BOARD OF STUDIES
NEW SOUTH WALES

Centre Number

Student Number

2008

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 3, 7, 11 and 13.

Total marks – 70

Section I Pages 2–9

25 marks

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

Section II Pages 11–14

30 marks

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

Section III Page 15

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 (7 marks)

Name ONE farm product you have studied.

Name of product .....

For the farm product you have named:

(a) Name ONE measure that is used to assess the quality of this product. **1**

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(b) Outline ONE way the quality of this product can be improved. **2**

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(c) Explain the role of advertising and promotion in the marketing of this product. Use an example in your answer. **4**

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Centre Number

Student Number

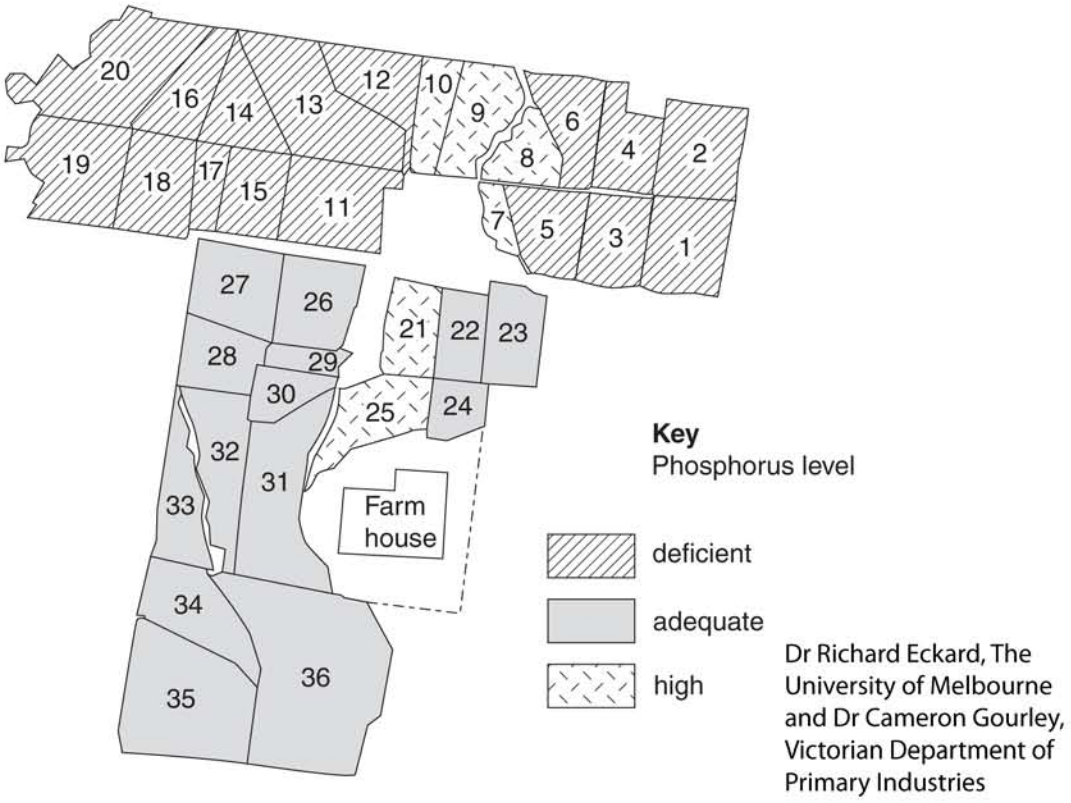
Section I (continued)

Question 2 (9 marks)

Marks

Question 2 (9 marks)

(a) The diagram shows the soil phosphorus level in 36 different paddocks on an Australian dairy farm.



(i) Give TWO possible reasons for the variation in phosphorus levels on this farm. **2**

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(ii) Explain how a farmer can manage the levels of soil phosphorus across this farm. **3**

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Question 2 continues on page 5

Marks

Question 2 (continued)

(b) What impact has the change in land use practices had on Australian agriculture? **4**

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End of Question 2

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Centre Number

Student Number

Section I (continued)

Question 3 (9 marks)

Marks

Question 3 (9 marks)

A farmer conducted a trial on 18 pigs to determine the effect of three different feed types on their final weight.

The 18 pigs were randomly divided into 3 equal groups and placed in different pens. Each group was fed a different feed type.

The final weight of each pig is shown.

	Final weight of pigs (kg)						*Mean final weight* (kg)	*Standard deviation* (kg)
Pen 1 Feed *X*	105	112	99	97	104	107		5.4
Pen 2 Feed *Y*	107	108	104	112	105	106	107.0	
Pen 3 Feed *Z*	100	107	100	113	109	110	106.5	5.4

(a) The mean final weight and standard deviation have been calculated for some of the groups of pigs.

Calculate:

(i) the mean final weight of the pigs in Pen 1. **1**

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(ii) the standard deviation of the weight of pigs in Pen 2. **1**

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Question 3 continues on page 9

Marks

Question 3 (continued)

(b) Based on the results of this trial, which feed should be selected? Justify your answer. **3**

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(c) Why is it important to consider other information before using this feed? **4**

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End of Question 3

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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.

Marks

Question 4 (15 marks)

(a) Outline ONE legal obligation of farmers in controlling animal diseases. **2**

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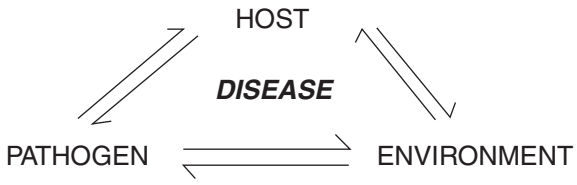
(b) For an animal disease, complete the following table. **3**

Name of animal disease	
Cause	
Symptoms	

Question 4 continues on page 12

Question 4 (continued)

(c) The diagram illustrates the interaction of components involved in the development of pathogenic diseases.



How can a farmer use the information in this diagram to prevent or control a named animal disease? **4**

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(d) Compare the physiology of monogastric digestion and ruminant digestion. **6**

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End of Question 4

Centre Number

Student Number

Section II (continued)

Marks

Question 5 (15 marks)

(a) Outline ONE role of water in plant growth. **2**

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(b) The table shows the amount of soil moisture at sowing, the amount of rainfall during growth, and crop yield over a four year period. All other management conditions remained the same.

Year	*Amount of soil moisture present at sowing* (mm)	*Amount of rainfall during crop growth* (mm)	*Crop yield* (t/ha)
2004	150	250	4.6
2005	60	340	3.8
2006	90	110	1.5
2007	50	100	0.8

In relation to water, account for the variation in crop yield as shown in the table. **3**

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Question 5 continues on page 14

Marks

Question 5 (continued)

(c) Evaluate a management technique a farmer can use to maximise the amount of soil moisture at sowing. **4**

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(d) Explain the interaction between plant genotype and the environment on plant productivity. Use examples to illustrate your answer. **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 the role of microbes and invertebrates in the decomposition of organic matter. **5**

(b) Discuss the use of crop rotation in improving sustainability of Australian farming systems. **10**

OR

Question 7 (15 marks)

(a) Describe the changes that occur in the energy of a food after it has been fed to an animal. **5**

(b) Analyse factors that affect growth and development in farm animals. **10**

OR

Question 8 (15 marks)

(a) Describe a plant breeding technique used to modify the genetic basis of a plant. **5**

(b) Discuss techniques available to farmers in managing pasture production systems. **10**

OR

Question 9 (15 marks)

(a) Describe a marketing chain, including an example of government intervention, for a named product. **5**

(b) Evaluate the importance of continued scientific research on ensuring the future of Australian agriculture. **10**

End of paper

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BOARD OF STUDIES
NEW SOUTH WALES

2008

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) Describe the ways in which the information was presented for a study undertaken to determine the impact of a large rural business organisation on agricultural industries. **3**

(b) Explain strategies that have improved the marketing opportunities for an agricultural product. **4**

(c) Evaluate the various sources of finance available to assist farm business operations. **8**

Question 2 — Animal Management (15 marks)

(a) Describe the research methodology used in a study of a current technique/technology which is advancing productivity in animal production systems. **3**

(b) Explain the development of resistance by pests to chemicals used in animal production systems. **4**

(c) Evaluate the management techniques farmers can use to manipulate reproduction in farm animals. **8**

Question 3 — Horticulture (15 marks)

(a) Describe the research methodology used in a study of a technological innovation aimed at improving productivity in a horticultural industry. **3**

(b) Explain the influence of a changing domestic market on the types of products produced within a horticultural industry. **4**

(c) Evaluate the role of the manager in manipulating the horticultural system to balance economic viability and environmental sustainability. **8**

Marks

Question 4 — Innovation and Diversification (15 marks)

(a) Describe the experimental design used in a study that led to the implementation of an alternative production system or technology. **3**

(b) Explain the factors that led to the development of an alternative agricultural system or technology. **4**

(c) Evaluate the impact of marketing techniques on the introduction of an innovation. **8**

Question 5 — Plant Management (15 marks)

(a) Describe the types of data collected in a study related to improving plant productivity. **3**

(b) Explain the influence of management techniques on nutrient cycling in a plant production system. **4**

(c) Evaluate the effect of plant density on the vegetative and reproductive yield in plant production systems. **8**

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

(a) Describe parts of the experimental design that contributed to the reliability of results in a study that is assisting with the conservation and efficient use of water. **3**

(b) Explain, using examples, the role of government in land and resource management. **4**

(c) Evaluate management strategies related to water quality and water supply in agricultural systems. **8**

End of paper

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