

T Level Technical Qualification in Agriculture, Land Management and Production: Livestock

8717-033 Core: Paper 2
Exam guide

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1. Introduction

This exam guide for the T Level Technical Qualification in Agriculture, Land Management and Production, Livestock Core: Paper 2 provides general tips for candidates taking this assessment, along with examples of different types of questions that will appear. Example candidate responses have also been provided along with examiner commentary and further hints and tips. The example candidate responses should not be considered as the only or best way to answer the question; their aim is to support transparency of the expectations when candidates are responding to different types of questions.

Marks, as indicated by “(1)” in red, have been added to show where marks have been awarded to support transparency of marking; they were not part of the candidate’s response. Where questions are marked using banded descriptors, individual marks are not indicated in this guide.

2. General Tips

- Spelling, Punctuation and Grammar (SPaG) are not assessed within the core exam; no marks are awarded or deducted based on this. Examiners will make a judgement in relation to phonetic spelling to determine if the candidate has the required knowledge and/or understanding and where there is credit will award the mark(s).
- Handwriting quality: It is essential that candidates provide responses that are clear and legible. Since examination papers are scanned and marked onscreen, ensuring legibility is crucial for accurate marking. Candidates should use a ball-point pen and take care that their handwriting is easy to read. A recommendation would be to use block capitals if handwriting is poor or explore using a scribe.
- It is key that candidates understand the paper is split into two sections (Section A and Section B) and they understand the type of questions they will find in each part of the paper. This can help them with time management ensuring they leave sufficient time to respond to the Extended Response Questions within Section B.
- The order of the paper is modelled in such a way that it gradually increases in level of difficulty. The paper starts with Section A with questions assessing knowledge, before moving onto understanding, then application. Section B then assesses application, analysis and evaluation.
- It is important that candidates carefully read and understand the question, reading it through twice if needed.

3. AO1a – Demonstrate Knowledge

What this assessment objective means

Recall or recognition of specific elements of knowledge which must be committed to long term memory in order to underpin success in the role.

All Assessment Objectives require the ability to recall knowledge. AO1a refers to instances where the candidate is simply required to demonstrate basic recall. In the exam, this helps to give confidence in sufficiency of coverage of the content, and recognises that not all knowledge requires further understanding eg terminology, number facts etc.

A candidate can

- name or recognise technical terms, principles or theories, based on a description/use or vice versa
- distinguish between correct and incorrect definitions/descriptions
- correctly use terminology/terms
- locate a part on a diagram.

This is assessed within the examination by

Simple questions that require knowledge that could be learned by rote (facts) with no requirement to go beyond recall and statement of fact:

- Labelling a diagram with names/locations
- Definitions, facts, recall of purpose of something
- Description of physical appearance of something.

3.1. Question and Mark Scheme

Q2	Stem	State two procedures that must be followed when encountering an emergency on a farm. (2 marks)				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Acceptable answer(s)</th> <th style="width: 30%;">Marking Guidance</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Communication with other farm staff (1) • Follow the emergency action plan (1) • Ensure the safety of self (1) • Ensure the safety of other people (1) • Ensure the safety of the livestock (1) • Contact the emergency services/999 (1) </td> <td> <p>Award 1 mark for each correct answer up to a maximum of 2 marks.</p> <p>Credit any other appropriate response.</p> </td> </tr> </tbody> </table>		Acceptable answer(s)	Marking Guidance	<ul style="list-style-type: none"> • Communication with other farm staff (1) • Follow the emergency action plan (1) • Ensure the safety of self (1) • Ensure the safety of other people (1) • Ensure the safety of the livestock (1) • Contact the emergency services/999 (1) 	<p>Award 1 mark for each correct answer up to a maximum of 2 marks.</p> <p>Credit any other appropriate response.</p>
	Acceptable answer(s)	Marking Guidance				
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Total marks	2 marks					
AO	AO1a					
Specification reference	1.3 Procedures and plans for emergency situations in the livestock sector.					

3.2. Candidate Responses

Example 1 (Marks 2)

Calling emergency services. (1)

Follow procedures stated on risk assessment or emergency plan. (1)

Examiner Commentary on application of mark scheme

The candidate provided two responses that were listed on the mark scheme to achieve the maximum 2 marks.

Example 2 (Marks 1)

Call for an ambulance. (1)

Phone 999.

Examiner Commentary on application of mark scheme

999 would be called to request an ambulance. These two responses come under the same bullet point in the mark scheme. Therefore only 1 mark is awarded.

3.3. Examiner Hints and Tips

- Where candidates struggle to achieve marks in relation to AO1a, this is because they may not have the knowledge the question is targeting, meaning they do not have a secure breadth of knowledge across the syllabus. Candidates may either leave the question blank or will recall an incorrect fact, acronym or name.
- Candidates sometimes pick up on key words and capture knowledge around this. They should be encouraged to read the full question and ensure they are answering this accurately.
- When asked to recall legislation or regulations, examiners will accept industry recognised abbreviations and acronyms, as shown in the marking scheme. Candidates do not need to provide the date of the legislation to be awarded with the mark.
- Examiners will also accept alternative answers and wording, if acceptable within the marking guidance. For example, descriptions of terms or definitions.
- Where a candidate does not know the answer, or is unsure, they should be advised to leave these questions and come back to them once they have completed the rest of the paper.
- As per the guidance at the top of the paper, examiners will only accept the first two responses (if two answers are required) for marking. It was common for candidates to list multiple answers with the correct answer at the end of this list. It is important for candidates to understand that only the required number of responses will be marked.

4. AO1b – Demonstrate Understanding

What this assessment objective means

The ability to explain principles and concepts beyond recall of definitions in order to be able to transfer these principles and concepts between contexts. Candidates have built connections between related pieces of knowledge.

AO1b focuses on the ability of the candidates to show understanding by summarising or explaining concepts in their own words, exemplifying or comparing and making inferences in general terms that show, for example, cause and effect.

A candidate can

- explain a concept in their own words
- explain what it means in practice
- describe a process
- describe how something has an impact on another
- give relevant examples
- say what the impact/implication may be in general terms

This is assessed within the examination by

Straightforward questions requiring demonstration, beyond recall, of understanding about something. Response is in general terms, or a concrete exemplification.

- Why is...?
- What does ... mean?
- Give an example of how...
- Describe how...
- Explain the use of...
- Explanation of how something works
- Explanation of the benefits/weaknesses of...

4.1. Question and Mark Scheme (Describe)

Q5	Stem	Describe how one feature of each of the following anatomical structures supports its function: a) Trachea. b) Alveoli.	(1 mark) (1 mark)
	Acceptable answer(s)		Marking Guidance
a)	<ul style="list-style-type: none"> • (C-shaped) cartilage rings keep the trachea open (1). • The tube structure allows for the passage of air (into/out of the lungs) (1). • Cilia remove debris/dust particles (1). 		<p>Award 1 mark for a correct answer.</p> <p>Credit any other appropriate response.</p>
b)	<ul style="list-style-type: none"> • Large surface area optimises gaseous exchange (1). • Surrounded by capillaries that provide a good blood supply (1). • Thin cell membranes provide a short distance for the diffusion of the gases (1). • Moist surface optimises gaseous exchange (1). 		<p>Award 1 mark for a correct answer.</p> <p>Credit any other appropriate response.</p>
Total marks	a) 1 mark b) 1 mark		
AO	AO1b		
Specification reference	5.1 Anatomy and physiology systems of livestock.		

4.2. Candidate Responses

Example 1 (2 marks)

- a) *Has tiny hairs called cilia that trap dust. (1)*
- b) *Gas exchange takes place over the large surface area. (1)*

Examiner Commentary on application of mark scheme

- a) This response provides a linked structure and function to achieve 1 mark.
- b) This response provides a linked structure and function to achieve 1 mark.

Example 2 (1 mark)

- a) *A wide tube so its more air can travel to the lungs (1)*
- b) *Having a large surface area so that nutrients can be absorbed*

Examiner Commentary on application of mark scheme

- a) The candidate linked the structure (wide tube) to its function (travel air to the lungs). This response was awarded 1 mark.
- b) The candidate provided a correct structure of alveoli, however its function was incorrect. No marks were awarded for this response.

4.3. Examiner Hints and Tips

- In questions such as this, candidates should take the approach of stating their first point before developing these points to demonstrate knowledge and understanding.
- Candidates must provide more than an outline or list of facts.
- It is important to note that candidates are not required to provide an explanation in these types of questions.

4.4. Question and Mark Scheme (Explain)

Q7	Stem	Explain two impacts that disease can have on the success of rearing young livestock. (4 marks)
	Acceptable answer(s)	Marking Guidance
	<ul style="list-style-type: none"> Impaired growth due to reduced appetite/increased energy expenditure (1) leading to longer production cycles (1). Weakened immune system resulting in increased vulnerability to further infections/animals being carriers of disease (1) which can spread further pathogens to other animals within the herd/flock (1). Increased mortality rates due to low immunity in young animals (1) resulting in a reduced number of animals available for market/breeding (1). Medicines/treatment would need to be purchased from/prescribed by the vet which brings increased costs (1) leading to a reduction in overall profits (1). 	<p>Award 1 mark for a basic explanation, and award 1 further mark for a developed explanation, up to a maximum of 2 marks.</p> <p>Award a maximum of 4 marks for two impacts that are fully explained.</p> <p>Credit any other appropriate response.</p>
Total marks	4 marks	
AO	AO1b	
Specification reference	6.1 Diseases, disorders, parasites, ailments and notifiable diseases that can affect livestock in all stages of production.	

4.5. Candidate Responses

Example 1 (4 marks)

The animals are likely to die as they are more vulnerable to disease when they are young (1). This could result in the farmer having less animals growing to adult weight or sale (1).

The calves could be slow growing as nutrients could be lost from scours (1). This could mean that it takes longer to fatten them or put them with a bull to breed (1).

Examiner Commentary on application of mark scheme

The candidate provided a response with two fully explained answers to achieve 4 marks in total. Each of the two responses provide a statement ('the animals are likely to die' / 'the calves could be slow growing') and basic explanation ('as they are more vulnerable to disease when they are young' / 'as nutrients could be lost from scours') for 1 mark, with a second mark awarded for the further explanation ('this could result in the farmer having less animals growing to adult weight or sale' / 'this could mean that it takes longer to fatten them or put them with a bull to breed'). The responses were valid and covered the answers found in the mark scheme.

Example 2 (3 marks)

Disease can stunt or effect growth rates of stock causing them to not hit market requirements (1) and therefore losing farmer money (1).

Disease may weaken the immune system which would mean the farmer would need to buy more medicines (1) which would mean a loss of money for the farmer.

Examiner Commentary on application of mark scheme

The first response demonstrated full understanding of the impact of disease. The candidate provided a statement and basic explanation for 1 mark, with a further explanation for the second mark.

The second response provided a clear statement and basic explanation to achieve 1 mark. However, the further explanation was unfortunately a repetition from their first answer. In order to achieve the last mark, the candidate needed to provide a different explanation when developing this response – for example, 'resulting in an increased workload for employees'.

Example 3 (2 marks)

It would cost the farmer more due to the vet visits and medicines (1).

The young stock are less likely to grow as fast which means that the animals may not get to slaughter weight on time (1). This will cost the farmer more money.

Examiner Commentary on application of mark scheme

The first response is worthy of 1 mark as it includes a statement and basic explanation, however there is no further explanation to award a second mark.

The second response contains a statement and basic explanation, however the further explanation is repeated from their first response. A different further explanation may have been, for example, 'which means there may be less space/feed available for other animals'.

Example 4 (1 mark)

They are less likely to put on weight so a consequence is loss of money (1). The disease could kill the animal which could result in loss of money.

Examiner Commentary on application of mark scheme

The candidate provided a good initial response with a statement and basic explanation to achieve 1 mark. There was no further explanation linked to this response to achieve another mark.

The second statement ('could kill the animal') is presented with a previously used explanation. For a second mark to be awarded, a different explanation would be required such as 'the disease could kill the animal which results in less animals to sell'.

4.6. Examiner Hints and Tips

- In questions such as this, candidates should take the approach of stating their point, then expanding on why this is important in the context of the question posed, using connects such as 'which' or 'so' to show cause and effect.
- Candidates need to provide both a knowledge statement and basic explanation to be awarded the first mark, with the second mark being awarded for the further/developed explanation, ie statement + basic explanation (1) further explanation (1).
- Using this model and understanding of the mark scheme candidates can understand how to structure their answer.
- Candidates must ensure they have also considered the context given within the question. Candidates will only achieve marks when they identify impacts relevant to the context given.
- By just listing out impacts with no further explanation, candidates will not be achieve full marks as they have not demonstrated they understand what the impact is.

5. AO2 – Apply Knowledge and Understanding to Different Scenarios and Contexts

What this assessment objective means

Using and applying knowledge and understanding, of processes procedures, generalisations principles and theories to specified, concrete scenarios. AO2 is about being able to take the understanding of generalities (AO1b) and apply them to specific novel scenarios. It is more granular than the more extended synthesis/creation that may respond to an analysis (AO3a) of a more holistic complex scenario/brief.

A candidate can

- differentiate relevant from irrelevant information in a given, new scenario
- select appropriate procedures/principles from memory
- implement these procedures and principles appropriately for the given scenario.

This is assessed within the examination by

Given a clear, straightforward/narrow scenario, the question requires selection and application of relevant principles and procedures in a way that is specific to the scenario (rather than in general terms).

- What is the best approach to ... in this scenario?
- Explain the process/ procedure to take when...
- What are the implications of ... (specific rather than general scenario).

5.1. Question and Mark Scheme

Q 13	Stem	<p>During milking, a farmer discovers that a dairy cow has mastitis. The farmer administers an intra-mammary infusion of antibiotics used for drying off cows.</p> <p>Explain two implications of this treatment.</p> <p style="text-align: right;">(4 marks)</p>				
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Total marks	4 marks					
AO	AO2					
Specification reference	8.1 Veterinary medicine and health supplements and their uses in supporting livestock during all stages of production.					

5.2. Candidate Responses

Example 1 (4 marks)

Dry cow tubes have a longer withdrawal time so the milk will not be able to go into the tank (1), causing the farmer a loss of profit (1).

The farmer could be in trouble with Red Tractor as they are using the wrong type of antibiotics on the cow (1), which could affect their reputation with their milk contractor (1).

Examiner Commentary on application of mark scheme

The candidate achieved the maximum 4 marks for their two responses. The candidate provided two implications that are realistic in this scenario. Both responses are fully explained and avoid repetition.

Example 2 (3 marks)

Using this treatment means that cows milk cant be drank by humans until the long withdrawal period of the antibiotics is over (usually 40-60 days for this treatment) (1) meaning he is losing money in milk sale (1).

The cow cant be sold for meat straight away as there is a longer withdrawal period, otherwise the farmer could be fined (1).

Examiner Commentary on application of mark scheme

The candidate shows understanding of the implications of administering a drying off medicine to a milking cow in basic terms. The first response includes relevant detail that is fully explained to achieve 2 marks. The second response contains repetition of a 'longer withdrawal period', therefore this part of the answer cannot be accepted. However, the remainder of this response can be considered as the statement and basic explanation for 1 mark. A total of 3 marks is allocated to this answer.

Example 3 (2 marks)

Over time, this treatment could make the cow immune to the antibiotics which may mean that it doesn't work effectively (1). This could cause a higher number of cows contracting mastitis during the dry period (1) which effects their milk yield when they calve.

Examiner Commentary on application of mark scheme

The candidate showed some good understanding to this question; however, they only provided one linked and fully explained response. As a result, 2 marks were awarded. If the candidate had added a statement or a basic response to 'effects their milk yield when they calve', further marks may have been awarded.

5.3. Examiner Hints and Tips

- In questions such as this, candidates should take the approach of stating their point, then expanding on why this is important in the context of the question posed, using connects such as 'which' or 'so' to show cause and effect.
- Candidates need to provide both a knowledge statement and basic explanation to be awarded the first mark, with the second mark being awarded for the further/developed explanation, ie statement + basic explanation (1) further explanation (1).
- Using this model and understanding of the mark scheme, candidates can understand how to structure their answer.
- Any context given to the candidates is needed to answer the question in full. It is crucial candidates acknowledge this context in their response and tailor their knowledge to this context.
- Candidates should be encouraged to highlight or underline the context given within the question. They should consider how this context impacts on the question they are being asked. They will only be given context and information which is relevant and needed for them to answer the question.
- Candidates should link their responses against the question context and requirements specifically.

6. Section B – Extended Response and AO3 (Analysis and Evaluation)

AO3a Analysis

What this assessment objective means

Complex thinking that distinguishes patterns and relationships, breaking material into constituent parts, and determining how the parts are related to one another and holistically, inferring underlying assumptions / conditions / relevance / causation.

It can be seen an extension of understanding (AO1b), or a prelude to evaluation (AO3b) and to the creation of a response to, for example, a complex brief or situation (more fully assessed in the project).

A candidate can

- break down a complex problem into parts
- consider the relationships between the parts
- manipulate knowledge and experience to determine a range of solutions/proposals
- balance competing priorities to suggest the best outcome.

This is assessed within the examination by

Given a relatively complex, realistic occupationally relevant scenario, stating a situation that implies (but does not directly state) the need for application of a number of different (possibly competing) principles / approaches / procedures; a requirement to respond / propose solutions

- Analyse the situation recommending an approach to be taken to...
- Analyse how the situation can be managed in order to...
- Analyse the consequences of...

AO3b Evaluation

What this assessment objective means

Ability to make judgements about the value, for some purpose, of own or other's work / ideas / solutions / methods using internal or external criteria or standards relevant for the occupational area. These criteria may include, for example, quality, accuracy, effectiveness, efficiency, coherence, consistency, and may be quantitative or qualitative.

A candidate can

- judge the quality of actions proposals, outcomes
- using their own internal quality standards
- using external standards / criteria
- can justify their judgements of quality.

This is assessed within the examination by

Must have something either given or supplied by the candidate to be evaluated; often following / as part of analysis and the proposal of, for example, an approach (AO3a above).

- ...justify your decisions/approach
- Evaluate how well ... meets ...standards
- Evaluate how effective/efficient...

6.1. Question and Mark Scheme

Q17	Stem	<p>A livestock farm has an outdoor lambing flock of 70 breeding ewes and two unrelated breeding rams. The farmer has decided to only put one ram in with the ewes this autumn as the other ram is injured. The farmer also plans to feed the flock with the grass and forage cut from the fields, however due to the very dry weather over the summer months, the quality of the crop is poor.</p> <p>Analyse the impact the farmer's decisions are likely to have on the farm's business targets and justify the steps the farmer could take to meet the nutritional requirements of the flock from mating up until lambing.</p> <p style="text-align: right;">(12 marks)</p>
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Levels of Response

Band	Marks	Descriptor
4	10-12	<p>Demonstrates comprehensive application of knowledge and understanding of natural mating and the impact to the business.</p> <p>Demonstrates a comprehensive use of analysis of the impacts on the business, in relation to inappropriate breeding management.</p> <p>Demonstrates comprehensive evaluative skills by justifying an excellent range of actions taken to manage the nutritional management of the flock. Justifications are supported with highly detailed and relevant reasoning.</p>
3	7-9	<p>Demonstrates thorough application of knowledge and understanding of natural mating and the impact to the business.</p> <p>Demonstrates a thorough use of analysis of the impacts on the business, in relation to inappropriate breeding management.</p> <p>Demonstrates thorough evaluative skills by justifying a good range of actions taken to manage the nutritional management of the flock. Justifications are supported with mostly detailed and relevant reasoning.</p>

2	4-6	<p>Demonstrates good application of knowledge and understanding of natural mating and the impact to the business.</p> <p>Demonstrates a good use of analysis of the impacts on the business, in relation to inappropriate breeding management.</p> <p>Demonstrates good evaluative skills by justifying a moderate range of actions taken to manage the nutritional management of the flock. Justifications are supported with some detail and relevant reasoning.</p>
1	1-3	<p>Demonstrates basic application of knowledge and understanding of natural mating and the impact to the business.</p> <p>Demonstrates a basic use of analysis of the impacts on the business, in relation to inappropriate breeding management.</p> <p>Demonstrates basic evaluative skills by justifying a limited range of actions taken to manage the nutritional management of the flock. Justifications are supported with minimal detail and relevant reasoning.</p>
	0	No relevant material

Indicative Content

Analysis

With only one ram covering the whole flock, the number of breeding opportunities will be significantly reduced resulting in a higher chance of decreased lamb production. This could result in lower income for the farm, as the sale of lambs is likely a significant revenue stream. With fewer lambs born means that there are fewer lambs to raise and put back into the breeding flock. This will reduce the number of animals to sell in subsequent years, potentially impacting the growth and profitability of the farm. With fewer lambs reared, the farmer will have fewer to choose from when it comes to selecting replacement ewes. This will reduce the quality of the flock as the farmer will need to select lower quality lambs to maintain replacement rates or they may have to buy in replacement ewes, thereby increasing costs.

By using only one ram for breeding, the farm will be limiting the genetic diversity within the flock compared to having two rams with different genetic traits. This would affect the farmer being able to maintain the flock's diverse gene pool, which is important for overall flock health and performance. With limited genetic input from a single ram, the farm may face challenges related to inbreeding or reduced genetic adaptability in the long term.

This situation brings nutritional challenges as poor quality nutrition can negatively affect reproductive performance in ewes, leading to lower conception rates and increased lamb mortality. It can also affect the overall health and condition of the sheep, potentially leading to reduced productivity and increased veterinary costs. The performance of the ram could also be affected as poor nutrition can lead to reduced sperm quality which would impact overall fertility rates. Low nutritional quality of the forage could also affect the ram's energy levels at tupping which could result in some of the ewes not being covered by the ram (initial or returns) and therefore reducing overall breeding success and the number of viable offspring.

To compensate for the poor-quality feed, the farmer is likely to need to supplement the flock's diet with additional feed such as high-quality hay, sheep nuts or mineral supplements. This will increase the farm's feed costs and may impact the profitability of the business, particularly if there is a reduced number of healthy new-born lambs.

The combination of reduced breeding success, potential inbreeding, poor quality feed and increased feed costs could have a significant impact on the farm's business targets. The farm may experience lower lambing rates, decreased growth rates and overall increased expenses, all of which could lead to lower profits and potential financial losses in the long run. The farm may need to reassess their breeding and feeding strategies in order to mitigate these risks and achieve their business targets.

Justifications

Monitor and record the body condition score of the flock regularly and adjust the feeding regime accordingly. This is likely to involve increasing or decreasing the amount of supplementary feed provided to maintain optimal body condition. There is a significantly higher mortality in lambs from underfed ewes, especially ones carrying triplets. The ram will require a high energy diet to maintain his health and performance during mating.

Analyse the quality of the grass/hay/other forage within a laboratory/via a nutritional specialist to identify any deficiencies and imbalances that it may contain. Depending on the deficiencies identified, the farmer should provide supplementary feed to compensate for the lack of nutrients in the pasture. This could include offering additional hay, silage or other types of high-quality forage, along with mineral blocks or concentrated feeds to ensure the flock receives the required nutrients. Poor roughage quality, inadequate concentrate allowance or high foetal demand may result in pregnancy toxemia (twin lamb disease), abortion and premature birth of weak lambs.

It is important to pregnancy scan the ewes to identify non-pregnant (empty/barren) animals and manage them differently. It will also allow the farmer to manage the pregnant ewes by providing appropriate nutrition to meet their target daily live-weight gain. Overfeeding ewes during the last six weeks of pregnancy can lead to oversized lambs and increased chances of difficult births which require assistance. During the last six weeks (when 75% of foetal growth occurs), it is best to feed for maintenance and the growth of the lamb(s) in utero, based on live-weight and number of lambs being carried.

Regular monitoring of the flock is essential to ensure that the nutritional needs of the ewes are being met. The farm should observe the ewes for signs of malnutrition or health issues, and make adjustments to the diet as needed. This monitoring is most likely to be carried

out during feeding time. If a routine feeding schedule is established to meet the nutritional requirements of the flock, then this consistency is likely to maintain optimal health and productivity of the flock. The earlier that signs of ill health are detected in individuals, the quicker/sooner strategies can be put in place to ensure that the most effective treatment is given.

Total Marks	12 marks
AO	AO2 = 4 marks AO3a = 4 marks AO3b = 4 marks
Specification reference	5.3 Methods and techniques used in breeding. 7.1 Nutrients, feed sources and food safety and hygiene requirements of livestock species.

What do we mean by:

	AO2 Application	AO3a Analysis	AO3b Evaluation
Comprehensive	A range of detailed and accurate understanding that is fully relevant to the context or question. Detailed and accurate interpretation through the application of relevant knowledge and understanding,	Detailed and accurate analysis through the application of relevant knowledge and understanding.	Detailed and substantiated evaluation through the application of relevant knowledge and understanding. Detailed and substantiated judgement through the application of relevant knowledge and understanding.
Thorough	A range of accurate understanding that is relevant to the context or question. Accurate interpretation through the application of relevant knowledge and understanding.	Accurate analysis through the application of relevant knowledge and understanding.	Supported evaluation through the application of relevant knowledge and understanding. Supported judgement through the application of relevant knowledge and understanding.
Good	Some understanding that is relevant to the context or question. Some accuracy in interpretation through the application of some relevant knowledge and understanding.	Some accuracy in analysis through the application of some relevant knowledge and understanding.	Partially supported evaluation through the application of some relevant knowledge and understanding. Partially supported judgement through the application of some relevant knowledge and understanding.
Basic	Limited understanding that is relevant to the context or question. Limited accuracy in interpretation through lack of application of relevant knowledge and understanding.	Limited accuracy in analysis through lack of application of relevant knowledge and understanding.	Un-supported evaluation through lack of knowledge and understanding. Un-supported judgement through lack of application of knowledge and understanding.

6.2. Candidate Responses

6.2.1. Band 4

Top of band 4 response (12 marks)

The farmer's decision to use only one ram to service the entire flock, combined with relying on low-quality forage poses significant risks to the farm's business outcomes. These decisions could directly affect flock fertility, lambing success and overall profitability.

A single ram may struggle to adequately cover all 70 ewes. Typically, a healthy ram can cover between 35-50 ewes in one breeding season. Overworking the tup may reduce his fertility performance, resulting in a lower conception rate. This could lead to fewer lambs born, reducing income from lamb sales. If the tup misses' ewes, some ewes will be empty which lowers the overall lambing percentage and production goals. It may also extend the lambing season as the ram may take longer to cover the entire flock. This creates issues with housing and staff, which will increase labour costs. Lambs born over an extended timeframe often show uneven growth rates which could affect market prices. It will also mean that only the genes from this ram will be passed onto the lambs. If the ram has health concerns or genetic problems, then these could be passed onto the future flock. There will be less genetic traits passed on with just the one ram, rather than the two which will affect the gene pool of the flock.

Feeding the flock this diet could severely impact ewe nutrition. Poor forage quality can lead to nutritional deficiencies, lowering the body condition score of the ewes. It can also affect their fertility and lead to weaker lambs and lower milk production. This can lead to fewer lambs born, lower lamb survival rates, and poor lamb growth post-lambing. Poor ewe nutrition may increase vet costs due to complications during lambing which leads to higher operational costs. It can also result in conditions like twin lamb disease or the ewe giving birth to stillborn lambs. This, with the potentially reduced number of lambs to sell is likely to affect both revenue and cash flow to the farm.

The farmer needs to supplement their feed such as adding high-energy concentrates and quality hay, in addition to the forage. This will help to meet the nutritional needs of the ewes, particularly during critical periods like mating and late gestation. The condition score should be around 3-3.5 to ensure high fertility rates and successful pregnancies. Poor nutrition at mating can result in reduced conception rates, while insufficient feeding during pregnancy can lead to smaller, weaker lambs and lower milk production. Mineral blocks can also be added to the field/pen to ensure they receive essential micronutrients. Deficiencies in these can lead to reproductive issues, poor lamb survival and compromise immunity. Once the ewes are scanned, the different groups need to be separated off and fed accordingly. If a ewe is scanned to have triplets, then she would have much higher energy, increased protein demands than one that scanned as empty. This is why it is so important to scan the ewes so their diet can be amended accordingly. Supplementing the flock or drenching ewes will help

maintain fertility, improve lamb vigour and support better lambing outcomes. The farmer should also try and implement rotational grazing to ensure that the best quality grass is reserved for ewes in late gestation and lactation when demands are highest. Rotating pastures will prevent overgrazing and ensure that ewes always have access to adequate forage. This will ensure better ewe condition, leading to stronger lambs at birth and improved milk production post-lambing. The farmer could also bring a nutritional expert onto their farm to test the crops and see exactly what is missing so the added supplements will be right for the flock.

Examiner Commentary on application of mark scheme

The candidate produced a very comprehensive application of core knowledge and understanding to the scenario. They showed a very good understanding of a range of impacts and steps from the indicative content. They demonstrated high levels of depth and breadth across both areas of the stem. The candidate justified an excellent range of actions that were realistic and applicable to the context of the scenario. The candidate fully met the requirements of the top of Band 4 to achieve 12 marks.

6.2.2. Band 3

Top of band 3 response (9 marks)

The farm business can be impacted in several ways based on the current situation. The ram is unable to serve all of the ewes which is likely to lead to reduced fertility rates. Overworking the ram could lead to missed heat cycles resulting in fewer ewes becoming pregnant. This directly affects the lambing percentage which reduces the total number of lambs born causing a drop in revenue. Having one ram impregnate all of the ewes will also decrease the genetic diversity of the new set of lambs. If the ram has any unknown defects, then the next generation will gain these genes. It may be that the ewe lambs could be infertile which would mean that the farmer would need to buy in more ewes to replace these.

As not all of the ewes will become pregnant in the first heat, this could mean that lambing will be more staggered than normal. This could affect the rest of the farm and workload for the staff. If the staff are trying to juggle jobs and housing is not free for the animals, then this could affect their welfare and potentially increase lambing losses.

The dry summer could cause the crops to be deficient in certain nutrients. If these are not supplemented, then it could affect the ewes condition score and lead to lower fertility rates. This can reduce the lambs survival rates and growth rates of the live born. This will increase the costs for the farmer as they will have to buy in extra feed and more labour which puts more pressure on the farms profit margins.

The whole flock need to be condition scored regularly. It is not adequate to just do it once as their needs and score would change at different stages of pregnancy etc. Also when the ewes are scanned, they need to be separated into whether they are having singles, triplets etc, so they can be fed the right quality and quantity of feed in relation to protein and energy requirements. The farmer does not want to overfeed the ewes at the end of pregnancy as this could cause issues at lambing with oversized ewes. This will increase the need for assistance by the farmer at lambing which increases stress and health risks to the ewe and her lambs.

Examiner Commentary on application of mark scheme

The candidate thoroughly demonstrated core knowledge and understanding to this subject area. They provided a range of valid examples that were discussed to a very good level. The candidate's response was justified well and was detailed in most areas. The candidate thoroughly analysed the impacts to the business in a logical manner. Overall, a very good level of depth and breadth was demonstrated to cover a significant amount of indicative content.

6.2.3. Band 2

Top of band 2 response (6 marks)

Firstly, due to one of the rams being injured, the farm is only putting one of the rams in with the ewes. This was a good decision to allow recovery time for the injured ram ready for the next tupping season, however it does reduce the chance of all 70 ewes becoming pregnant as there is only one ram to impregnate them. This is a risk as it will cost the farmer money to keep the ewes when they potentially aren't producing any lambs to counteract this. The farmer is also paying for the ram to be fed and housed, even though he isn't working to reproduce. Overall, keeping one ram for 70 ewes is unfeasible for the farm and is a high risk for lambing.

The farmer has the right idea of feeding the stock their own grass and forage cuts from the field as it will help keep costs down due to being able to produce it yourselves. However due to the dry weather, the crop is poor quality and it will lack nutrients needed for the pregnant ewes. Without the correct feed while pregnant, ewes can get twin lamb disease where they give all of their nutrients to the lambs, leaving themselves weak which not only can kill them, but also their lambs. To avoid this you want to give the ewes a nutritious diet with high protein (soya, peas, clover), high energy (oats, wheat and cereal crops) and lots of vitamins and minerals found in licks and supplements. These should be given in correct quantities dependant on the amount of lambs and quality of the ewe. By doing this, with allowing ewes to get a suitable body condition score before tupping to increase fertility rates, the ewes and lambs produced should be at a high level to create good meat and keep profits high.

Examiner Commentary on application of mark scheme

The candidate produced a good overall response to demonstrate a fair understanding of breeding and nutritional challenges faced by sheep farmers. There was a good range of core knowledge and understanding shown in the implications discussed, however there was a lack of breadth demonstrated in their analysis and justifications. The candidate only covered a limited range of topics from the indicative content. To move into Band 3, the candidate would need to provide further implications and steps to demonstrate a wider understanding.

6.2.4. Band 1

Top of band 1 response (3 marks)

One impact the farmer's decision are likely to have on the farm's business targets is going to lose money. This is because only one ram is used for breeding 70 breeding ewes. The ram will not breed with all of them. As well as this, eventually this can cause fighting.

Aswell as the feed provided for them, the ewes and rams will not be given enough energy for the ewe to carry the lambs. This could mean the lamb could die which results in a loss of money.

The steps that the farmer could take to meet the nutritional requirements later on until lambing is to buy a high energy and nutrient mix and put it on the grass. This will help the sheep and give them the energy to move and for the lambs to grow. It would also help their condition score to help them survive.

Examiner Commentary on application of mark scheme

The candidate provided a superficial response overall. The response showed limited accuracy through a lack of application of relevant knowledge and understanding. There was limited evidence of analysis and justification, and detail was quite limited. Evaluation and judgement was unsupported in most areas.

6.3. Examiner Hints and Tips

- These questions are designed to differentiate candidates' performance; they assess higher order thinking skills and as such they do stretch and challenge candidates.
- It is key that candidates give themselves sufficient time to respond to these lengthier questions.
- Although these questions appear in Section B, candidates can choose to tackle the extended response questions first before returning to Section A if they are concerned about their time management.

- Before writing out in full their answer to extended questions, candidates may find it helpful to identify the key requirements of the question and note down a brief plan or outline of how they will answer it. This will help clarify their thinking and make sure that they do not spend too much time on or provide too much detail for one part of the question at the expense of others.
- By planning, candidates can ensure they provide a structure to their response and that they have covered off the major points they wish to make in their response. By considering the structure of the response, and how one point may link to another, they will be able to demonstrate both their ability to analyse and evaluate sufficiently to access the higher mark bands.
- There are always two elements to each ERQ and it is important that candidates focus on both elements equally to be able to move up into the higher bands. If candidates were asked to 'Analyse X and Justify Y', they need to attempt both of these elements. If a candidate provided a very comprehensive analysis of X, and did not provide any justification for Y, then the candidate may not be able to move out of Band 1 as they have not demonstrated understanding in both of the key areas.
- Candidates will not receive more marks if they make the same point multiple times.
- Candidates need to ensure their answers balance the ability to demonstrate a breadth of knowledge, ie making multiple points, against ensuring they demonstrate their depth of understanding on the subject matter. If candidates recall lots of points but fail to demonstrate the ability to evaluate and analyse these points, they will be marked into the lower bands. Likewise, if they only explore one point in extensive detail, they will not demonstrate they have sufficient breadth of knowledge of the subject area and will not be able to access higher bands.
- Candidates should be encouraged to write in continuous prose. A bullet point list will demonstrate some knowledge, but it will not demonstrate to the examiner that the candidate is able to analyse or evaluate, therefore limiting them to the bottom of the lowest band.
- When making a point in response to the question the candidate needs to explain why they think this point is relevant to the question; this demonstrates their ability to make judgements and is therefore evidence of evaluation.
- Similarly to the AO2 questions, candidates will be given context within the question and it is key that their answers are tailored to the context/scenario given. It is important they give examples which support the given scenario to demonstrate the application of their understanding.

Get in touch

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