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Sample assessment 2020

Multiple choice question book

Agricultural Science

Paper 1



Queensland
Government



Queensland Curriculum
& Assessment Authority

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Section 1

Instructions

- Answer all questions in the question and response book.
 - This book will not be marked.
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QUESTION 1

The table below gives pairs of descriptions for intensive and extensive industries.

Feature	Intensive	Extensive
I	high levels of input/ha	low levels of input/ha
II	low levels of production/ha	high levels of production/ha
III	high initial capital costs per unit area	low initial capital costs per unit area
IV	smaller areas of production	larger areas of production

Which of the following describes the characteristics for intensive and extensive industries?

- (A) I, II, III
- (B) I, II, IV
- (C) I, III, IV
- (D) II, III, IV

QUESTION 2

Which of the following is a major function of rumen bacteria in animal nutrition?

- (A) secreting enzymes to assist in the breakdown of carbohydrates into volatile fatty acids
- (B) secreting enzymes to assist in the breakdown of fats into fatty acids and glycerol
- (C) synthesising carbohydrates to simple sugars
- (D) synthesising vitamin D

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QUESTION 3

Which pathway represents the metabolism of energy in animals?

- (A) gross energy → digestible energy → net energy → metabolisable energy → maintenance and production energy
- (B) gross energy → digestible energy → metabolisable energy → net energy → maintenance and production energy
- (C) gross energy → digestible energy → maintenance and production energy → metabolisable energy → net energy
- (D) gross energy → metabolisable energy → digestible energy → ammonia → maintenance and production energy → net energy

QUESTION 4

Four steers were weighed to calculate their feed conversion ratios (FCR), as shown in the table below.

Animal	FCR
I	4.8: 1
II	5.2: 1
III	4.9: 1
IV	5.6: 1

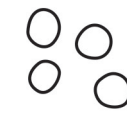




From the data in the table, which two animals would be the costliest to finish for optimum condition if all four animals were introduced to a feedlot finishing ration?

- (A) Animal I and Animal III
- (B) Animal I and Animal IV
- (C) Animal II and Animal III
- (D) Animal II and Animal IV

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QUESTION 5

The figure below shows the differently sized seeds of various agricultural crops, pastures and weeds. The diagrams are drawn to scale.

Soybeans	Velvetleaf	Corn	Giant foxtail	Wheat
				

From the information in the figure, which of the following seeds is most likely to successfully establish if planted deeper in the soil?

- (A) giant foxtail
- (B) soybeans
- (C) wheat
- (D) corn

QUESTION 6

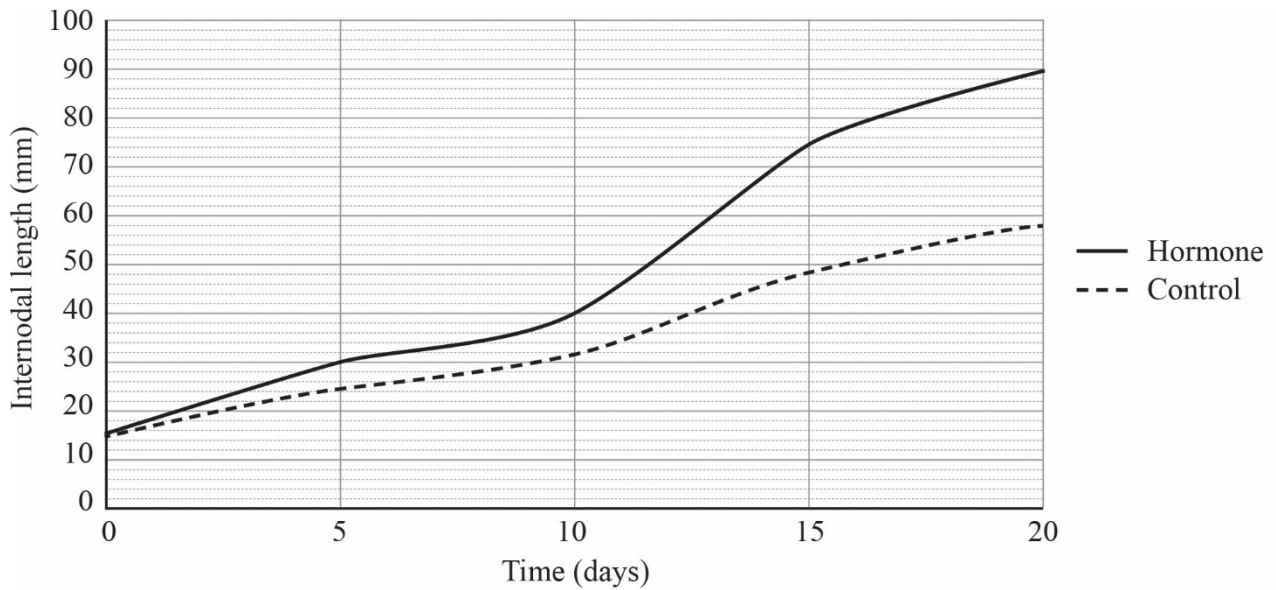
The nutrient that legumes least require at planting compared to other agricultural crops is

- (A) phosphorus.
- (B) potassium.
- (C) nitrogen.
- (D) calcium.

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QUESTION 7

The figure below shows the results of a trial conducted on cotton seedlings to investigate the effect on internodal length of applying an unknown hormone to the seedlings.



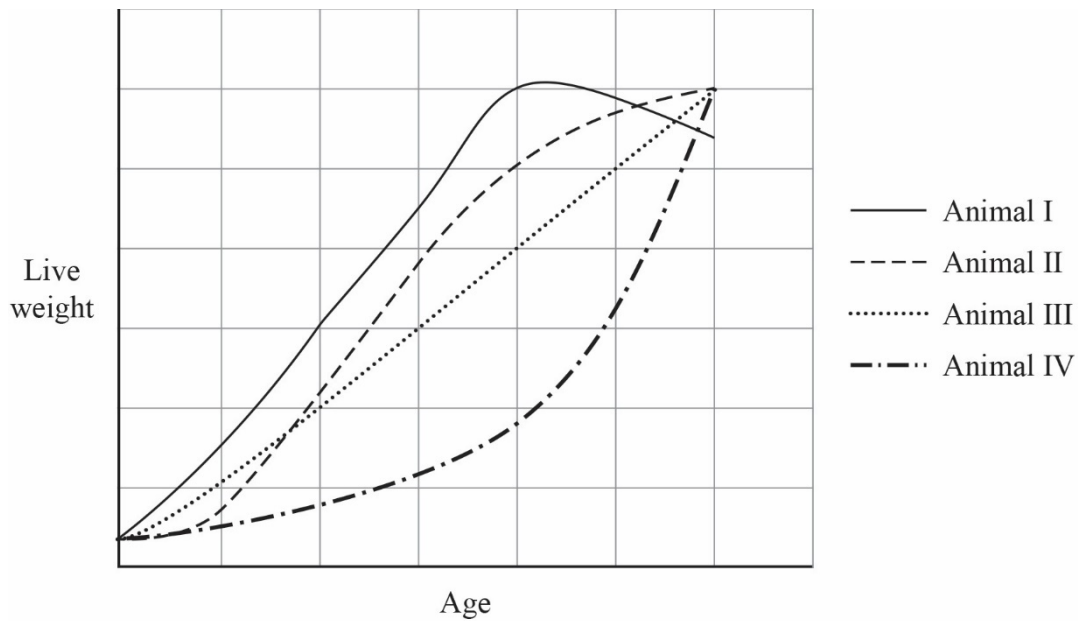
Analyse the results in the figure to determine the phase of the trial where the seedlings showed the greatest percentage response to the hormone application.

- (A) days 0 to 5
- (B) days 5 to 10
- (C) days 10 to 15
- (D) days 15 to 20

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QUESTION 8

The graph below shows the relationship between live weight and age for four different animals.



Which animal illustrates the typical growth curve of an animal over its life up to slaughter?

- (A) Animal I
- (B) Animal II
- (C) Animal III
- (D) Animal IV

QUESTION 9

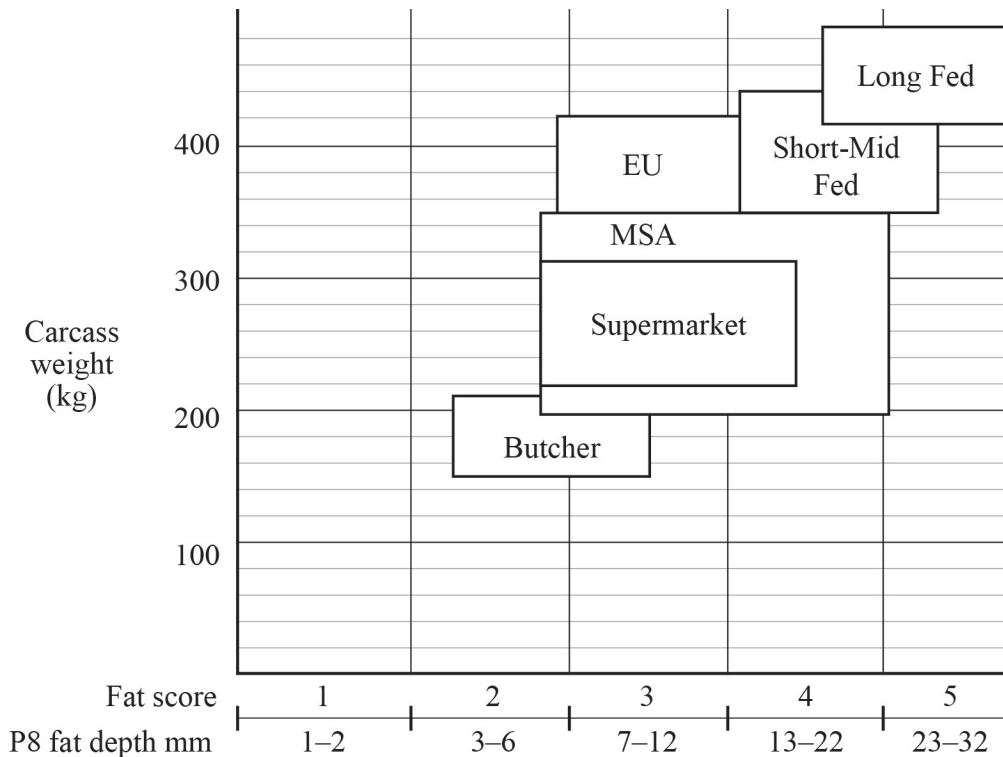
Some of the market specifications for an animal carcass set by industry bodies (e.g. Meat Standards Australia) include

- (A) rib fat, external parasite count, sex, carcass weight, pH, meat colour, tropical breed content, hormone growth promotants.
- (B) carcass weight, pH, meat colour, marbling, sex, rib fat, tropical breed content, hormone growth promotants.
- (C) pH, meat colour, marbling, sex, tropical breed content, rib fat, carcass weight, marbling, hide colour.
- (D) meat colour, marbling, rib fat, carcass weight, pH, sex, polledness, hormone growth promotants.

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QUESTION 10

The figure below shows the target market specifications for cattle carcasses.



The table below shows the carcass weight, fat score and fat depth for four different animals.

Animal	Carcass weight (kg)	Fat score	P8 fat depth (mm)
I	210	3	10
II	240	3	8
III	320	4	17
IV	290	4	14

From the information in the figure and table, which animal/s would most likely meet MSA market requirements?

- (A) Animal I
- (B) Animal I and Animal III
- (C) Animal II and Animal III
- (D) Animal IV

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QUESTION 11

Which of the following is an example of a marketing technique for an agricultural product?

- (A) quality assurance
- (B) value-adding
- (C) auctioning
- (D) bartering

QUESTION 12

The most effective method of comparing the profitability of an alternative enterprise to an existing one is a

- (A) partial budget.
- (B) cash flow budget.
- (C) whole-farm budget.
- (D) gross margin budget.

QUESTION 13

A producer is most likely to change from a regular production system to a certified organic system because of their need to

- (A) respond to a change in consumer demands.
- (B) maximise output while minimising input.
- (C) increase crop yields.
- (D) reduce labour costs.

QUESTION 14

Paddock rotation is a system of

- (A) planting agricultural crops in alternating strips to minimise water erosion on steeper slopes.
- (B) growing different crops on the same paddock from one year to the next.
- (C) alternating the use of paddocks to allow for a rest period.
- (D) breaking up paddocks to maximise feed utilisation.

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QUESTION 15

In terms of plant production, 'biological control' means pest and disease control methods

- (A) that use chemicals.
- (B) that introduce a natural enemy or predator.
- (C) where the pest is attacked and/or destroyed.
- (D) that use a combination of synthetic techniques.

QUESTION 16

The labels below provide information about Products A and B.

Product A

For active immunisation against pulpy kidney, black disease, tetanus, blackleg, vibriosis and malignant oedema in sheep, goats and cattle.

For active immunisation against tetanus and haemorrhagic enterotoxaemia in horses.

Product B

For active immunisation against pulpy kidney, lamb dysentery, tetanus and vibriosis in pigs.

For active immunisation against pulpy kidney, haemorrhagic enterotoxaemia, malignant oedema, blackleg, black disease, redwater and tetanus in ruminant animals.

Compare the information about diseases controlled by Product A and Product B.

A disease that is covered by both products for ruminants is

- (A) haemorrhagic enterotoxaemia.
- (B) malignant oedema.
- (C) dysentery.
- (D) vibriosis.

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QUESTION 17

An exotic disease is

- (A) an organism that injures, irritates or damages livestock, livestock products or plant products, and that can adversely affect production.
- (B) a disorder of structure or function in an animal or plant that is not simply a direct result of physical injury.
- (C) an animal disorder that by law must be reported to government authorities.
- (D) an infectious disease that normally does not occur in the region.

QUESTION 18

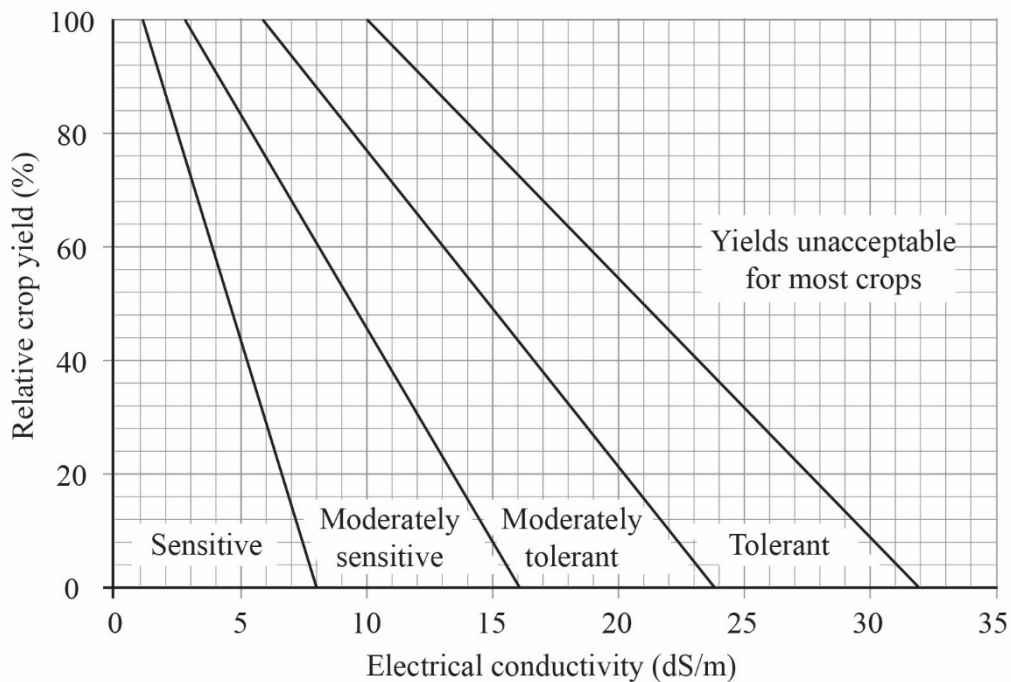
The term *animal welfare* considers the

- (A) physical and psychological wellbeing of animals.
- (B) husbandry practices that maximise animal production.
- (C) study of non-human relations, including animal rights and animal psychological welfare.
- (D) process of an animal increasing in size and weight with the assistance of management decisions.

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QUESTION 19

The figure below shows crop tolerance to soil salinity.



For which of the following ranges of soil salinity would an agricultural crop classified as tolerant record a relative crop yield of 80%?

- (A) 24.0–32.0 dS/m
- (B) 2.5–14.5 dS/m
- (C) 9.5–14.5 dS/m
- (D) 5.5–9.5 dS/m

QUESTION 20

Which of the following is an example of a risk avoidance strategy for an agricultural producer?

- (A) establishing a monoculture farming system
- (B) increasing the stocking rate on their property
- (C) maintaining a constant stocking rate throughout the year
- (D) growing more than one type of agricultural crop at the same time

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References

Question 5

Derived from Cornell University 2018, 'How does soil fertility influence the competitive balance between crops and weeds?', *Organic Agriculture at Cornell*,
www.hort.cornell.edu/extension/organic/ocs/tutorial/weeds/fertility.html.

Question 10

Andrews, T 2015, *Market specifications for cattle*, NSW Government Department of Primary Industries,
www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/148415/Market-specifications-for-cattle.pdf. © State of New South Wales through the Department of Trade and Investment, Regional Infrastructure and Services 2015. Used under a bare licence — worldwide.

Question 16

Derived from Coopers 2019, 'Tasvax 5 in 1', www.coopersanimalhealth.com.au/products/Tasvax5In1.

Question 19

Food and Agriculture Organization of the United Nations, 'Annex 1. Crop salt tolerance data',
www.fao.org/docrep/005/y4263e/y4263e0e.htm. Reproduced with permission.

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