Assessment Schedule – 2023

Agricultural and Horticultural Science: Demonstrate knowledge of livestock management practices (90921)

Assessment Criteria

Achievement	Achievement with Merit	Achievement with Excellence
Describes how livestock management practices are carried out.	**Links ideas** to **explain** why livestock management practices, or steps within practices, are carried out.	**Applies knowledge** of livestock management practices to given situations. This may involve **comparing and contrasting** or **justifying** management practices.

Evidence

Question ONE	Evidence	Achievement	Achievement with Merit	Achievement with Excellence
(a)	• Pigs have a monogastric digestive system, with only one stomach. The main form of digestion is chemical digestion in the mouth and stomach, and mechanical / physical digestion in the mouth. • Cattle and sheep have ruminant digestive systems, with four stomach compartments (rumen, reticulum, omasum, abomasum). Their main form of digestion is microbial with micro-organisms in the rumen and reticulum breaking down food through fermentation. Ruminants also ruminate and chew their cud.	Describes how a pig's digestive system is different to cattle and sheep. Basic facts with little development of ideas.	Explains how a pig's digestive system is different to cattle and sheep, makes links, underlined-type evidence.	
(b)	• Pigs only have one stomach where chemical digestion occurs. Acids and enzymes cannot break down cellulose / plant material, so pigs must be fed grains and pellets, which can be broken down in the stomach. Pigs do not have micro-organisms in their stomach, which are a source of protein for ruminant animals as it passes through their abomasum. Because of this, pigs must get all their protein from their food.	Describes why a pasture-only diet is unsuitable for pigs.	Explains why a pasture-only diet is unsuitable for pigs, makes links, underlined-type evidence.	

(c)	**Rapeseed** *Advantages* • High levels of energy which are required by lambs as they are growing so require more than maintenance feed. High levels of energy can increase the level of fat on the carcass. • High digestibility, which increases the amount of nutrients the animal can break down and use for growth and development, and also increases the rate it moves through the digestive tract and how much food the animal eats. Faster break down of food = full for less time = eat more = faster growth. • High dry matter, which reflects high levels of nutrients. *Disadvantages* • Low levels of protein which is needed for muscle and bone growth in young animals (finishing lambs). This could slow down the growth rate of the lambs. **Lucerne** *Advantages* • High dry matter, which shows high levels of nutrients. More nutrients mean that more are available for growth and development, increasing growth rates of lambs. *Disadvantages* • Lowest energy. It has the slowest growth rates and lowest level of fat on carcass. • Low digestibility. It takes the food longer to move through the digestive tract and animals can access fewer nutrients. Will slow down feed intake and growth rates. **White clover** *Advantages* • High levels of protein which will increase muscle and bone growth, especially important for young / growing animals. • High energy. • High digestibility. *Disadvantages* • Low dry matter and fewer nutrients.	Chooses a crop based on the table provided for finishing off lambs and explains why.	Chooses a crop based on the table provided for finishing off lambs and explains why, makes links, including underlined-type evidence.	Chooses a crop based on the table provided for finishing off lambs and compares it with another to justify choice.

N1	N2	A3	A4	M5	M6	E7	E8
Describes ONE idea at Achievement level.	Describes TWO ideas at Achievement level.	Describes THREE ideas at Achievement level.	Describes FOUR ideas at Achievement level.	Explains THREE ideas at Merit level.	Explains FOUR ideas at Merit level.	Justifies the chosen method.	Justifies the chosen method by comparing and contrasting with another method.

N0 = No response; no relevant evidence.

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<tr><th>Question TWO</th><th>Evidence</th><th>Achievement</th><th>Achievement with Merit</th><th>Achievement with Excellence</th></tr>
<tr><td>(a) (i)</td><td>Heat detection methods:
• Collar – placed around the neck of the animal. Monitors rumination and movement and sends an alert when on heat.
• KAMAR – placed on the base of the tail of the cow. When it is ridden for more than 3 seconds it bursts the paint.
• Tail paint – brightly coloured paint on the base of the tail of the cow. When a cow is ridden, it rubs the paint off.
• Visual signs – farmers observe the cattle and watch for visual signs – standing to be ridden, swollen vulva, restless, etc.</td><td>Describes how heat detection is carried out.</td><td>Explains how heat detection is carried out, including underlined-type evidence.</td><td></td></tr>
<tr><td>(ii)</td><td>• A cow can only be fertilised when she is on heat. This is because it is just before the ova is released. The ova has a shorter lifespan than the sperm, so for successful fertilisation, the sperm needs to be in the reproductive tract before ovulation occurs.</td><td>Describes why correct heat detection is important.
Limited explanation.</td><td>Explains why correct heat detection is important, makes links, including underlined-type evidence.</td><td></td></tr>
<tr><td>(b)</td><td>• The ram is heterozygous (Ll) so carries the recessive allele (less muscle mass), which means that it can pass this gene on to offspring of ewes which also have this trait.
<table><tr><th></th><th>L</th><th>L</th></tr><tr><th>l</th><td>Ll</td><td>Ll</td></tr><tr><th>l</th><td>Ll</td><td>Ll</td></tr></table><table><tr><th></th><th>L</th><th>l</th></tr><tr><th>l</th><td>Ll</td><td>ll</td></tr><tr><th>l</th><td>Ll</td><td>ll</td></tr></table>• Culling the ram, and buying a new, purebred ram (homozygous dominant – LL) will mean that all offspring will have the dominant gene and display increased muscle mass regardless of the alleles of the ewe.</td><td>Describes why the farmer would cull the ram.

Accurate but basic details provided.</td><td>Explains why the farmer would cull the ram.

Makes links, including underlined-type evidence.</td><td></td></tr>
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(c)	**Bull** *Advantages* • Mated with ~40 cows per season, produces more offspring and passes on genes more quickly, which means that more offspring will have marbled meat and increasing profit. • Can buy purebred bulls that are homozygous dominant. • Cheaper to buy several bulls than many cows, which lowers the production costs. *Disadvantages* • Bulls are more expensive to buy and maintain, which reduces the overall profit of the farm / farmer. • Depending on the dam breed, could produce a large calf, which can cause birth difficulties and increase labour / mortality rate in calves. • Will need to be replaced to prevent inbreeding with any offspring into the breeding herd. **Cow** *Advantages* • Cheaper to buy per animal and less maintenance. *Disadvantages* • Only produces one calf per year – slower introduction of genetics and improvement in meat quality. • Need to purchase multiple cows to replace the current herd which would be a large expense.	Chooses a Speckle Park bull or cow to introduce marbling traits, using some details.	Chooses a Speckle Park bull or cow to introduce marbling traits, makes links, including underlined-type evidence.	Justifies whether buying a Speckle Park bull or cow would be best at introducing marbling traits. Considers initial cost, as well as short- and long-term impacts on herd quality.

N1	N2	A3	A4	M5	M6	E7	E8
Describes ONE idea at Achievement level.	Describes TWO ideas at Achievement level.	Describes THREE ideas at Achievement level.	Describes FOUR ideas at Achievement level.	Explains THREE ideas at Merit level.	Explains FOUR ideas at Merit level.	Justifies the chosen method.	Justifies the chosen method by comparing and contrasting with another method.

N0 = No response; no relevant evidence.

Question THREE	Evidence	Achievement	Achievement with Merit	Achievement with Excellence
(a)	• Internal parasites remove nutrients from the digestive tract, which slows growth as fewer nutrients are available to be used by the animal. • Parasites can damage internal organs, i.e. liver. • They cause infection and energy is used to fight infection rather than grow. • Increase in susceptibility to other illnesses/diseases. • Decrease in appetite means lower feed intake, lower growth rates or production of the animal.	Describes how internal parasites impact livestock production, giving some details.	Explains how internal parasites impact livestock production, giving some details, makes links, including underlined-type evidence.	
(b)	• Weighing a sample of animals and drenching to the heaviest weigh will prevent animals being "under-drenched", which can cause drench resistance and a negative impact on production. • Calibrate the drench gun applicator to the highest weight. This ensures animals are receiving the correct amount of drench to kill the parasites. • Yard the animals or place into a race. This prevents injury to both the animal and stockperson. • Apply the drench along the spine of the animal. It kills the parasites and has a positive impact on the growth and production of the animal. • Apply only in fair weather, no forecasted rain during the rainfast period to ensure effective application. • Check expiry date, to ensure that the drench will still be at its peak effectiveness.	Names three steps taken when using an external, pour-on drench and partially explains why this is carried out. NB: Only two opportunities for A and two opportunities for M in this question.	Names three steps taken when using an external, pour-on drench and explains why they are carried out, including underlined-type evidence.	

(c)	Pigs are drenched through injection, such as Ivomec or placed in-feed, as their strong jaws make them unsuitable for traditional oral drench. *Preventing overcrowding* • Pigs are housed, and the close living conditions means that diseases and parasites are easily passed between animals. • Preventing overcrowding means there are fewer pigs in the shed / home so they are not as close, limiting chance of disease transmission between animals. • Parasites are shed by pigs so could be picked up by other animals, especially if they live closely together. • Limiting animals will decrease profit as there are fewer animals to sell but the animals grow faster with low parasite burdens and are more efficient convertors of feed. *Drenching* • Parasites have a negative impact on growth as they remove nutrients from the digestive tract, limiting the amount the animal gets and slowing weight gain. • Drenching kills parasites, allowing animals to grow better and be ready for sale earlier, which makes the farmer more money. • Killing internal parasites through drenching will prevent the spread of parasites between animals and will remove the negative impacts of parasites. • Drenching costs money as farmers need to pay for both drench and labour but it will prevent negative impacts of parasites. In the worst case, the pigs die from high parasite burdens. • Drenching doesn't always work. Parasites can be under-drenched and develop drench resistance.	Explains why farmers choose to use both methods of managing worms rather than only drenching. Not all factors considered.	Explains why farmers choose to use both methods of managing worms rather than only drenching, makes links, including underlined-type evidence.	Justifies why farmers choose to use both methods of managing worms rather than only drenching. Considers cost and overall herd health in argument.

N1	N2	A3	A4	M5	M6	E7	E8
Describes ONE idea at Achievement level.	Describes TWO ideas at Achievement level.	Describes THREE ideas at Achievement level.	Describes FOUR ideas at Achievement level.	Explains THREE ideas at Merit level.	Explains FOUR ideas at Merit level.	Justifies the chosen method.	Justifies the chosen method by comparing and contrasting with another method.

N0 = No response; no relevant evidence.

Cut Scores

Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
0 – 6	7 – 12	13 – 18	19 – 24