BOARD OF STUDIES
NEW SOUTH WALES

Centre Number

Student Number

2006

HIGHER SCHOOL CERTIFICATE EXAMINATION

Agriculture
Paper 1

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black or blue pen
- Draw diagrams using pencil
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of this page and pages 5, 7, 9 and 13

Total marks – 70

Section I Pages 2–8

25 marks

- Attempt Questions 1–3
- Allow about 40 minutes for this section

Section II Pages 9–16

30 marks

- Attempt Questions 4–5
- Allow about 50 minutes for this section

Section III Page 17

15 marks

- Attempt ONE question from Questions 6–9
- Allow about 30 minutes for this section

Section I

25 marks
Attempt Questions 1–3
Allow about 40 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 1 (10 marks)

Name ONE farm product you have studied.

Name of product .....

For the farm product you have named:

(a) State ONE way this product may be sold. **1**

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(b) Outline ONE on-farm method that may be used to improve the quality of the named product. **2**

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(c) Explain how the off-farm processing of the named product may be influenced by consumer demand. **3**

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Question 1 continues on page 3

Marks

Question 1 (continued)

(d) Explain how governments may intervene in the production or marketing of the named product. **4**

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End of Question 1

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Centre Number

Student Number

Section I (continued)

Marks

Question 2 (7 marks)

An example of nutrient cycling in a farm system is shown.

(a) State ONE way that nutrients may be lost from a farm system. **1**

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Question 2 continues on page 6

Marks

Question 2 (continued)

(b) Outline ONE method a farmer may use to manage nutrient levels in a farm system. **2**

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(c) Explain how micro-organisms or invertebrates assist in the cycling of nutrients. **4**

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End of Question 2

Centre Number

Section I (continued)

Student Number

Marks

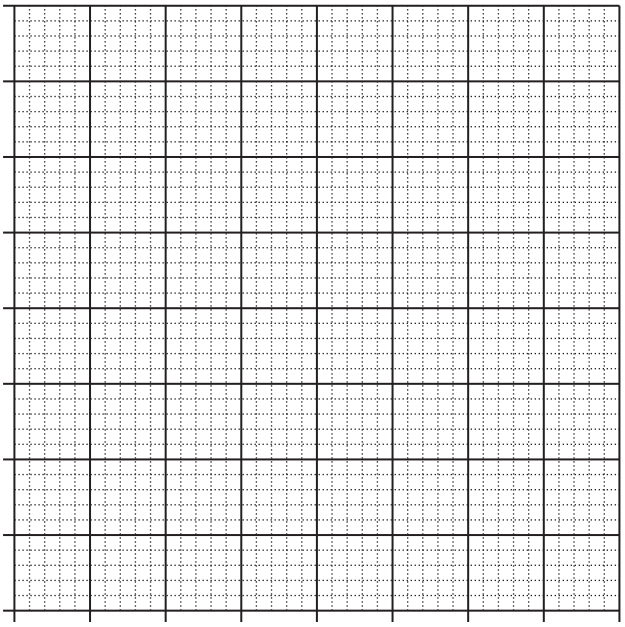
Question 3 (8 marks)

A researcher conducted an experiment to examine the effect of applied nitrogen fertiliser on barley yield.

The results of the experiment are shown in the table.

Applied nitrogen fertiliser (kg N/ha)	*Barley yield* (t/ha)
0	1.4
10	1.8
20	2.2
40	2.8
80	3.2
160	2.4

(a) Construct a graph using the data shown in the table. **3**



Question 3 continues on page 8

Marks

Question 3 (continued)

(b) Outline the reason for including a rate of 0 kg N/ha in the experiment. **2**

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(c) Justify why a farmer may choose to apply a rate of nitrogen fertiliser other than the 80 kg N/ha rate shown in the table. **3**

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End of Question 3

Agriculture

Centre Number

Section II

Student Number

30 marks
Attempt Questions 4–5
Allow about 50 minutes for this section

Answer the questions in the spaces provided.

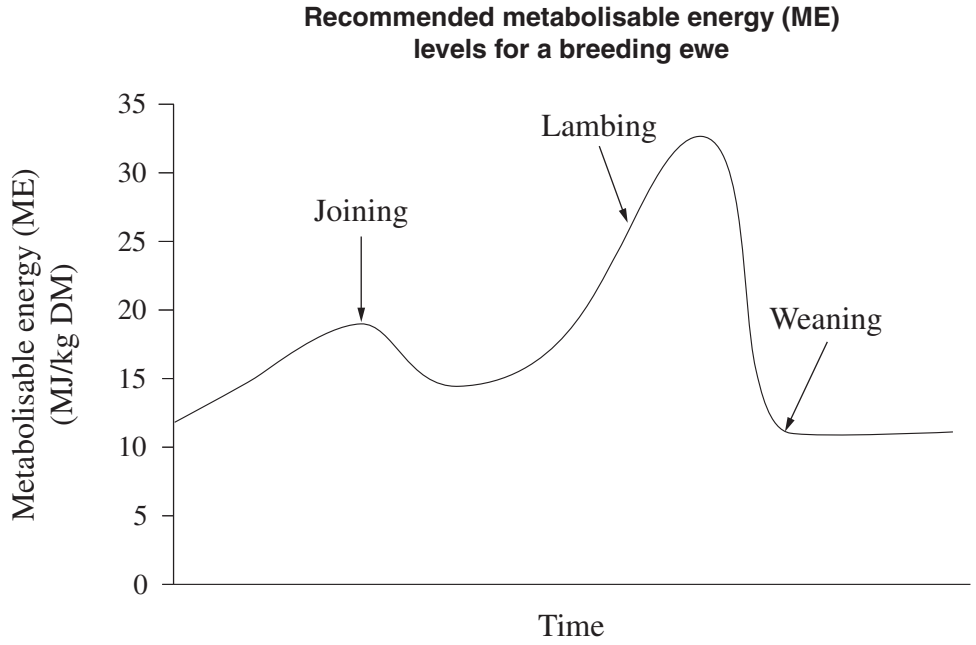
Question 4 (15 marks)

Please turn over

Marks

Question 4 (15 marks)

The graph shows the recommended metabolisable energy (ME) levels, measured in megajoules per kilogram of dry matter (MJ/kg DM), for a breeding ewe during a production cycle.



(a) Account for the increasing ME levels leading up to lambing. **2**

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(b) Explain an effect on ewe fertility of increasing ME levels prior to joining. **3**

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Question 4 continues on page 11

Question 4 (continued)

(c) Explain how TWO factors, other than nutrition, may affect the fertility of farm animals. **4**

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Question 4 continues on page 12

Marks

Question 4 (continued)

(d) Discuss the genetic basis of a breeding system used to improve animal production. **6**

Name of breeding system .....

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End of Question 4

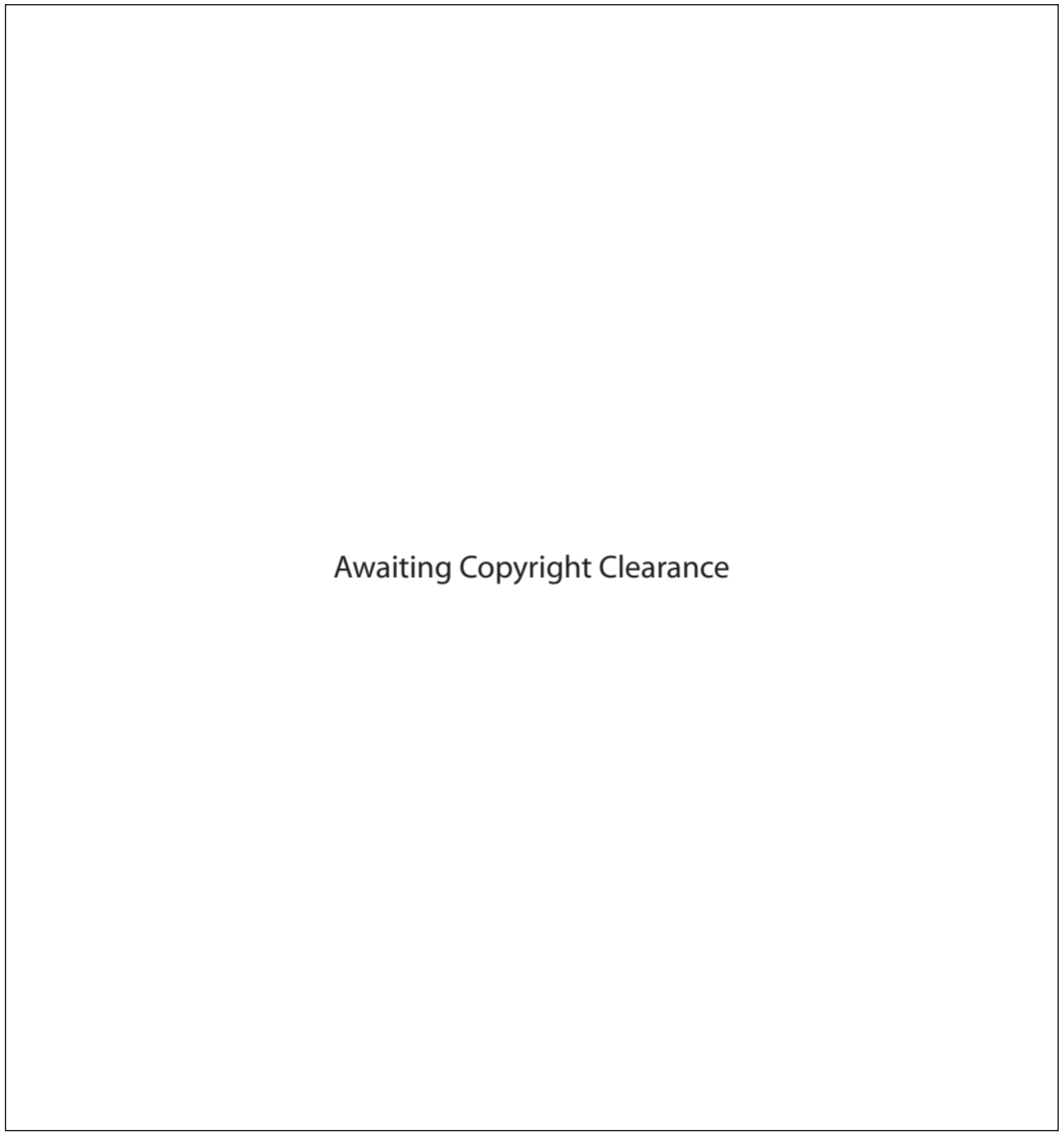
Question 5 (15 marks)

Please turn over

Marks

Question 5 (15 marks)

A chemical label for a herbicide used to control weeds in native pastures is shown.



(a) Identify from the label the safety equipment that must be worn when preparing the spray *Pasture Plus*. **2**

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Question 5 continues on page 15

Marks

Question 5 (continued)

(b) Explain how incorrect usage of agricultural chemicals may affect farm production systems. **3**

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(c) Explain how TWO environmental factors may affect plant production. **4**

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Question 5 continues on page 16

Question 5 (continued)

(d) Discuss the advantages and disadvantages of using native pasture species in a pasture production system. **6**

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End of Question 5

Agriculture

Section III

15 marks
Attempt ONE question from Questions 6–9
Allow about 30 minutes for this section

Answer the question in a writing booklet. Extra writing booklets are available.

Marks

Question 6 (15 marks)

(a) Describe TWO characteristics of soils that can be measured. **5**

(b) Discuss, using examples, how the broader community and farmers can work together to reduce the harmful environmental effects of agriculture. **10**

OR

Question 7 (15 marks)

(a) Describe the interaction between the host, pathogen and environment in causing disease. **5**

(b) Discuss, using examples, how a farmer can manage the levels of pathogenic microbes or invertebrates present on the farm. **10**

OR

Question 8 (15 marks)

(a) Describe ways farmers may use climatic information in farm decision-making. **5**

(b) Discuss, using examples, the major components of plant interference AND how these components may be managed to improve plant production. **10**

OR

Question 9 (15 marks)

(a) Describe ways a farmer meets animal welfare requirements when managing animal production systems. **5**

(b) Discuss, using examples, the effects of animal hormones on both animal production AND animal behaviour. **10**

End of paper

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BOARD OF STUDIES
NEW SOUTH WALES

2006

HIGHER SCHOOL CERTIFICATE EXAMINATION

Agriculture
Paper 2

General Instructions

- Paper 2 should be attempted only by students who have studied Electives
- Reading time – 5 minutes
- Working time – 1 hour
- Write using black or blue pen
- Board-approved calculators may be used

Total marks – 30

- Attempt TWO questions from Questions 1–6
- Allow about 30 minutes for each question

Total marks – 30
Attempt TWO questions from Questions 1–6
Allow about 30 minutes for each question

Answer each question in a SEPARATE writing booklet. Extra writing booklets are available.

Marks

Question 1 — Agribusiness (15 marks)

(a) Outline the impact ONE international market may have on farm business. **3**

(b) Describe the findings of a study relating to the impact of a rural business on an agricultural industry. **4**

(c) Evaluate the role farm advisory services play in a farmer's decision-making process. **8**

Question 2 — Animal Management (15 marks)

(a) Outline the potential impact of ONE genetic technology on animal production systems. **3**

(b) Describe the methods that were used to ensure unbiased results in a study relating to the use of a current technique/technology in animal production. **4**

(c) Evaluate the use of objective measurement in an animal breeding program. **8**

Question 3 — Horticulture (15 marks)

(a) Outline ONE way horticulture is important to the Australian economy. **3**

(b) Describe the experimental design that was used in a study relating to a technological innovation in a horticultural industry. **4**

(c) Evaluate the importance of management in balancing economic viability and environmental sustainability of a horticultural system. **8**

Marks

Question 4 — Innovation and Diversification (15 marks)

(a) Outline ONE legal or other institutional requirement associated with establishing an alternative agricultural system, enterprise or technology. **3**

(b) Describe the types of information or data that were considered in a study that has led to the implementation of an alternative agricultural system or technology. **4**

(c) Evaluate factors the farm manager should consider for the successful introduction of an alternative agricultural system or technology. **8**

Question 5 — Plant Management (15 marks)

(a) Outline ONE method that is used to produce new plant genetic material. **3**

(b) Describe the method that was used to obtain data in a study related to plant breeding or advancing productivity in plant production systems. **4**

(c) Evaluate farm management techniques used to optimise water and nutrient uptake in a plant production system. **8**

Question 6 — Sustainable Land and Resource Management (15 marks)

(a) Outline ONE current recommended procedure to alleviate a soil degradation problem. **3**

(b) Describe the methods that were used to present data in a study related to the efficient use of water. **4**

(c) Evaluate the importance of various land management practices in causing one type of soil degradation. **8**

End of paper

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