



SAMPLE ASSESSMENT TASKS

ANIMAL PRODUCTION SYSTEMS
ATAR YEAR 11

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Sample assessment task

Animal Production Systems – ATAR Year 11

Task 8 – Unit 1

Assessment type: Investigation

Conditions

Period allowed for completion of the task: 4 weeks

Task weighting

5% of the school mark for this pair of units

Drench resistance and effectiveness trial

(66 marks)

Background information

Worm control in sheep is an important factor in profitable and sustainable sheep and wool production. Drench chemicals are part of the strategy to control sheep worms, but in Western Australia worms are increasingly resistant to drenches. Therefore it is important to preserve the few remaining effective drenches.

When a new drench group is introduced, resistant worms comprise a tiny fraction of the worm population. When exposed to the drench, resistant worms have a survival advantage over non-resistant worms. Therefore, the proportion of resistant worms in the population increases and, as resistance is genetically-based, when resistant worms reproduce resistance is passed to the next generation. In this way, each subsequent generation has an increase in the proportion of resistant worms.

You are required to complete a scientific investigation (drench resistance/worm egg count (WEC) reduction test) to determine the effectiveness of the various drenches used or that could be used on the College farm.

What you need to do:

- 1. Plan the investigation**
 - Develop a hypothesis to test
 - Plan the investigation, using elements of experimental design including variables and controls
 - Select appropriate equipment/livestock/materials to use in the investigation
- 2. Conduct the trial**
 - Carry out the investigation in an organised and safe manner
 - Accurately collect and record data
 - Minimise sources of error (large sample size, replicates, repeat trials, random sampling)

3. **Process data**
 - Calculate means
 - Analyse data (interpret tables, graphs and statistics, identify trends, make comparisons, consider validity of results)
 - Select appropriate methods to display results
4. **Discuss and evaluate**
 - Relate the hypothesis to the results
 - Discuss the results – what was measured and observed?
 - Draw conclusions which are consistent with the data using scientific knowledge
 - Make general suggestions for improving the techniques or the design of the investigation
 - Make a recommendation based on the results

What you need to submit for assessment

1. You will need to submit your findings in the form of a **scientific report** using the *Scientific Investigation: Drench Resistance and Effectiveness Trial* sheet provided.

Notes

1. By convention, scientific reports are written in the passive past tense which means you do not report as 'I', 'we', or 'you', for example, 'the distance was measured' not 'I measured the distance'.
2. **Variables** are anything which will influence the outcome of an investigation.
3. A **hypothesis** states a cause/effect relationship between the dependent and independent variables.
4. The **independent variable** is selected to be the cause of the relationship.
5. The **dependent variable** refers to the effect and how it changes as a result of changes to the independent variable.
6. **Observations** refer to anything we can detect directly using our senses. The information collected is referred to as data.
7. **Inferences** are conclusions drawn from observations.

Scientific Investigation Report: Drench Resistance and Effectiveness Trial

a) **Title**

Title: _____

Student name: _____

Date: _____

Other members of the group: _____

b) **Introduction**

i. Identify **two (2)** reasons why control of worms in sheep is important. (2 marks)

ii. Describe **two (2)** problems that can arise from the use of drenches to control worms. (4 marks)

iii. Outline **two (2)** strategies that are used to reduce the development of resistant strains of sheep worms. (4 marks)

iv. Outline what you are going to investigate. (2 marks)

v. State your hypothesis. (*Hint: it needs to be a statement that can be tested.*) (2 marks)

- vi. Identify the independent, dependent and at least **three (3)** control variables in the investigation. (7 marks)

What will I keep the SAME?	What will I CHANGE?	What will I MEASURE?
CONTROLLED VARIABLES	INDEPENDENT VARIABLE	DEPENDENT VARIABLE

- c) **Equipment/Materials** (4 marks)

List the equipment and materials you will need to carry out your investigation.

f) **Discussion**

(6 marks)

- Describe any patterns or trends you observe in your data.
- Explain the patterns or trends in your data.
- Do the data support the hypothesis? Explain.

g) Conclusion

(8 marks)

- State a conclusion that relates to the hypothesis.
- Validate conclusions based upon the data and indicate your level of confidence in the conclusions.
- Discuss management recommendations.

h) Evaluation

(4 marks)

- Discuss the main sources of experimental error.
- Suggest how the experimental design may have been improved to reduce any errors. Or if you think no changes are needed, explain why.

i) **References and Appendices** (4 marks)

Provide a reference list such that any sources of information used in the investigation and report are acknowledged and another reader could access these resources.

For books, the name of the author(s), title of the book, date of publication and publisher need to be provided.

For scientific reports, the name of the author(s), report title, date of publication and where the report is published need to be provided.

Where web based sources are used, give its html address, the date accessed and, ideally, the author and/or publisher of the website.

DECLARATION	
<i>I declare that this is my own work. Where it is not my own, I have appropriately referenced it.</i>	Name:
	Signature:

Marking key for sample assessment task 8 – Unit 1

Description	Marks
b) Introduction	
i. Recognition that control of worms is important for	
• animal health	1
• sustainable meat and wool production (or any other two suitable reasons)	1
ii. Describes two possible problems of drench use such as	
• development of resistance in worms	1–4
• possible residues in meat and/or wool	(up to 2 each problem)
• potential pesticide contamination of soil and/or water	
iii. Outline of two possible strategies to reduce development of resistance such as	
• quarantining introduced livestock until their WEC status is established	
• rotating drench groups, including combinations, to avoid relying on only one chemical group	
• monitoring the worm status of the flock regularly through WEC's so as to drench only when necessary	1–4
• selecting sheep bred for increased resistance to worms	
• managing stock nutrition to keep sheep well-conditioned and naturally resilient	
• using grazing/paddock management strategies	
iv. Recognition that the investigation is to determine the worm egg count of sheep drenched with different chemicals.	
v. Statement of hypothesis relating independent and dependent variables e.g. 'Drenching sheep with a triple combination drench will give a lower worm egg count than drenching sheep with abamectin.'	2 1–2
vi. Identification of variables	
• independent variable – types of drenches	1–2
• dependent variable – worm egg count reduction test	1–2
• identification of at least 3 control variables e.g. doses of active ingredients, time of administering drench, time egg count done after administering drench, age of sheep, condition of sheep, breed of sheep, nutrition, sex of sheep	1–3
Subtotal	21
c) Equipment/Materials suitable for the conduct of the experiment is listed	1–4
d) Method described in sufficient detail that someone reading the description can repeat the experiment and provides evidence for	1–2
• control of variables (fair testing conditions)	1–3
• appropriate measurement techniques	1–2
• suitable dosing levels identified	1–2
• use of repeats and replicates	1–2
Subtotal	15

Description	Marks
e) Results displayed appropriately in table(s) <ul style="list-style-type: none"> appropriately labelled columns units included as appropriate in column titles includes repeat averages supporting description of results in the table 	1–2 1–2 1–2 1–2
Subtotal	8
f) Discussion <ul style="list-style-type: none"> recognition of differences in drench types explanation of differences e.g. likely that newer chemicals have less resistance as worms have not been exposed to these as much as older chemicals; if combinations of chemicals used, combination can be more effective because those surviving one of the chemicals may be killed by the other chemical statement relating data to hypothesis 	1–2 1–2 1–2
g) Conclusion <ul style="list-style-type: none"> states a conclusion that relates to the hypothesis validates conclusions based upon the data and indicates level of confidence in the conclusions discusses management recommendations 	1–2 1–3 1–3
h) Evaluation <ul style="list-style-type: none"> identifies and discusses main sources of experimental error suggests possible improvements or justifies lack of need for changes to experimental design 	1–2 1–2
Subtotal	18
i) Referencing <ul style="list-style-type: none"> at least three sources – 1 mark each up to a maximum of 3 marks clear referencing allowing verification 	1–3 1
Subtotal	4
Total	66

Sample assessment task

Animal Production Systems – ATAR Year 11

Task 2 – Unit 1 and Unit 2

Assessment type: Production

Conditions

Period allowed for completion of the task: This task is developed over the year with sections due on specific dates

Task weighting

24% of the school mark for this pair of units

Dairy Whole Farm Plan

(183 marks)

The key to successful dairy farming is an integrated plan which includes:

- having a clear view of your objectives – short, medium and long term
- making decisions that always bring you closer to your goals
- carefully monitoring progress (e.g. using records and data), and
- being prepared for changes e.g. extra fodder in case of a poor season.

This task involves analysing the structure and operation of a dairy enterprise. Your group is expected to identify the key performance indicators (goals) and review management strategies used in the enterprise. You will assess performance of the operation by observing, measuring, recording, tabulating and interpreting data. You will be given an opportunity to make recommendations for modifications and further developments that could improve the sustainability of the farm.

Tasks for completion

Part	Activity	How activity will be assessed	Due date	Marks	%
1	Interview	In-class validation task		51	5
2	Calendar of operations	Calendar and report on operations		20	4
3	Goals	Report of goals		30	3
4	Herd recording	Ranking of selected cows; records; discussion of recommendations		32	3
5	Risk management	In-class validation task		12	3
6	Cash flow budget	Cash flow budget		10	3
7	Whole-farm site plan	Three aerial photograph overlays showing existing farm features; soil types/land management units; recommended changes and accompanying report		28	3
Total				183	24%

Part 1: Interview with the dairy manager

Brainstorm with a partner the questions you could ask about the dairy enterprise. Aim to make your questions clear so that the manager understands the kind of information you need.

You should start from a position of some knowledge. Questions should relate to:

a) **Structure of the enterprise**

- Land use types, paddock size, labour requirements, capital equipment
- Cattle numbers, herd structure, values and breeds
- Pastures, grazing systems, stocking rates and supplementary feeding

b) **Economics and markets**

- Types, quantity and value of products; available markets and market specifications
- Supply and demand, trends
- Cost of production, profitability of enterprise
- Key performance indicators/goals
- Quality assurance systems

c) **Animal Health**

- Impact of pests and diseases on production
- Monitoring of pests and diseases
- Factors influencing pest and disease control programs (including mastitis)

d) **Breeding and improvement**

- Aims of breeding and selection
- Methods used for selection and culling
- Selection criteria

e) **Requirements for sustainable production**

- Maintaining and improving the quality of soil and water
- Risks to sustainable production
- Sustainability of current management practices
- Technology used in the enterprise and requirements for the future

Part 2: Calendar of Operations for the dairy

Develop a calendar of operations for the enterprise that includes both livestock and grazing practices.

Provide in table format the month and operations occurring in the month.

Select **three (3)** months and for each activity in these months describe

- the importance of the operation, and
- why its timing is important.

Part 3: Goals of the enterprise

Typically a sustainably-focussed dairy enterprise would have production goals based on:

- milk production
- milk quality
- calving percentage
- mortality rates
- stocking rate (per hectare).

For each of the above aspects, state an appropriate goal. Use regional industry benchmarks to assist in identifying the goals. For the goals stated, discuss strategies and management techniques that can be used to achieve them (including those already occurring in the enterprise and any you recommend be implemented).

Part 4: Herd recording

Select **four (4)** cows from the dairy herd, monitor their production and evaluate their production against the standards specified by the market (consider quality assurance) and the enterprise goal for average milk production per cow.

Select production data to display using suitable methods.

Discuss recommendations for your selected cows to optimise productivity in terms of feeding, breeding (including sire selection) and culling.

Note: Use the following web sites to select bulls to inseminate individual cows. Justify your selection (e.g. milk quality, milk production, cow structure/conformation).

<http://www.genaust.com.au/>

<http://www.agrigene.com.au/>

Part 5: Risk management

Identify the risks to sustainable production of the enterprise and the factors that increase the chance of the risk occurring. For **two (2)** of the risks you have identified, discuss management strategies used to lessen the chance of the risk occurring and, if it does occur, reduce its impact.

Part 6: Dairy cash flow budget

Develop an annual cash flow budget of income and expenditure for the dairy enterprise.

- Using last year's income and expenditure figures develop an annual cash flow budget for the dairy enterprise for the current year.
- Consider adjustments that need to be made to this year's budget. For example, number of cows milked, cost of inputs, capital item replacement.
- Briefly outline your rationale for the adjustment of income items and variable costs.

Part 7: Whole-farm site plan

Produce a whole-farm site plan for the dairy enterprise.

a) Plan 1

Map the existing features on an aerial photograph. On the first clear overlay provided, mark in the following:

- areas which are not used for agricultural production
- areas used for grazing and cropping
- areas of degradation
- existing fences, gateways, water troughs, dams, waterways
- location of dairy, sheds, stockyards, tanks, silos
- location of roads/laneways to connect paddocks, buildings, yards and other services, and
- shelter belts, tree plots, revegetation areas/remnant vegetation.

b) Plan 2

Using a second overlay, map the Land Management Units (LMU) by:

- identifying the soil types on the farm and recording their areas on your plan
- dividing the farm into LMU's based on soil type, slope, drainage and vegetation, and
- justify your decisions.

c) Plan 3

From the above plans, use a third overlay to produce a new whole-farm site plan that shows your recommendations for:

- relocating fences, tracks, gateways, waterpoints, laneways to improve the operation of the enterprise
- management of different soil types and foster landcare.

Also consider the incorporation of trees, fodder shrubs, perennial pastures and drainage to reduce the risk of degradation. Explain your recommendations.

In relation to your new plan:

- discuss the conservation of biodiversity and functioning natural ecosystems, and
- outline government legislation for the protection of the environment that the farmer should be aware of.

Dairy Whole Farm Plan

Task 2 Part 1: In-class validation of Dairy Whole Farm Plan interview

Time: 90 minutes

Answer the following questions based on the information you collected in your interview.

You may use your notes for this in-class validation.

1. **Structure of the enterprise: land resources**

Outline how the land resources support the dairy enterprise.

In your answer, refer to land use types, pastures, grazing systems, stocking rates, fodder production. (5 marks)

3. **Animal health**

a) Identify **one (1)** pest or disease that needs to be controlled in the enterprise. (1 mark)

b) For the selected pest/disease in (a) describe:

- i. the impact it has on the production system
- ii. how its presence is monitored
- iii. how it can be prevented
- iv. how it can be managed if present
- v. factors that influence control programs for the pest/disease.

(20 marks)

4. **Breeding and improvement**

Outline how the animal breeding and selection program aims to:

- i. optimise enterprise profitability
- ii. meet market requirements for products.

In your response, include reference to selection criteria.

(10 marks)

5. **Requirements for sustainable production**

a) Describe **one (1)** strategy used on the farm to maintain and improve soil quality.

b) Identify a technology used in the enterprise and describe how it improves efficiency.

(5 marks)

Dairy Whole Farm Plan

Task 2 Part 5: In-class validation of Dairy Whole Farm Plan Risk management task

Time: 50 minutes

1. Complete the following table by identifying **four (4)** risks to the enterprise and giving the cause for each. (8 marks)

Risk	Cause

2. For **two (2)** of the risks identified in question 1, briefly describe strategies to prevent it, and, if it becomes necessary, how to remedy it. (4 marks)

Risk 1

Risk 2

Marking key for sample assessment task 2 – Unit 1 and Unit 2

Part 1: Interview – In-class validation test

Description	Marks
1. Structure of the enterprise: land resources	
Outline of land resources includes information about:	
• land use types	1
• pastures	1
• grazing systems	1
• stocking rates	1
• fodder production	1
Subtotal	5
2. Economics and markets	
Main product of dairy enterprise identified	1
Enterprise productivity expressed in terms of	
• quantity of product sold	1
• value of product sold	1
• cost of production (per unit)	1
Identifies one available market for the enterprise	1
Describes the market specifications for the enterprise product	1–5
Subtotal	10
3. Animal health	
Identifies one pest or disease that needs to be controlled in the enterprise	1
For the selected pest/disease describes	
• the impact it has on the production system	1–4
• how its presence is monitored	1–4
• how it can be prevented	1–4
• how it can be managed if present	1–4
• factors that influence control programs for the pest/disease	1–4
Subtotal	21
4. Breeding and improvement	
Outlines how the enterprise breeding and animal selection program aims to:	
• optimise enterprise profitability	1–3
• meet market requirements for products	1–3
• refers to selection criteria	1–4
Subtotal	10
5. Requirements for sustainable production	
Describes one strategy used on the farm to maintain and improve soil quality	1–2
Identifies a technology used in the enterprise	1
Describes how the identified technology improves efficiency	1–2
Subtotal	5
Total	/51

Part 2: Calendar of Operations

Description	Marks
Extensive list of activities included in calendar and provided in table format showing month each activity occurs	1–5
For three months	
<ul style="list-style-type: none"> description of importance of activity to the enterprise description of why timing of activity is important 	1–5 for each month
Total	20

Part 3: Goals

Description	Marks
Appropriate goal stated based on industry bench mark (1 mark for each area)	1–5
Detailed discussion of strategies to achieve stated goal (up to 5 marks for each area)	1–25
Total	30

Answer could include, but is not limited to:

For milk production goal expressed in terms of average milk production/cow/year and strategies for high milk production such as

- high protein/energy feed
- increased feed before calving
- breed for high milk production
- good health/low mastitis
- low stress

For milk quality goal expressed in terms of

- butter fat (e.g. 4%)
 - protein (e.g. 3.2%)
 - antibiotic free
 - storage e.g. 4°C within two hours of milking
 - somatic cell count e.g. 150 000 pp/mL
 - bacteria count e.g. 55 000 pp/mL
- and identifies strategies to monitor and/or improve milk quality such as
- breeding e.g. breed selection, animal selection, genetics
 - feeding e.g. sufficient protein, energy, fibre, minerals, vitamins; ration formulation, feed tests, high quality forages
 - structure of herd e.g. ages, stage of lactation
 - hygiene practices

For calving percentage goal of 95–96% calving rate and identifies strategies to achieve desired calving rate such as

- good nutrition/health
 - cull cows for poor fertility/age
 - disease control (vaccinate for leptosporosis)
 - breed for size
 - breed for conformation
 - ease of calving
 - breed for high fertility
- and identifies strategies to achieve desired calving rate such as
- nutrition/supplementary feeding
 - condition score 2–3
 - health (vaccinate, backline, mastitis control)
 - fertile healthy, vigorous bulls
 - quality AI technicians

Description	Marks
<p>For mortality rate goal identifies strategies to decrease death % such as</p> <ul style="list-style-type: none"> • nutrition/supplementary feeding • health program – parasite control, vaccinate, mastitis control • selective breeding • disease prevention and treatment (milk fever) • calving management 	
<p>For stocking rate goal sets a realistic target e.g. 1.2 lactating cows/ha, and identifies strategies to maintain/increase stocking rate/ha such as</p> <ul style="list-style-type: none"> • improved pastures (re-seeding) • fertiliser application (N, P & K and lime) • supplementary feeding (hay, silage, TMR) • cobalt program • irrigation • strip/rotational grazing 	

Part 4: Herd recording

Description	Marks
<p>Data recorded and displayed in tables and graph and includes</p> <ul style="list-style-type: none"> • milk quantity (L/day) graph (up to 2 marks) • milk quality in terms of % protein graph (up to 2 marks) • milk quality in terms of % butter fat graph (up to 2 marks) • somatic cell count graph (up to 2 marks) 	1–8
<p>Evaluation of each cow's performance compared to enterprise goal for milk production and milk quality (up to 2 marks for each cow)</p>	1–8
<p>Makes recommendations for each cow to improve enterprise productivity in terms of feeding requirements, breeding (including sire selection) and culling (up to 4 marks per cow)</p>	1–16
Total	32

Part 5: Risk management – In-class validation test

Description	Marks
<p>1. Complete the following table by identifying four (4) risks to the enterprise and giving its cause.</p>	
<p>Identifies four risks</p>	1–4
<p>States cause of each risk (1 mark per risk)</p>	1–4
Subtotal	8
<p>2. For two (2) of the risks identified in question 1, briefly describe strategies to prevent it and if it becomes necessary how to remedy it.</p>	
<p>Management strategies and remedies stated for 2 risks (2 marks per risk)</p>	1–4
Subtotal	4
Total	12

Part 6: Cash flow budget

Description	Marks
Cash flow budget shows income sources	1–3
Cash flow budget shows expenditures	1–3
Rationale for the adjustment of income items and variable costs	1–4
Total	10

Part 7: Whole-farm site plan

Description	Marks
Plan 1	
Aerial photograph overlay shows following features: <ul style="list-style-type: none"> • areas not used for agricultural production • areas used for grazing and cropping • areas of degradation • existing fences, gateways, water troughs, dams, waterways • location of dairy, sheds, stockyards, tanks, silos • location of roads/laneways to connect paddocks, buildings, yards and other services • shelter belts, tree plots, revegetation areas/remnant vegetation 	1–5
Subtotal	5
Plan 2	
Overlay shows soil types on the farm Map shows farm divided into land management units (LMUs) based on soil type, slope, drainage and vegetation Explanation of choice of LMUs	1–5
Subtotal	5
Plan 3	
Overlay shows, where appropriate, following features mapped on to it <ul style="list-style-type: none"> • relocated fences • relocated gateways • relocated water points • relocated laneways • new tree plantings • fodder shrubs • perennial pastures • drainage The reason for any relocations are explained Discussion of conservation of biodiversity and natural ecosystem components including things such as <ul style="list-style-type: none"> • soil health • water quality • plant pollination • nutrient cycling Outline of government legislation for protection of the environment relevant to agriculture	1–5 1–5 1–3
Subtotal	18
Total	28

Sample assessment task

Animal Production Systems – ATAR Year 11

Task 3 – Unit 1 and Unit 2

Assessment type: Test

Conditions

Time for the task: 60 minutes

Task weighting

5% of the school mark for this pair of units

Year 11 ATAR Test

Question/Answer Booklet

STUDENT NAME: _____

Time allowed for this paper: 60 minutes

Materials required/recommended for this test

To be provided by the teacher

This Question/Answer Booklet

To be provided by the candidate

Standard items: pens, pencils, eraser, correction fluid, ruler, highlighters

Special items: non-programmable calculators

Structure of this test

Section	Number of questions available	Number of questions to be answered	Suggested working time (Minutes)	Marks available
Section One: Multiple-Choice	20	20	20	20
Section Two: Short answer	3	3	30	22
			Total	42

Instructions to candidates:**Section One:** Multiple-choice

Answer all questions on the answer sheet provided using only a blue or black pen. For each question circle either a, b, c, or d.

If you make a mistake, place a cross through that circle, and circle your new answer. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

Section Two: Short answer

Write your answers in this Question/Answer booklet.

Section One: Multiple-choice**(20 Marks)**

Answer all questions on the answer sheet provided using only a blue or black pen. For each question circle either a, b, c, or d.

If you make a mistake, place a cross through that circle, and circle your new answer. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

Suggested working time for this section is 25 minutes.

1. Ruminant animals break down fibrous foods because
 - a) they have very strong acid in their rumen.
 - b) they re-chew their food.
 - c) their rumen contains bacteria that help break down fibre.
 - d) their saliva contains fibre-specific enzymes.

2. Microorganisms in the rumen consist of
 - a) white blood cells, fungi and protozoa.
 - b) protozoa, viruses and bacteria.
 - c) spores, bacteria and viruses.
 - d) bacteria, fungi and protozoa.

3. Which part of the ruminant's digestive system is referred to as the 'true stomach', because it secretes gastric juice?
 - a) reticulum
 - b) omasum
 - c) rumen
 - d) abomasum

4. The fermentation process used in microbial digestion produces a large volume of
 - a) water.
 - b) gas.
 - c) urine.
 - d) faeces.

5. The majority of nutrient absorption in both ruminants and monogastric animals occurs within the
- pancreas.
 - large intestine.
 - small intestine.
 - stomach
6. For optimal sperm production, it is important for the testes to be
- at a temperature higher than the normal body temperature.
 - at a temperature lower than the normal body temperature.
 - inside the body cavity at 37°C.
 - outside the body cavity at 37°C.
7. The oestrous cycle is
- the limited period of time when the female will accept and mate with a male.
 - when a young animal's reproductive organs become functional.
 - the shedding of an egg from the ovary so that fertilisation may occur.
 - a repetitive cycle involving periods of sexual activity and sexual inactivity.
8. Which hormone is produced by the maturing follicle on the ovaries and causes a female to come on heat and ovulate a few days later?
- oestrogen
 - oxytocin
 - testosterone
 - prostaglandin
9. In cattle 'heat' (oestrus) lasts for approximately
- 1–2 hours.
 - 6–8 hours.
 - 12–18 hours.
 - 24 hours.

10. In which one of the following sites does fertilisation of the egg by the sperm occur?
- a) ovary
 - b) fallopian tube
 - c) uterus
 - d) cervix
11. Implantation refers to the
- a) union of the sperm and the egg.
 - b) placement of semen into the vagina by the male.
 - c) attachment of the fertilised ovum to the uterine wall.
 - d) release of the placenta from the uterine wall after birth.
12. A bull with poor 'libido' would most likely be
- a) unable to mate.
 - b) physically deformed.
 - c) more aggressive.
 - d) less inclined to mate.
13. Which one of the following is **not** a sign that birth will occur soon?
- a) an increase in the size of the udder
 - b) an increase in the amount of water consumed
 - c) an increase in mucus secretion from vagina
 - d) an increase in the size of the vulva
14. Which one of the following is **not** a stage of the birthing process?
- a) delivery of the placenta
 - b) dilation of the cervix
 - c) production of colostrum
 - d) delivery of the foetus

15. The milk let-down hormone is called
- a) oxytocin.
 - b) adrenaline.
 - c) progesterone.
 - d) prolactin.
16. In lactation, milk moves from the alveoli to the teats by which tubed structures?
- a) ducts
 - b) cisterns
 - c) mammary grooves
 - d) capillaries
17. Which one of the following is a response to adrenaline?
- a) milk let-down speeds up
 - b) sperm production begins
 - c) oestrogen is released
 - d) milk let-down slows down
18. A newborn calf or lamb has an immature rumen so it cannot digest
- a) fats.
 - b) simple sugars.
 - c) fibre.
 - d) protein.
19. A lack of which nutrient will cause death of offspring sooner than any other nutrient?
- a) protein
 - b) water
 - c) vitamins
 - d) minerals

20. Which one of the following **does not** make a mother more susceptible to mastitis?
- a) physical injury of the teats
 - b) the age of the offspring at weaning
 - c) being a high milk-producing breed
 - d) poor hygiene practices

End of Section One

Section Two: Short answer

(22 marks)

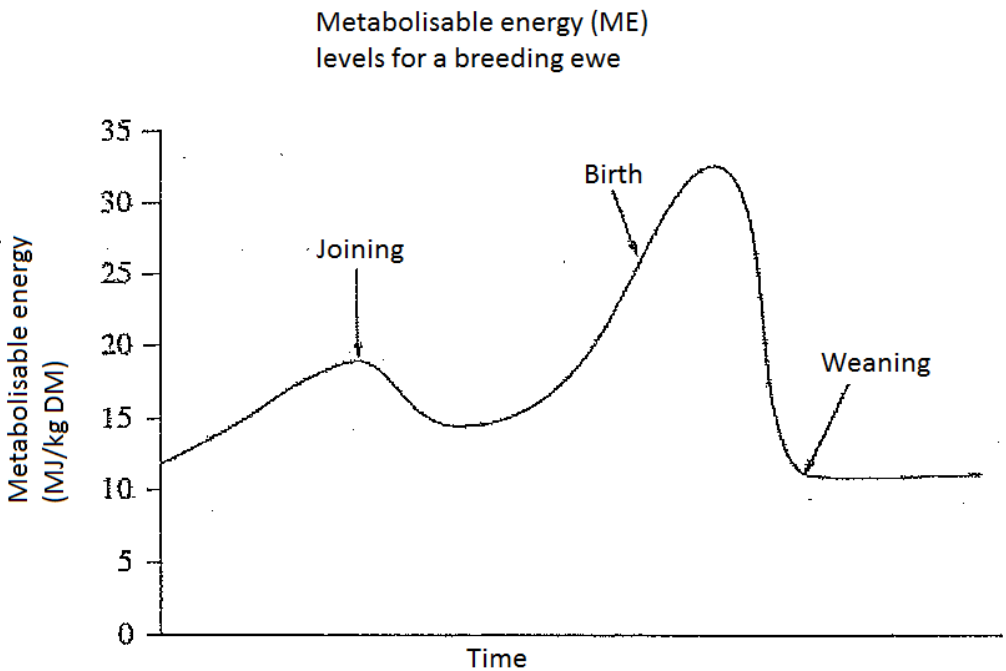
This section has **three** questions. Write your answers in the space provided.

Suggested working time for this section is 35 minutes.

Question 21

(10 marks)

The following graph shows the recommended metabolisable energy (ME) levels required, measured in megajoules per kilogram of dry matter (MJ/kg DM), for a breeding animal during a production cycle.



- a) Explain the trend observed in the graph for the ME levels leading up to joining and birth. (4 marks)

b) List one management practice that is required to increase fertility. At what stage of the production cycle should this occur?

(2 marks)

c) Identify **two (2)** factors, other than nutrition, that may affect the fertility of farm animals and, for each, state how it affects fertility.

(4 marks)

Question 22**(7 marks)**

The following gives the stages in the breeding cycle of a farm animal (cow or sheep).

Implantation	Conception	Ovulation
Calving/lambing	Oestrus	Gestation

Place these stages in order in the table below and briefly describe each stage. Calving/lambing is done as an example.

Order	Stage	Description
1		
2		
3		
4		
5		
6	Calving/lambing	Cow or sheep gives birth

Question 23**(5 marks)**

Complete the table below by either describing the function of the reproductive structure or naming the reproductive structure.

Structure	Function
Follicle	
Testes	
	The site of the germination, maturation, and transportation of the sperm cells
Uterus	
	Supplies nutrients to, and removes wastes from the foetus

End of test

ACKNOWLEDGEMENTS

Section Two

Question 21 Graph from: Board of Studies. (2006). *Agriculture Paper 1: 2006 Higher School Certificate Examination* (p. 10). Retrieved August, 2014, from www.boardofstudies.nsw.edu.au/hsc_exams/hsc2006exams/pdf_doc/agricult_p1_p2_06.pdf

Marking key for sample assessment task 3 – Unit 1 and Unit 2

Section One: Multiple-choice

(30 Marks)

Question	Answer
1	c
2	d
3	d
4	b
5	c
6	b
7	d
8	a
9	d
10	b
11	c
12	d
13	b
14	c
15	a
16	a
17	d
18	c
19	b
20	b

Description	Marks
1 mark per question	0–20
Total	20

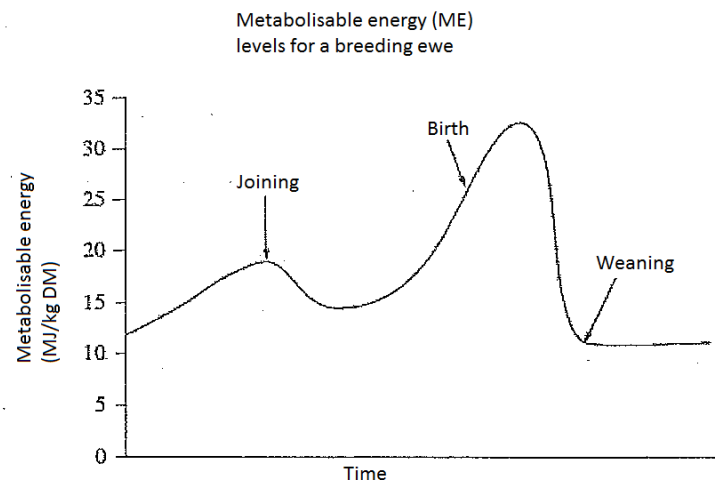
Section Two: Short answer

(22 marks)

Question 21

(10 marks)

The following graph shows the recommended metabolisable energy (ME) levels required, measured in megajoules per kilogram of dry matter (MJ/kg DM), for a breeding animal during a production cycle.



a) Explain the trend observed in the graph for the ME levels leading up to joining and birth. (4 marks)

Description	Marks
Recognition of gradual increase in energy requirements prior to joining	1
Recognition that increased energy needs prior to joining are due to need for increased conditioning as animal enters oestrus	1
Recognition of rapid increase in energy requirements leading to birth	1
Recognition that increased energy needs leading to birth are due to the rapidly growing foetus requiring nutrition from the mother	1
Total	4

b) List one management practice that is required to increase fertility. At what stage of the production cycle should this occur? (2 marks)

Description	Marks
Identification of one management practice	1
Appropriate stage of production cycle is identified for the stated practice	1
Total	2

Answer could include, but is not limited to:

- improved nutrition to meet the energy requirements of the animal.
- improved nutrition should occur prior to joining

- c) Identify **two (2)** factors, other than nutrition, that may affect the fertility of farm animals and, for each, state how it affects fertility.

(4 marks)

Description	Marks
Identification of two factors (1 mark each)	0–2
Appropriate statement of how identified factors affect fertility (1 mark each)	0–2
Total	4
Answer could include, but is not limited to:	
any two factors out of: genetics, temperature, day length, disease	

Question 22

(7 marks)

The following gives the stages in the breeding cycle of a farm animal (cow or sheep).

Implantation	Conception	Ovulation
Calving/lambing	Oestrus	Gestation

Place these stages in order in the table below and briefly describe each stage. Calving/lambing is done as an example.

Order	Stage	Description
1	Oestrus	A recurring period of maximum sexual receptivity in the female; commonly known as being in heat
2	Ovulation	The shedding of an egg from the ovary so that fertilisation may occur
3	Conception	When fertilisation occurs (sperm and ova unite)
4	Implantation	The attachment of the fertilised egg to the lining of the uterus
5	Gestation	The period during which the foetus develops in the female's uterus
6	Calving/lambing	Cow or sheep gives birth

Description	Marks
Correct order provided	2
One error in the order of stages in reproductive cycle	1
1 mark for each description as in the table above	0–5
Total	7

Question 23**(5 marks)**

Complete the table below by either describing the function of the reproductive structure or naming the reproductive structure.

Structure	Function
Follicle	Produce eggs and release hormones to prepare the uterine lining
Testes	The male sex organ that produces sperm and the hormone testosterone
Seminiferous tubules	The site of the germination, maturation, and transportation of the sperm cells
Uterus	Organ where implantation of an embryo occurs
Placenta	Supplies nutrients to, and removes wastes from the foetus

Description	Marks
1 mark for each cell of the table as above	0–5
Total	5

ACKNOWLEDGEMENTS

Section Two

- Question 21** Graph from: Board of Studies. (2006). *Agriculture Paper 1: 2006 Higher School Certificate Examination* (p. 10). Retrieved August, 2014, from www.boardofstudies.nsw.edu.au/hsc_exams/hsc2006exams/pdf_doc/agricult_p1_p2_06.pdf