

LUI

School code

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Book

of

books used

External assessment 2022

Question and response book

Agricultural Science

Paper 1

Time allowed

- Perusal time — 10 minutes
- Working time — 90 minutes

General instructions

- Answer all questions in this question and response book.
- QCAA-approved calculator permitted.
- Planning paper will not be marked.

Section 1 (20 marks)

- 20 multiple choice questions

Section 2 (33 marks)

- 7 short response questions





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Section 1

Instructions

- Choose the best answer for Questions 1–20.
- This section has 20 questions and is worth 20 marks.
- Use a 2B pencil to fill in the A, B, C or D answer bubble completely.
- If you change your mind or make a mistake, use an eraser to remove your response and fill in the new answer bubble completely.

	A	B	C	D
Example:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	A	B	C	D
1.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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9.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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11.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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13.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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17.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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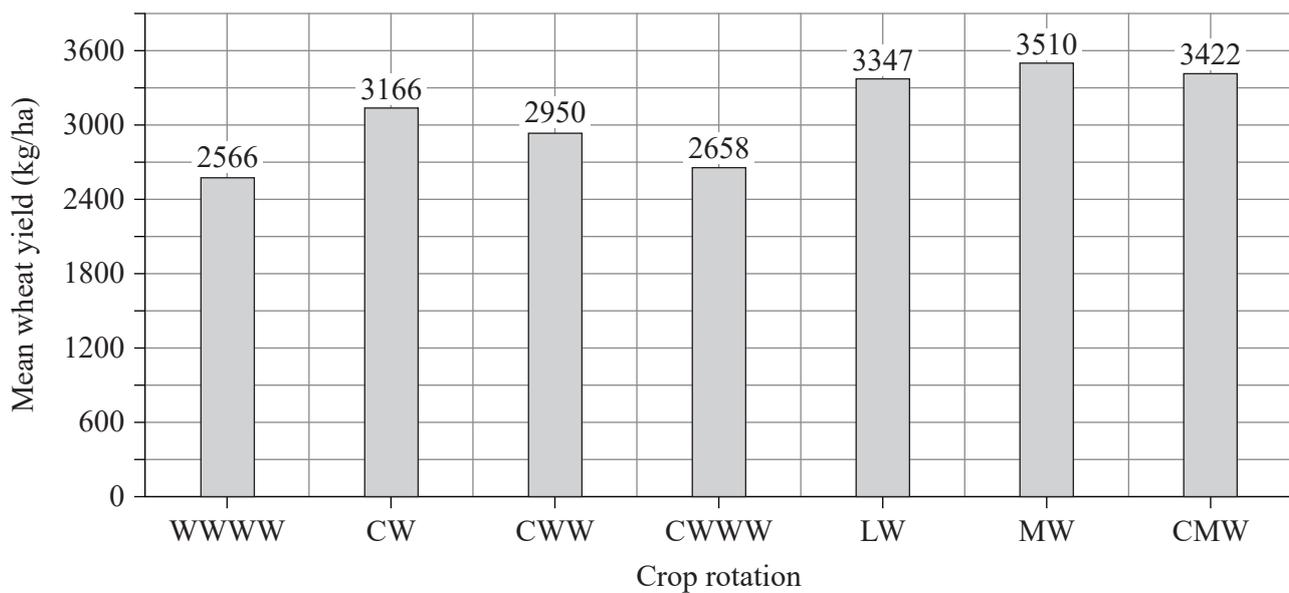
Section 2

Instructions

- Write using black or blue pen.
- If you need more space for a response, use the additional pages at the back of this book.
 - On the additional pages, write the question number you are responding to.
 - Cancel any incorrect response by ruling a single diagonal line through your work.
 - Write the page number of your alternative/additional response, i.e. See page ...
 - If you do not do this, your original response will be marked.
- This section has seven questions and is worth 33 marks.

QUESTION 21 (4 marks)

The graph shows the relationship between the mean wheat yield and the crop rotation system used.



Key W = wheat C = canola L = lupin M = medic
Note: Canola has a deeper tap root system than medic species.

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QUESTION 22 (7 marks)

a) Identify two differences between the quality of feedlot rations and green fodder crops. [2 marks]

A producer has recently weaned first-cross lambs that currently have a mean weight of 32 kg. The Meat Standards Australia requirements for selling lamb, and feed options for these lambs, are shown in the tables.

Category/Cipher	Dentition H	Carcass weight (kg)	Fat score
Lamb 'L'	0 permanent incisor teeth	≥18	≥2

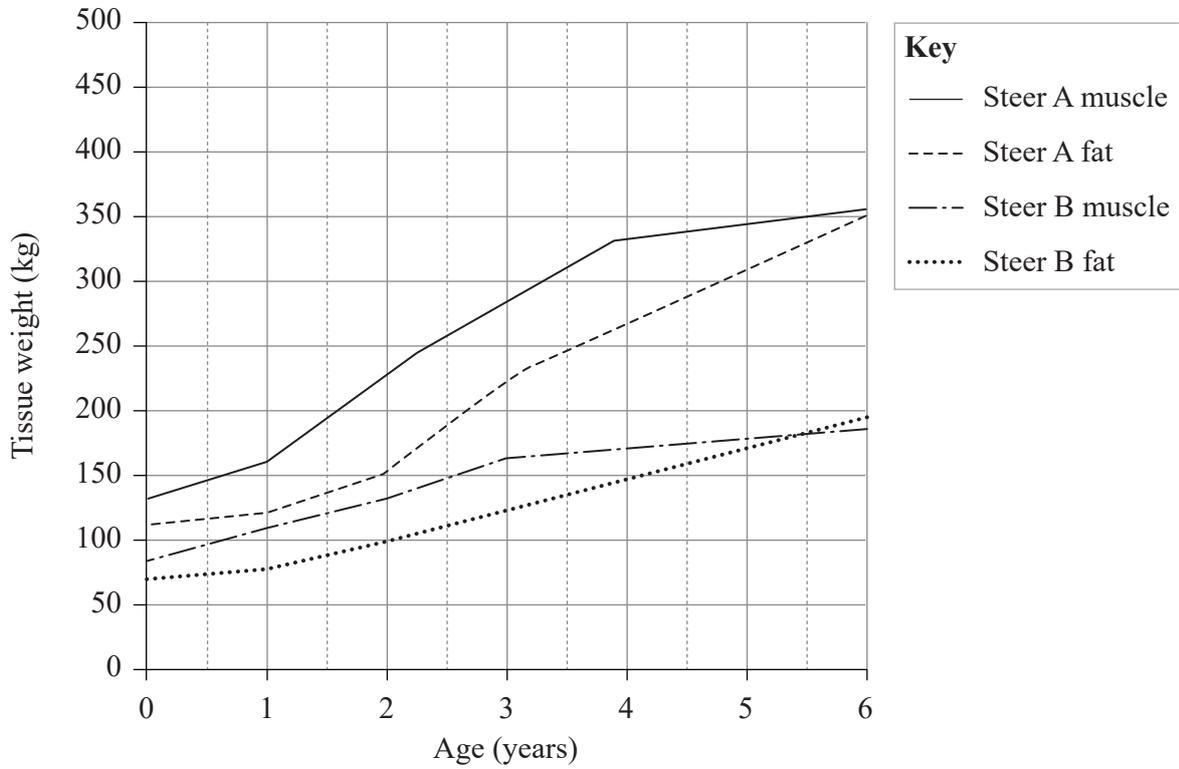
Fat score	Dressing percentage (lambs)	
	Unweaned (%)	Weaned (%)
1	43	41
2	45	43
3	47	45

Lamb finishing system	First-cross weight gain (g/head/day)
Green fodder crops	180
Feedlot rations	300

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QUESTION 24 (5 marks)

The graph shows changes in the body composition of two steers of different breeds, A and B, at different times during their development.



a) Determine which steer matures earlier. Justify your decision.

[2 marks]

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QUESTION 25 (3 marks)

Identify two features of an online auction in the context of an agricultural industry.

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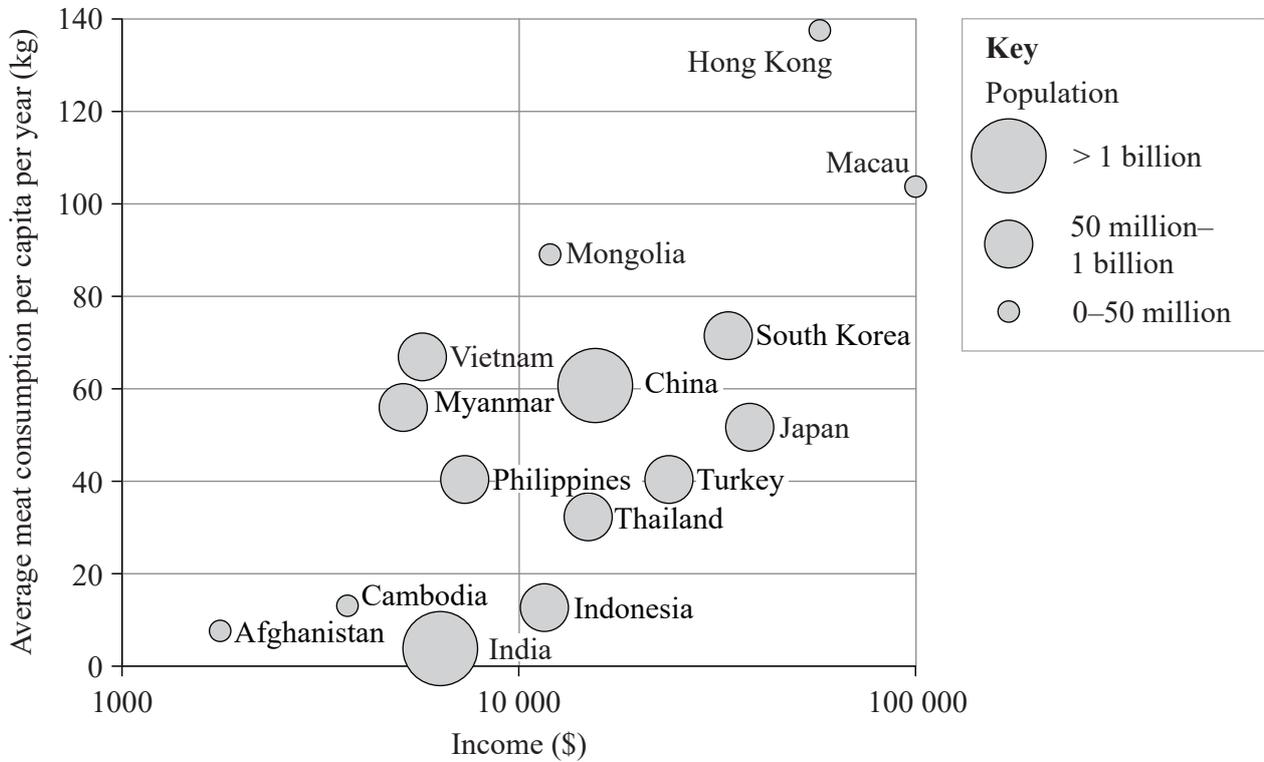
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QUESTION 26 (6 marks)

The graph shows the relationship between average annual income and meat consumption in some Asian countries.



Discuss four opportunities for sustainable social growth in Australian plant and animal protein industries using evidence from the graph. Draw a justified conclusion about the social sustainability of these industries, referring to standard of living.

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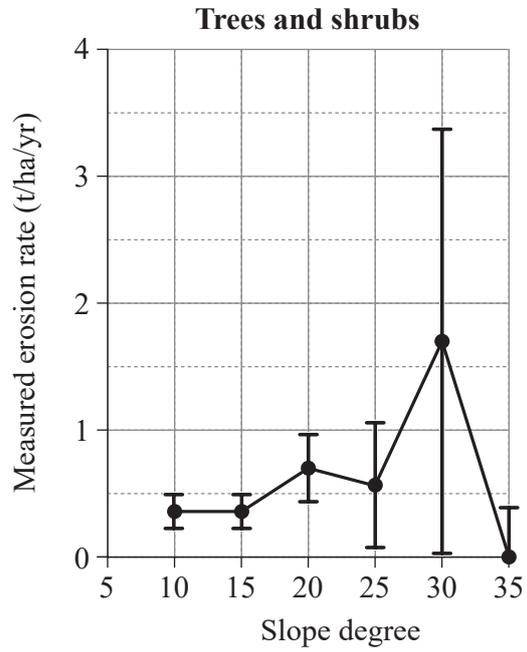
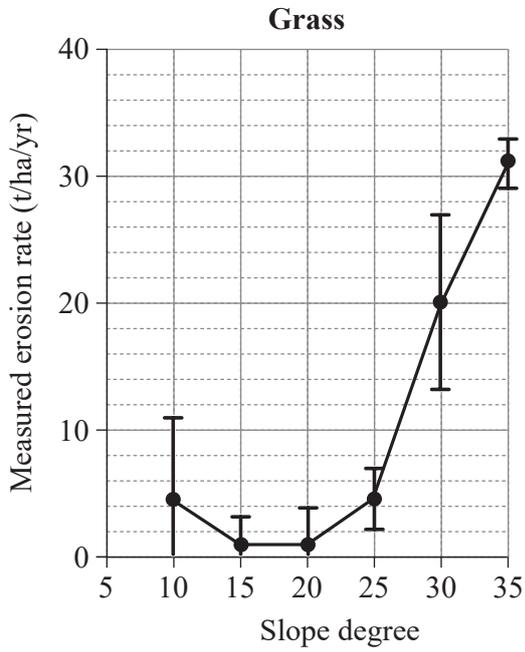
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QUESTION 27 (6 marks)

The graphs show the erosion rate of soil on two blocks of land of varying slopes, one covered in grass and one covered in trees and shrubs.

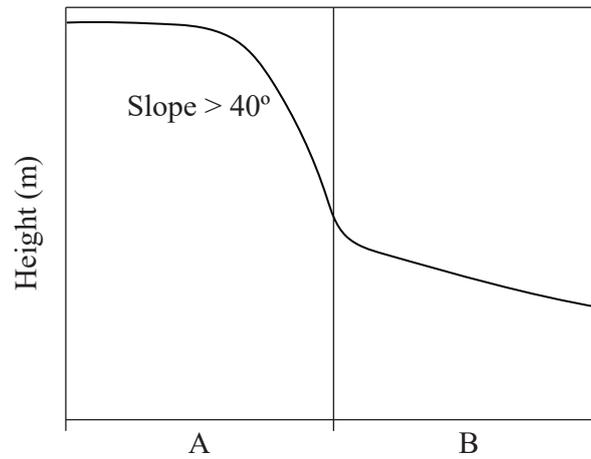


a) Identify differences in the erosion rate of soil on the two blocks of land.

[2 marks]

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The graph shows a cross-section of land for an animal production area.



- b) Using the data from Question 27a), decide whether grass or trees and shrubs would be more suitable for sustainable animal production on sections A and B. Justify your conclusions.

[4 marks]

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References

Question 21

Data sourced from Graph 1 from Strauss, J 2017, 'Why crop rotation is important in wheat production', *Grain SA*, www.grainsa.co.za/why-crop-rotation-is-important-in-wheat-production.

Question 22

Data derived from Making More From Sheep 2023, 'Tool 3.5: MSA production guidelines for lamb and sheepmeat', www.makingmorefromsheep.com.au/market-focussed-lamb-and-sheepmeat-production/tool_3.5.html.

Question 26

Adapted from Our World in Data 2017, 'Meat consumption vs. GDP per capita, 2017', <https://ourworldindata.org/grapher/meat-consumption-vs-gdp-per-capita?time=2017>. Used under the Creative Commons Attribution 4.0 licence (CC BY 4.0). Source data from Food and Agriculture Organization of the United Nations; data compiled from multiple sources by World Bank.

Question 27

Adapted from Figure 4 in Zhao, J, Van Oost, K, Chen, L, & Govers, G 2016, 'Moderate topsoil erosion rates constrain the magnitude of the erosion-induced carbon sink and agricultural productivity losses on the Chinese Loess Plateau', *Biogeosciences*, vol. 13, pp. 4735–4750, <https://doi.org/10.5194/bg-13-4735-2016>. Used under the Creative Commons Attribution 3.0 Licence (CC BY 3.0).



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