BOARD OF STUDIES
NEW SOUTH WALES

Centre Number

Student Number

2007

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, 5, 7 and 11

Total marks – 70

Section I Pages 2–6

25 marks

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

Section II Pages 7–12

30 marks

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

Section III Page 13

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) State ONE input to the farm system required for this product. **1**

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(b) Explain ONE effect the cost of inputs has on the profitability of this product. **2**

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(c) Explain how a farmer can manage the risk associated with meeting a market specification for this product. **4**

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Centre Number

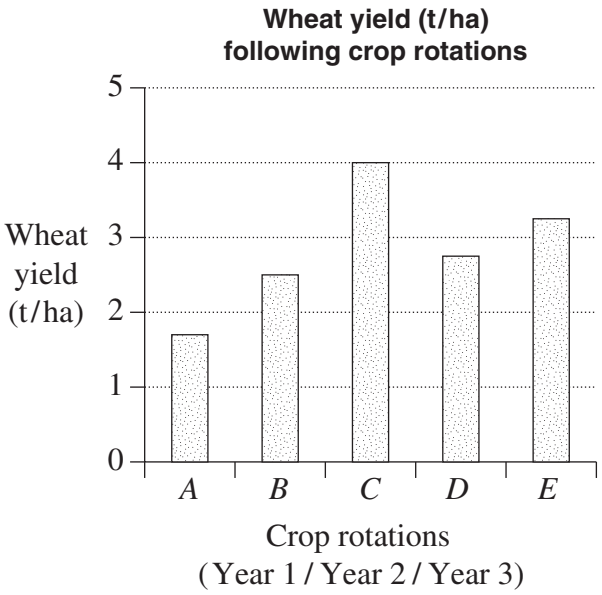
Section I (continued)

Student Number

Marks

Question 2 (7 marks)

The graph shows wheat yield (t/ha) in the final year for a number of three-year crop rotation systems.



KEY

A – Wheat / Wheat / Wheat

B – Canola / Wheat / Wheat

C – Wheat / Canola / Wheat

D – Chickpea / Wheat / Wheat

E – Wheat / Chickpea / Wheat

(a) Which crop rotation resulted in the highest wheat yield in the final year? **1**

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(b) Outline ONE way that crop rotations can increase crop yields. **2**

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Question 2 continues on page 4

Marks

Question 2 (continued)

(c) Justify the use of minimum tillage in Australian farming systems. **4**

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End of Question 2

Centre Number

Section I (continued)

Student Number

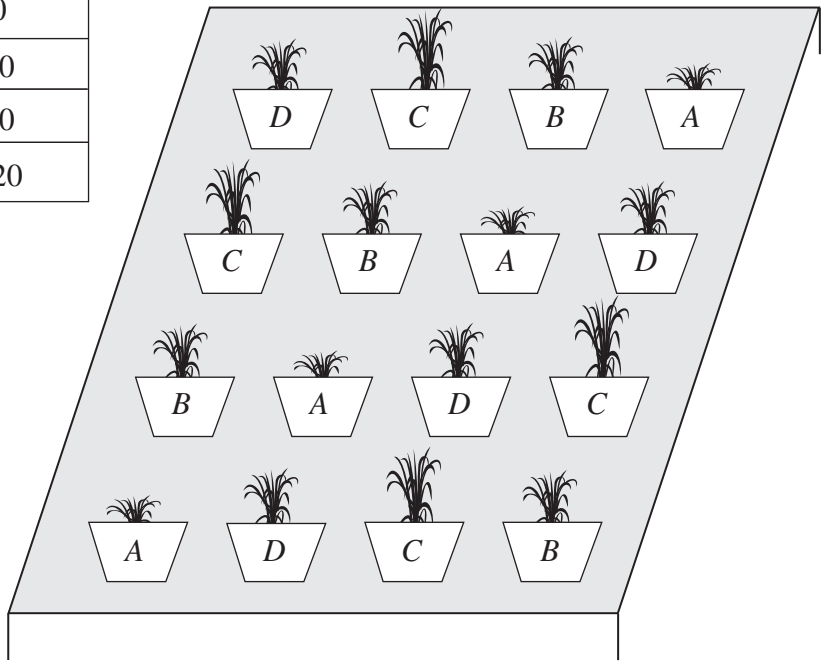
Marks

Question 3 (11 marks)

A student conducted an experiment in a glasshouse to determine the effect of a new fertiliser, *Growell*, on barley plants. Each pot contained ten seeds and the rate of *Growell* fertiliser applied is shown in the table.

Treatment (pot)	*Growell* (g/pot)
A	0
B	40
C	80
D	120

Response of barley plants to *Growell*



(a) State ONE measurement the student may make to determine the effect of *Growell* on barley. **1**

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Question 3 continues on page 6

Marks

Question 3 (continued)

(b) Outline ONE method that the student could use to analyse the results obtained from the experiment. **2**

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(c) Describe ways that this student has increased the reliability of results by using this experimental design. **4**

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(d) Discuss factors that need to be considered before conducting this experiment in the field rather than in a glasshouse. **4**

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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.

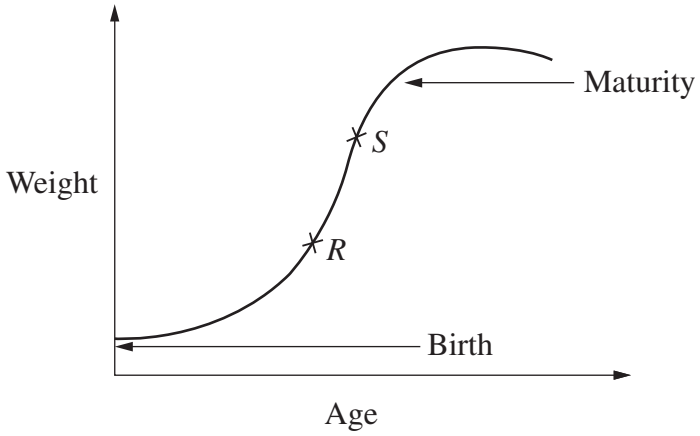
Question 4 (15 marks)

Please turn over

Marks

Question 4 (15 marks)

(a) The graph shows a typical growth curve for an animal.



Account for the shape of the growth curve between *R* and *S*. **2**

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(b) Explain the relationship between the sex of an animal and its body composition. **3**

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Question 4 continues on page 9

Marks

Question 4 (continued)

(c) Two pens of steers in a feedlot were fed the same quantity of an identical ration for ninety days. The resulting average growth rates for each pen are shown.

Pen	*Number of steers*	*Age* (months)	*Average growth rate* (kg/day)
A	10	14	2.0
B	10	14	1.6

Outline possible reasons for the variation in average growth rate between the two pens. **4**

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Question 4 continues on page 10

Question 4 (continued)

(d) Analyse the management strategies used by farmers to meet the nutritional requirements of an animal you have studied. **6**

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End of Question 4

Centre Number

Student Number

Section II (continued)

Marks

Question 5 (15 marks)

(a) The table shows the results of a trial carried out to determine the effect of weed density of *Barnyard Grass* and *Bindweed* on the yield of sunflowers.

Barnyard Grass (plants/m^2)	*Sunflower yield* (t/ha)	*Bindweed* (plants/m^2)	*Sunflower yield* (t/ha)
0	4.0	0	4.0
1	3.8	1	3.8
3	3.0	3	3.5
9	1.5	9	2.9
20	0.9	20	2.1

(i) Identify the treatment that resulted in the lowest yield of sunflowers. **2**

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(ii) Explain why sunflower yield decreases as the level of weeds increases. **3**

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Question 5 continues on page 12

Question 5 (continued)

(b) Outline methods that plant breeders can use to develop new plant varieties. **4**

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(c) Discuss factors that a farmer should consider before replacing the variety currently grown on the farm with a new variety. **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) Explain the effects of ONE soil nutrient on farm production. **5**

(b) Evaluate techniques that can be used to improve soil fertility. **10**

OR

Question 7 (15 marks)

(a) Explain the role of government in protecting waterways. **5**

(b) Evaluate an Integrated Pest Management (IPM) program for a plant or animal production system you have studied. **10**

OR

Question 8 (15 marks)

(a) Explain how ONE recent technology affects production of a plant or animal product. **5**

(b) Evaluate techniques that can be used to develop new or existing markets for a product you have studied. **10**

OR

Question 9 (15 marks)

(a) Explain why the timing of farm operations is important in the production of a plant or animal product. **5**

(b) Evaluate the impact that various community groups or organisations may have on sustainable agricultural production. **10**

End of paper

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