

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

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

- 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

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

Advantage 1 _____

Advantage 2 _____

Disadvantage 1 _____

Disadvantage 2 _____

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

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

1. _____

2. _____

3. _____

4. _____

DO NOT WRITE IN THIS AREA

TURN OVER

Question 4 (7 marks)

The table below shows the prescribed list of weeds for study in 2016.

Common name of weed	Scientific name
capeweed	<i>Arctotheca calendula</i>
flickweed (also known as common bittercress)	<i>Cardamine hirsuta</i>
gorse/furse	<i>Ulex europaeus</i>
Paterson’s curse	<i>Echium plantagineum</i>
winter grass (or annual meadow grass)	<i>Poa annua</i>
wild radish	<i>Raphanus raphanistrum</i>

- a. Choose one weed from the prescribed list and describe a detailed integrated weed management plan for controlling the chosen weed.

5 marks

Chosen weed _____

Plan _____

DO NOT WRITE IN THIS AREA

- 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. _____

DO NOT WRITE IN THIS AREA

TURN OVER

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"> • wheat rust • barley rust • grapevine rust • rose rust 	<ul style="list-style-type: none"> • <i>Puccinia triticina</i> • <i>Puccinia hordei</i> • <i>Phakopsora euvitis</i> • <i>Phragmidium</i> sp.
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"> • <i>Staphylococcus aureus</i> • <i>Streptococcus agalactiae</i> • <i>Streptococcus uberis</i>
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 _____

DO NOT WRITE IN THIS AREA

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

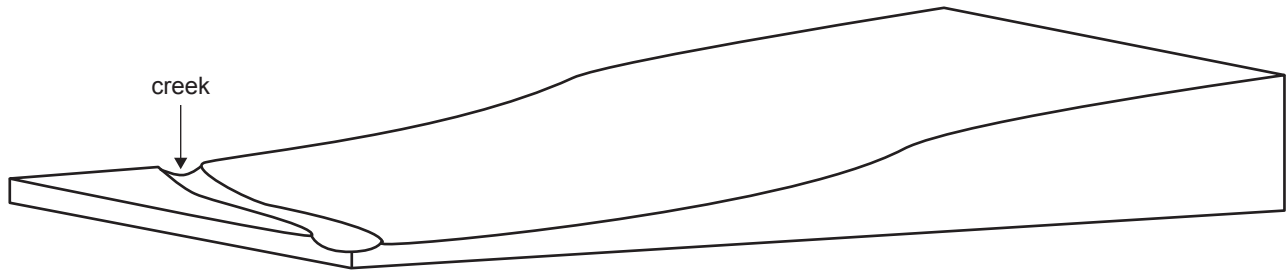
e. Develop a plan for the ongoing control and/or eradication of the pest or disease chosen in **part b.** 5 marks

TURN OVER

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

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

2 marks

DO NOT WRITE IN THIS AREA

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.		

DO NOT WRITE IN THIS AREA

TURN OVER

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

Methane (CH₄)	Associated activity that releases this gas _____
Explanation	
Carbon dioxide (CO₂)	Associated activity that releases this gas _____
Explanation	
Nitrous oxide (N₂O)	Associated activity that releases this gas _____
Explanation	

DO NOT WRITE IN THIS AREA

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 _____

DO NOT WRITE IN THIS AREA

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 _____

DO NOT WRITE IN THIS AREA

- 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

DO NOT WRITE IN THIS AREA

TURN OVER

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

- 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

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

DO NOT WRITE IN THIS AREA

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

2 marks

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

DO NOT WRITE IN THIS AREA

Question 9 – continued
TURN OVER

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. _____

DO NOT WRITE IN THIS AREA