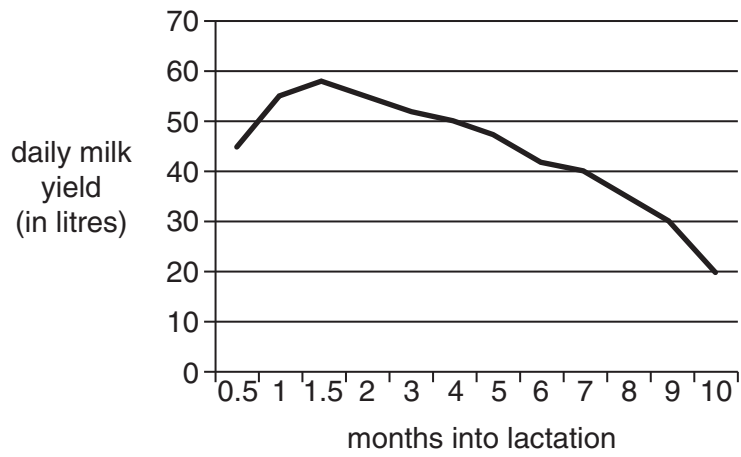
(b) The farmer treats his animals for internal parasites.

How can the farmer prevent **re-infection** by these parasites?

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

7 This question is about the changes in yield and composition of milk during lactation.

(a) The graph shows how the milk yield of a cow changes over the lactation period.



Suggest **why** the amount of milk a cow produces changes as shown by the graph.

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

(b) Describe how the composition of the milk changes over the lactation period.

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

8 Embryo transfer can be used in animal breeding.

Embryo transfer requires careful manipulation of both the donor and recipient cows' reproductive cycles.

(a) Why is it necessary to give the donor cow hormones if it is to be used as a source of embryos?

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

(b) The recipient cow will have no influence on the calf's genotype.

Explain why.

..... [1]

(c) Suggest **two** reasons why some scientists are concerned over the impact artificial insemination and embryo transfer will have on the gene pool.

1 .....

.....

2 .....

..... [2]



9 The photograph shows one rare breed of sheep.



Rare breeds are breeds of livestock that have become less popular with farmers over many years.

Suggest **three** reasons why these breeds have become less popular.

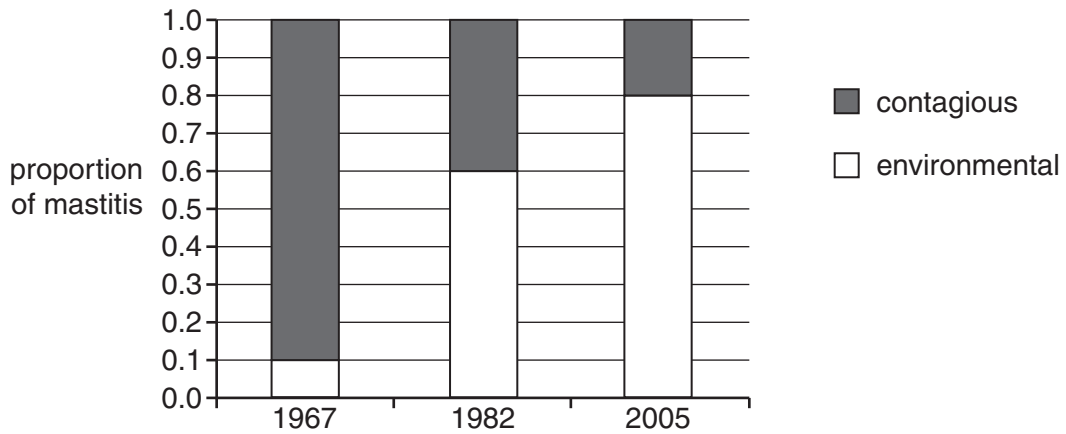
- 1 .....
  - 2 .....
  - 3 .....
- ..... [3]

10 Mastitis is a bacterial disease infecting the udders of cows.

Mastitis can be caught from:

- other cattle – **contagious** mastitis
- dirty wet bedding and a dirty environment – **environmental** mastitis.

The graph shows the percentage of these two types of mastitis in the years 1967, 1982 and 2005.



Describe the changes in the incidence of mastitis as a result of each of these sources.

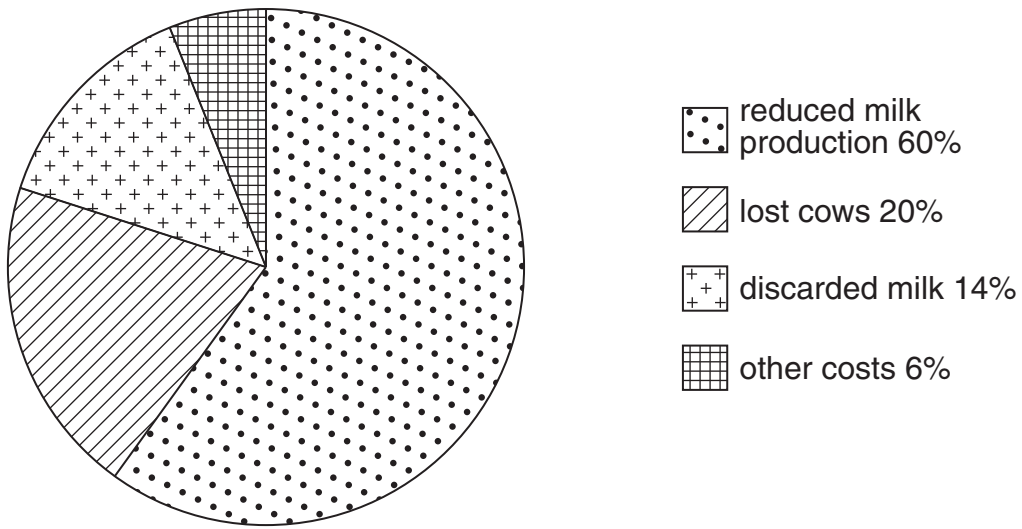
.....

.....

.....

..... [1]

11 The chart shows the total losses caused by mastitis on a typical dairy farm.



(a) How much milk is lost as a result of mastitis?

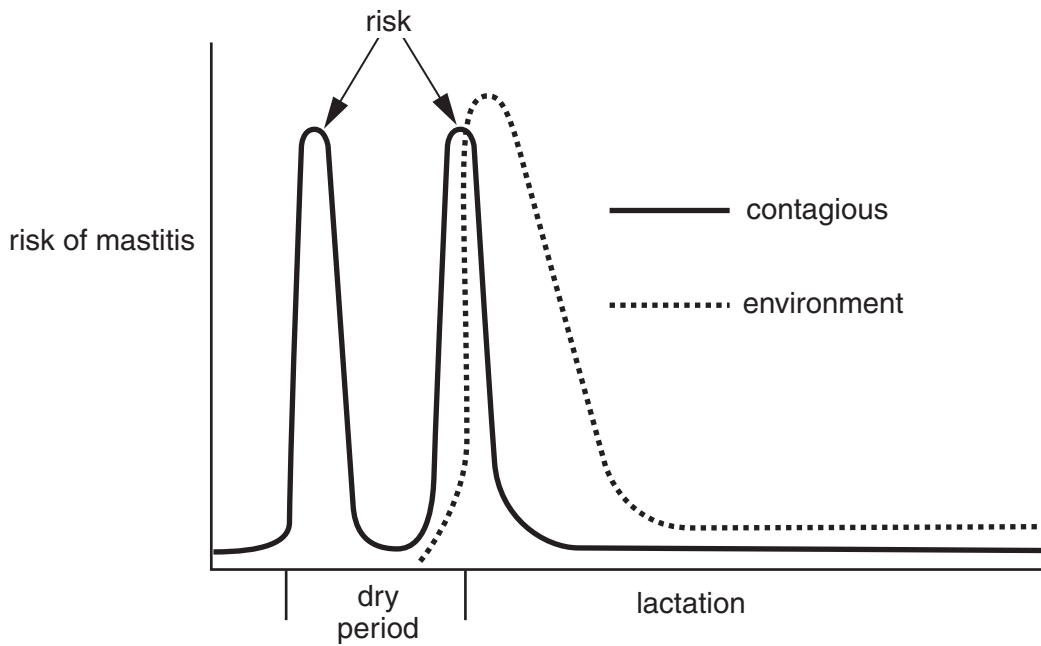
..... % [1]

(b) For a typical dairy farm the average financial cost of mastitis is £150 000 per year.

Calculate the cost to the farmer of the lost cows.

£ ..... [1]

12 The graph shows how the risk of contagious and environmental mastitis changes over the year.



Use the graph to describe **three** ways the risk of mastitis changes over the year.

- 1 .....
  - 2 .....
  - 3 .....
- [3]

13 Contagious mastitis is passed from cow-to-cow usually during milking.



How could the farmer reduce the risk of **contagious** mastitis?

.....

.....

.....

..... [2]

14 The picture shows a meat-chicken and egg-layer side-by-side.



A student wanted to answer this question:

“Do meat-chickens grow faster than egg-layers?”

Design an investigation to test this question.

Describe what the student would have to do.

.....

.....

.....

.....

.....

.....

..... [4]

15 Here is a photograph of some piglets.



Explain the difference between an animal's genotype and its phenotype.

.....

.....

.....

..... [2]

**END OF QUESTION PAPER**

**PLEASE DO NOT WRITE ON THIS PAGE**



**Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.