

STUDENT NUMBER  Letter

# AGRICULTURAL AND HORTICULTURAL STUDIES

## Written examination

Thursday 10 November 2016

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>
9	9	100

- Students are to write in blue or black pen.
- 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 correction fluid/tape.
- No calculator is allowed in this examination.

#### Materials supplied

- Question and answer book of 16 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 unauthorised electronic devices into the examination room.**

**Instructions**

Answer **all** questions in the spaces provided. Write using blue or black pen.

**Question 1** (11 marks)

- a. Give **two** ways to improve the water-holding capacity of soil or potting mix. 2 marks

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- b. What are **two** effects of a legume crop on soil? 2 marks

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- c. Name two pre-sowing techniques that can be used to aid the germination of hard-coated seeds. 2 marks

1. \_\_\_\_\_

2. \_\_\_\_\_

- d. What is the pH level of neutral soil? 1 mark

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- e. Outline two advantages and two disadvantages of using windbreaks in a grazing enterprise. 4 marks

Advantage 1 \_\_\_\_\_

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Advantage 2 \_\_\_\_\_

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Disadvantage 1 \_\_\_\_\_

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Disadvantage 2 \_\_\_\_\_

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**Question 2 (4 marks)**

**a.** Suggest two methods of modifying farm topography. 2 marks

1. \_\_\_\_\_

2. \_\_\_\_\_

**b.** Choose one of the methods suggested in **part a**. Describe the potential benefits to a farmer of altering the topography for a specific crop using this method. 2 marks

Chosen method \_\_\_\_\_

Crop \_\_\_\_\_

Benefits \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Question 3 (6 marks)**

**a.** List **two** legal responsibilities of landowners with regard to managing local native vegetation on their property. 2 marks

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\_\_\_\_\_

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**b.** Outline four benefits of maintaining local native vegetation on a farm. 4 marks

1. \_\_\_\_\_

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2. \_\_\_\_\_

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3. \_\_\_\_\_

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4. \_\_\_\_\_

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- b. Identify one type of business that would be affected by the weed chosen in **part a**.

Type of business \_\_\_\_\_

Suggest two effects that the chosen weed would have on the type of business identified. 2 marks

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

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**Question 5** (14 marks)

The table below shows the prescribed list of pests and diseases for study in 2016.

Common name of pest or disease	Scientific name
aphids	assorted species
coccidiosis	<i>Eimeria</i> spp.
one of the following: <ul style="list-style-type: none"> <li>• wheat rust</li> <li>• barley rust</li> <li>• grapevine rust</li> <li>• rose rust</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Puccinia triticina</i></li> <li>• <i>Puccinia hordei</i></li> <li>• <i>Phakopsora euvtis</i></li> <li>• <i>Phragmidium</i> sp.</li> </ul>
primary green blowfly (or Australian sheep blowfly)	<i>Lucilia cuprina</i>
mastitis	The main mastitis pathogens are as follows: <ul style="list-style-type: none"> <li>• <i>Staphylococcus aureus</i></li> <li>• <i>Streptococcus agalactiae</i></li> <li>• <i>Streptococcus uberis</i></li> </ul>
liver fluke	<i>Fasciola hepatica</i>
western flower thrips	<i>Frankliniella occidentalis</i>
pregnancy toxemia	n.a.

- a. From the prescribed list above, identify one example of each of the following types of disease. 3 marks

Type of disease	Example
metabolic	
metazoal	
microbial	

- b. Choose one pest or disease from the prescribed list above and identify a specific agricultural or horticultural business it would affect. 1 mark

Pest or disease \_\_\_\_\_

Business affected \_\_\_\_\_

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c. List three symptoms or signs that would indicate the presence of the chosen pest or disease in the business identified in **part b.** 3 marks

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

d. Using examples, explain how you would quickly treat an outbreak of the pest or disease chosen in **part b.** 2 marks

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e. Develop a plan for the ongoing control and/or eradication of the pest or disease chosen in **part b.** 5 marks

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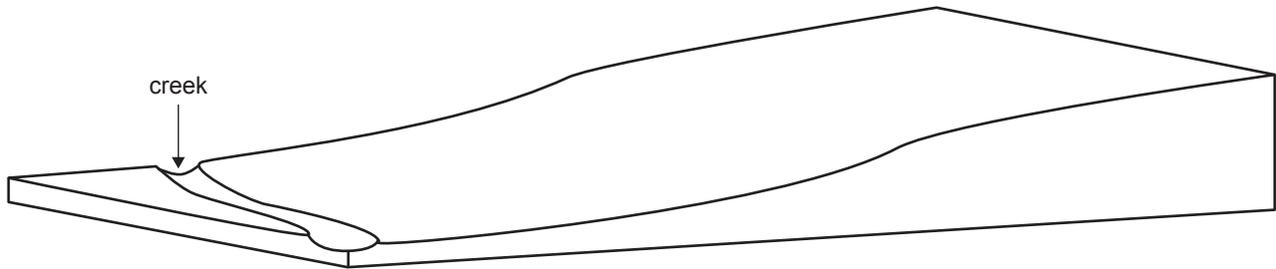
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**Question 6** (11 marks)

Jennifer manages a farm-based restaurant that produces its own fruit, vegetables and meat on a mixed farm in Victoria. A creek flows through the property. The land is gently undulating, with flatter land near the creek, which Jennifer uses for irrigation. High salinity readings taken near the creek indicate a salinity problem. The pastures on the flatter land near the base of the hill are discoloured, plant growth is stunted and some of Jennifer’s fruit and vegetable plants are also affected.

- a. The diagram below represents part of Jennifer’s property.



Using appropriate terminology, give a detailed explanation of how the salinity problem is likely to have occurred. Label the diagram above to support your explanation.

3 marks

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- b. Describe **one** method Jennifer could use to monitor the level of the water table of the flatter land near the creek.

2 marks

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- c. Suggest two strategies that Jennifer could use to manage the salinity problem. Explain how each strategy would manage salinity on her property.

6 marks

	Strategy	Explanation
1.		
2.		

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**Question 7** (14 marks)

a. Agricultural and horticultural activities and processes produce greenhouse gases.

For each gas listed below:

- name an associated agricultural or horticultural activity that could cause the gas to be released
- explain how the gas is most likely to have been produced by the activity.

9 marks

<b>Methane (CH<sub>4</sub>)</b>	Associated activity that releases this gas _____
Explanation	
<b>Carbon dioxide (CO<sub>2</sub>)</b>	Associated activity that releases this gas _____
Explanation	
<b>Nitrous oxide (N<sub>2</sub>O)</b>	Associated activity that releases this gas _____
Explanation	

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b. Some effects of climate change in Victoria are:

- decreasing annual rainfall
- increasing average temperatures
- increasing incidences of extreme weather events, for example, unseasonal intense summer rainfall.

To manage these challenges or threats to production, businesses will need to alter or modify their practices.

Identify one type of agricultural or horticultural business. Suggest a management strategy for the business and explain how this strategy could be used to reduce the risks associated with the effects of climate change.

5 marks

Business type \_\_\_\_\_

Management strategy \_\_\_\_\_

\_\_\_\_\_

Explanation \_\_\_\_\_

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TURN OVER

**Question 8** (13 marks)

a. New or emerging technologies can be found in agriculture and horticulture.

In the spaces provided below:

- name two new or emerging technologies that could be used in an agricultural or horticultural business
- identify what each technology is used for
- explain how the technology works.

8 marks

New or emerging technology 1 \_\_\_\_\_

What the technology is used for \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How the technology works \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

New or emerging technology 2 \_\_\_\_\_

What the technology is used for \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How the technology works \_\_\_\_\_

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- b. Choose one of the technologies named in **part a.** and identify the technology that it would replace. 1 mark

Chosen technology \_\_\_\_\_

Technology replaced \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- c. Evaluate the impact of the new technology chosen in **part b.** on the sustainability of the business. 4 marks

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**Question 9 (20 marks)**

Choose one type of agricultural or horticultural business that you have studied this year or one that you are familiar with in terms of its business operations. Give the main product for this type of business.

Type of business \_\_\_\_\_

Main product \_\_\_\_\_

- a. Describe a marketing strategy that could be used to promote the main product to consumers and indicate why this strategy would be effective. 2 marks

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- b. Choose one information and communications technology (ICT) application that a business manager could use in decision-making for your chosen business.

ICT application \_\_\_\_\_

Describe how the chosen ICT application could be used to make decisions to improve business productivity. 3 marks

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- c. Outline the importance of developing a cash flow estimate as part of a business plan for your chosen business. 2 marks

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d. Describe **one** possibility for adding value to the main product.

2 marks

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e. Estimate the additional income that could be made from the value-added product. Use simple figures and give an explanation to support your estimate of the additional income.

3 marks

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Question 9 – continued  
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f. Identify two different health and safety risks to an employee in your chosen type of business. For each risk identified:

- describe how the risk could occur
- suggest two strategies that could be used to minimise the potential risk to an employee.

8 marks

Risk 1 \_\_\_\_\_

How the risk could occur \_\_\_\_\_

Risk minimisation strategies

1. \_\_\_\_\_

2. \_\_\_\_\_

Risk 2 \_\_\_\_\_

How the risk could occur \_\_\_\_\_

Risk minimisation strategies

1. \_\_\_\_\_

2. \_\_\_\_\_

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