



**Victorian Certificate of Education
2003**

SUPERVISOR TO ATTACH PROCESSING LABEL HERE

STUDENT NUMBER

Letter

Figures									
Words									

**AGRICULTURAL AND HORTICULTURAL
STUDIES**

Written examination

Wednesday 5 November 2003

Reading time: 9.00 am to 9.15 am (15 minutes)

Writing time: 9.15 am to 10.45 am (1 hour 30 minutes)

QUESTION AND ANSWER BOOK

Structure of book

<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
4	4	100

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers.
 - Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
 - No calculator is allowed in this examination.
- Materials supplied**
- Question and answer book of 15 pages.
- Instructions**
- Write your **student number** in the space provided above on this page.
 - All written responses must be in English.

Students are NOT permitted to bring mobile phones and/or any other electronic communication devices into the examination room.

Instructions

Answer **all** questions in the spaces provided.
 Students are encouraged to use diagrams wherever they may help description or explanation.

Question 1

From the list provided in Table 1, choose the pest or disease that you are most familiar with by placing a tick in the appropriate box.

Table 1. Selected pests or diseases

Ringworm		Powdery mildew	
Stem and root rot		Coccidiosis	
Crown gall		Black spot	
Itch mite		Liver flukes	
Aphids		Cabbage moth	
Hydatids		Botflies	

- a. What specific type of agricultural or horticultural enterprise is **most** affected by the pest or disease you have chosen?

1 mark

- b. Explain what your chosen pest or disease does to plants or animals to reduce production quality or quantity.

3 marks

- c. Pest and disease **prevention** lowers the chance of an enterprise being affected by a pest or disease. **Quarantine** is a pest and disease prevention method that keeps healthy plants or animals separate from affected ones.
 Besides quarantine, list **one** other method of preventing the pest or disease you have chosen from becoming a problem.

1 mark

- d.** Pest and disease **control** is used to stop pests and diseases when they occur. **Eradication** is a control method that destroys the affected plants or animals.

Besides eradication, list **one** other method of controlling the pest or disease you have chosen when it has become a problem.

1 mark

- e.** Integrated Pest Management (IPM) is used to manage pest or disease problems. List the main components of IPM.

3 marks

Total 9 marks

TURN OVER

Question 2

John is a landscape gardener. He has been asked to design and build a garden in a newly constructed retirement village in Melbourne. The garden is for the residents of the village and for community functions throughout the year.

John inspects the site for the garden and notes the following.

- A 1.5 metre high brick wall surrounds the site.
- The garden will be fully exposed to the sun in the north, except where the walls cast shadows around the edge.
- There is a large, mature deciduous flowering tree next to the south wall of the site. This tree must be carefully managed as it is listed on the Victorian Significant Tree Register.
- The soil in the garden site was compacted during the village construction.
- The builder has roughly filled the site with clay-loam soil from another construction site.
- The site is located in a cool climate area with high rainfall that falls mainly in winter. The summer months are very dry.
- To save money, once the garden is built, the elderly residents of the village want to maintain the garden.

a. List five things John should consider when deciding what type of plants to put in the garden.

- i. _____
- ii. _____
- iii. _____
- iv. _____
- v. _____

5 marks

b. Describe four ways that the large deciduous tree will influence the environment for plant growth in the garden.

- i. _____

- ii. _____

- iii. _____

- iv. _____

8 marks

c. Describe what John should do to solve each of the following soil problems to make the soil suitable for healthy plant growth.

i. The soil below the clay-loam topsoil is compacted.

ii. The clay-loam topsoil has many weed seeds in it.

3 + 3 = 6 marks

d. Recommend the **best** organisation to help John solve the soil problems and maintain sustainability of this garden. Give **three** reasons why it is the best organisation to help solve the soil problem.

Recommended organisation _____

Reasons for the recommendation

i. _____

ii. _____

iii. _____

3 marks

e. Describe one thing John should do to make the garden **environmentally** sustainable.

2 marks

Total 24 marks

Question 3

Kim has purchased a 200 hectare grazing and cropping property in Western Victoria. The property has the following features.

- It is in a high rainfall area (greater than 500 mm).
- The main winter crop grown is wheat.
- Wheat has been grown using a rotation of three years crop and one year of pasture for the past 60 years.
- All crop stubble has been burnt in the field after harvest.
- Desmond Creek, a significant permanent waterway, runs through the property.
- Three hectares of remnant vegetation remain on the property in a number of small pockets linked together by the creek.

Kim is concerned about the sustainability of the farm. In the coming year, Kim wants to work on three problems.

- The main wheat paddocks are not providing the yield that they did in the past.
- The remaining three hectares of remnant vegetation need protecting.
- The banks (riparian zone) of Desmond Creek are being degraded.

Kim has asked for suggestions to help solve the problems.

- a. One suggestion was to grow a legume crop in rotation with the wheat. Explain **one** benefit of doing this.

3 marks

- b.** Another suggestion was that, after harvest, the wheat stubble should be kept to turn into the soil at the next cultivation. Explain **one** benefit of doing this.

3 marks

- c.** The practice of ‘minimum tillage’ was also suggested to Kim.

- i.** Describe what is meant by minimum tillage.

- ii.** Explain the benefits of minimum tillage.

2 + 3 = 5 marks

- d. Kim found two types of fertiliser in the shed. One had an NPK content of 21:6:10 (high N) and the other had a content of 13:13:21 (high K).
- i. State what the letters NPK mean.

- ii. Which fertiliser should Kim use on the pasture? Include a reason for your choice in your answer.

3 + 2 = 5 marks

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- e. The Department of Sustainability and Environment has told Kim that excessive use of artificial fertilisers year after year is causing soil and water degradation.
- i. What is the most likely **soil** degradation problem?

What macronutrient is causing this problem?

How would the extent of the problem be monitored?

- ii. What is the most likely **water** degradation problem?

What macronutrient is causing the problem?

How would the extent of the problem be monitored?

3 + 3 = 6 marks

- b.** Most enterprises require ‘specialist’ equipment or machinery. Specialist means that the machinery, equipment or tool is **only** of use to a group of similar enterprises. A tractor **is not** a specialist item of equipment because it is used by many different enterprises.

List two items of **specialist** machinery, equipment or tools needed for the enterprise type you have chosen in Table 2, and describe what they are used for.

- i.** Name of machinery, equipment or tool _____

What is it used for? _____

- ii.** Name of machinery, equipment or tool _____

What is it used for? _____

3 + 3 = 6 marks

- c.** Explain how you would monitor the **economic** sustainability of the enterprise type you have chosen in Table 2.

3 marks

- d. i.** Name the type of environmental degradation that the enterprise type you have chosen in Table 2 is **most** likely to cause.

- ii.** Describe how to monitor if this degradation is becoming a problem.

1 + 3 = 4 marks

- e. On Table 3, choose (by placing a tick in the appropriate box) an area of technological development that has affected the enterprise you chose in Table 2.

Table 3. Areas of technological developments

Biological pest or disease control		Chemical pest or disease control	
Genetic manipulation		Innovation in resource management	
Alternative energy sources		Remote sensing	
Reproduction manipulation		Plant or animal breeding	
Communication innovation		Radiation use	

- i. Describe, giving a **specific example**, how the area of technological advancement you chose has been applied to the type of enterprise you have chosen.

- ii. What are **two** advantages of the technology?

1.

2.

- iii. What are **two** disadvantages of the technology?

1.

2.

2 + 2 + 2 = 6 marks

Total 33 marks