

STUDENT NUMBER Letter

AGRICULTURAL AND HORTICULTURAL STUDIES

Written examination

Thursday 15 November 2018

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>
8	8	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 22 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.

Question 1 (10 marks)

a. Outline two methods of modifying light levels in a commercial glasshouse or polyhouse. 2 marks

1. _____

2. _____

b. Describe three characteristics of soil or potting mix, which may be modified to get the best growing conditions for plants. 3 marks

1. _____

2. _____

3. _____

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c. Give three methods of maximising the birthing percentages of livestock. 3 marks

1. _____

2. _____

3. _____

d. Identify one technique for modifying farm topography and outline one benefit associated with this technique. 2 marks

Technique _____
Benefit _____

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Question 2 (15 marks)

- a. Identify one positive aspect and one negative aspect of a natural ecosystem and of a managed ecosystem.

4 marks

Ecosystem	Positive aspect	Negative aspect
natural		
managed		

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b. There are many types of environmental degradation that can affect a farm’s production.

Identify two types of land or soil degradation. For each type of degradation, describe a possible cause and a rectification strategy.

6 marks

Land or soil degradation type 1 _____

Cause _____

Rectification strategy _____

Land or soil degradation type 2 _____

Cause _____

Rectification strategy _____

c. Identify one water quality issue, describe the impact it could have on a business and suggest a rectification strategy.

3 marks

Water quality issue _____

Impact _____

Rectification strategy _____

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d. Describe two environmental indicators that could be used to evaluate the success of the rectification strategies described in **part b.** and/or **part c.**

2 marks

1. _____

2. _____

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Question 3 (12 marks)

The table below shows the prescribed list of weeds for study in 2018.

Common name of weed	Scientific name	Impacts
blackberry	<i>Rubus fruticosus</i> aggregate	animals and plants
brome grass	The following are the most common species: <ul style="list-style-type: none"> • <i>Bromus diandrus</i> • <i>Bromus rigidus</i> 	animals and plants, specifically crops
capeweed	<i>Arctotheca calendula</i>	animals and plants
Chilean needle grass	<i>Nassella neesiana</i>	pastures and grazing animals
flickweed (also known as common bittercress)	<i>Cardamine hirsuta</i>	plants, specifically crops and those grown in nurseries or for horticulture
gorse/furse	<i>Ulex europaeus</i>	animals and plants

- a. Name two non-grass broadleaf weeds given in the prescribed list that have flowers that are mainly yellow. 1 mark

1. _____

2. _____

- b. Chilean needle grass has been known to cause a weed problem throughout Victoria.
 What responsibilities do Victorians have regarding restricted weeds? 1 mark

- c. The use of herbicides is widespread in market gardens, broadacre cropping, grazing enterprises and other agricultural and horticultural businesses.
 Give two reasons why the use of herbicides may have undesirable consequences. 2 marks

1. _____

2. _____

Choose one weed from the prescribed list.

Chosen weed _____

- d. In the table provided below, identify and describe two methods of controlling your chosen weed, including the best time to implement each method. Any chemical controls mentioned must include the name of the main chemical used.

6 marks

Method	Description	Time of implementation
1.		
2.		

- e. Describe **two** financial impacts that your chosen weed could have on an agricultural or horticultural business.

2 marks

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Question 4 (10 marks)

The table below shows the prescribed list of pests and diseases for study in 2018.

Common name of pest or disease	Scientific name	Animal or plant it affects (host)
aphids	assorted species	ornamental plants, fruit, vegetables, broadacre crops
coccidiosis	<i>Eimeria</i> spp.	poultry, cattle, sheep, pigs
one of the following: <ul style="list-style-type: none"> cattle lice chicken body lice equine lice sheep lice 	<ul style="list-style-type: none"> <i>Linognathus vituli</i> <i>Menacanthus stramineus</i> <i>Haematopinus asini</i> <i>Bovicola ovis</i> 	<ul style="list-style-type: none"> cattle poultry horses sheep
mastitis	The following are the main mastitis pathogens: <ul style="list-style-type: none"> <i>Staphylococcus aureus</i> <i>Streptococcus agalactiae</i> <i>Streptococcus uberis</i> 	beef, dairy cattle, sheep, goats
milk fever	hypocalcaemia	cattle, goats
primary green blowfly (or Australian sheep blowfly)	<i>Lucilia cuprina</i>	sheep
one of the following: <ul style="list-style-type: none"> barley rust grapevine rust rose rust wheat rust 	<ul style="list-style-type: none"> <i>Puccinia hordei</i> <i>Phakopsora euvitis</i> <i>Phragmidium</i> sp. <i>Puccinia triticina</i> 	<ul style="list-style-type: none"> barley grapevines roses wheat
western flower thrips	<i>Frankliniella occidentalis</i>	ornamental plants, fruit, vegetables

Choose one pest or disease from the prescribed list.

Chosen pest or disease _____

a. Explain how your chosen pest or disease affects its host.

2 marks

b. Biosecurity is important in all agricultural and horticultural businesses.

Give two methods of preventing your chosen pest or disease from entering an agricultural or horticultural property.

2 marks

1. _____

2. _____

c. Suggest **one** method of monitoring your chosen pest or disease and describe how this method would be implemented.

2 marks

d. How would the results of monitoring your chosen pest or disease influence any further action to be taken?

1 mark

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Question 4 – continued
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e. Explain how you would control your chosen pest or disease. Any chemical controls mentioned must include the name of the main chemical used.

3 marks

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- c. Explain how Sally can use a property management plan to maintain the biodiversity of her remaining native bushland and indigenous fauna. 3 marks

- d. What plans should Sally make to stop further degradation of the areas along the stream? 3 marks

- e. Name a government regulation that requires Sally to fix the problems along the stream. 1 mark

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Question 6 (15 marks)

New or emerging technologies are found in many areas of agriculture and horticulture.

- a.** Choose two new or emerging technologies that you have studied and, for each, describe how it works and name the technology it replaces or the problem it solves in the table provided below. 6 marks

Chosen technology	Description	Technology replaced or problem solved
1.		
2.		

- b. i.** Outline two reasons why an agricultural or horticultural business would choose to invest in the first technology chosen in **part a.** 2 marks

1. _____

2. _____

- ii.** Apart from cost, what is **one** disadvantage of adopting this technology? 1 mark

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- c. Evaluate the positive and negative impacts of the second technology chosen in **part a.** on each aspect of sustainability listed in the table provided below.

6 marks

Aspect of sustainability	Positive impact	Negative impact
environmental		
economic		
social		

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Question 7 (10 marks)

Agricultural and horticultural businesses can contribute to the effects of climate change and can be affected by the effects of climate change.

- a. Name the major greenhouse gas produced as a result of each of the processes or activities listed in the table provided below. 3 marks

Process or activity	Major greenhouse gas produced
use of tractors around a farm	
digestion process in ruminant animals	
decomposition of animal urine	

- b. Identify two expected changes to Victoria's climate as a result of climate change. 2 marks

1. _____

2. _____

Choose an agricultural or horticultural business that you have studied.

Chosen business _____

- c. In the table provided below, indicate a positive or a negative impact that each of the expected changes identified in **part b.** will have on your chosen business. 2 marks

Expected change to Victoria's climate	Impact on chosen business
1.	
2.	

- d. Explain a potential management strategy that your chosen business could implement to counteract the impact of climate change and to maintain or increase its current production levels.

3 marks

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Question 8 (15 marks)

Choose one type of agricultural or horticultural business that you are familiar with in terms of its business operations, and indicate its main product or service.

Chosen type of business _____

Main product or service _____

- a. Describe **one** quality standard for the main product or service indicated above. 2 marks

- b. Outline the steps involved in measuring the quality standard described in **part a**. 1 mark

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c. Businesses need to monitor and manage inputs and processes in order to maintain appropriate quality standards.

i. Give **two** inputs for your chosen type of business.

2 marks

ii. Choose one process and explain how your chosen type of business should monitor and manage this process in order to maintain appropriate quality standards.

2 marks

Process _____

Explanation _____

d. Describe two methods that could be used to analyse the financial performance of your chosen type of business.

2 marks

1. _____

2. _____

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e. An essential step before starting a business is to prepare a business plan.

Outline the key components that need to be included in the business plan for your chosen type of business.

3 marks

f. Give one water management technique that your chosen type of business could use to show that it uses water wisely. Explain how the technique makes water management more sustainable.

3 marks

Technique _____

Explanation _____

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