



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2021

Medicine of Sheep

Paper 1

Perusal time: **Fifteen (15)** minutes

Time allowed: **Two (2)** hours after perusal

Answer **ALL FOUR (4)** questions

Answer **FOUR** questions, each worth 30 markstotal: 120 marks

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Paper 1: Medicine of Sheep

Answer all four (4) questions

1. Answer **all** parts of this question:

- a) List **three (3)** common abortigenic agents that are endemic in sheep flocks in Australia and/or New Zealand. *(3 marks)*
- b) For **each** agent identified in 1 a), briefly discuss:
 - i. **two (2)** important risk factors *(9 marks)*
 - ii. **two (2)** control measures. *(9 marks)*
- c) Outline a protocol to investigate low fertility in a group of rams in a commercial flock of sheep. *(9 marks)*

2. Answer **all** parts of this question:

- a) An adequate dietary intake of both carbohydrates and protein is necessary for good rumen function in adult sheep. Explain the role of each of these two nutrients in ruminal digestion and explain why adequate supplies of both nutrients are required for optimal rumen function. *(10 marks)*
- b) Explain why a source of non-protein nitrogen can, under some conditions, partly compensate for a low dietary protein intake in adult sheep. *(5 marks)*
- c) Explain why acidosis (grain poisoning) may develop in sheep which have a sudden increase in the intake of foodstuffs containing rapidly-fermentable carbohydrates. *(5 marks)*
- d) Briefly describe the principal physiological roles of vitamin D in sheep and the common clinical expressions of deficiency. *(5 marks)*
- e) Briefly describe the consequences for the health and productivity of sheep if their diets contain inadequate amounts of selenium. *(5 marks)*

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3. Answer **all** parts of this question:

- a) Describe the life cycle of the blow fly *Lucilia cuprina*. In your answer, provide an estimate of the duration of each stage of the life cycle and how it may be affected by environmental conditions. (10 marks)
- b) List the preventive strategies commonly recommended to reduce the risk of flystrike in sheep. For each strategy, briefly describe its value in reducing flystrike risk, and any disadvantages which may be attributed to it. (10 marks)
- c) Discuss the main factors contributing to the development of resistance to the insecticides commonly used to control infestations of body lice (*Bovicola ovis*) in sheep. (10 marks)

4. Answer **both** parts of this question:

- a) Outline the clinical presentation(s) and mode(s) of transmission of:
 - i. maedi-visna (6.5 marks)
 - ii. foot and mouth disease in sheep (6.5 marks)
 - iii. bluetongue in sheep (6.5 marks)
 - iv. sheep pox. (6.5 marks)
- b) For each disease listed in 4 a) i-iv, identify **one (1)** disease endemic to Australia or New Zealand which is a likely differential diagnosis. (4 marks)

End of paper



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Paper 2

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Answer **ALL FOUR (4)** questions

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Paper 2: Medicine of Sheep

Answer all four (4) questions

1. Answer **all** parts of this question

- a) List **four (4)** analgesic products (brand or trade names) that are registered for use in sheep. *(4 marks)*
- b) For each product listed in 1 a), identify:
 - the active constituent(s) and the drug class of all active constituents (e.g. penicillin is an antibacterial drug)
 - the method of administration. *(4 marks)*
- c) Describe the common husbandry practices on sheep farms for which pain relief products should be administered. Discuss the use of analgesic products for those procedures, and any special considerations for their use. *(12 marks)*
- d) It is important to consider the health and welfare of sheep prior to road transport. Provide **two (2)** examples of conditions which may cause an individual or group of sheep to be considered unfit to load. *(5 marks)*
- e) For each example provided for 1 d), describe what option(s) farmers have when dealing with these individuals or groups of sheep. *(5 marks)*

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2. A client calls your private veterinary practice. She has just discovered in a mob of 300 early pregnant Merino ewes that 20% of the ewes are dead and 20% are moribund. The moribund ewes are either comatose or, if standing, apparently blind and unresponsive to stimuli when approached by a person or dog. The condition has been sudden in onset as the ewes appeared to be well 48 hours previously.
- You agree to visit the farm immediately.

Answer **all** parts of this question.

- a) Describe an appropriate approach to systematically investigate this disease outbreak. *(22 marks)*

- b) Assuming that you are unable to make a definitive diagnosis of the cause of the disease, state the recommendations that should be made to the flock owner while the investigation is on-going and before a diagnosis is confirmed. *(5 marks)*

- c) Describe any further activities that you should undertake following your first visit to the farm. *(3 marks)*

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3. You have been asked to investigate an outbreak of respiratory disease in a group of 500 seven-month-old lambs of meat breeds in January. The lambs have recently arrived on a farm from three different sources and are about to enter a feedlot for finishing to market weight. They have spent the past 10 days in a holding paddock and have been fed meadow hay with access to small amounts of the feedlot ration. During those 10 days the lambs have been shorn, injected with Cydectin Weanerguard Se B12 (which contains moxidectin, selenium and vitamin B12 and vaccines against clostridial diseases and caseous lymphadenitis).

When you visit you find that a number of lambs are coughing. The owner reports that a few have died in the past three days and two lambs which have died in the past few hours are available for necropsy.

Your post-mortem examination reveals that the two dead lambs had a severe, acute pneumonia. There are no other significant findings from the gross examination of these carcasses and your preliminary diagnosis is that these lambs died of pneumonia.

Clinical examination of two affected lambs reveals a moderately elevated temperature, polypnoea and harsh lung sounds, particularly over the cranial lobes.

You form the correct opinion that this flock of lambs is experiencing an outbreak of pneumonia.

Answer **all** parts of this question:

- a) Describe the likely aetio-pathogenesis of this outbreak of pneumonia. *(5 marks)*
- b) List the risk factors that are likely to be relevant in this outbreak of pneumonia. *(5 marks)*
- c) Discuss treatment options for clinically affected lambs. *(4 marks)*
- d) Describe how lambs should be selected for treatment. *(4 marks)*
- e) Discuss the pros and cons of providing prophylactic medication to all lambs. *(4 marks)*
- f) Apart from prophylaxis, discuss other advice that should be given to the owner of the sheep in order to limit further negative effects of this outbreak. *(4 marks)*
- g) List the post-mortem specimens that should be submitted to the laboratory for further investigation and identify the tests that should be requested. If you decide not to submit any specimens, explain why this is your preferred course of action. *(4 marks)*

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4. You have been asked to present information about reproduction in sheep at a field day for Merino producers from your local region.

Answer **both** parts of this question:

- a) Briefly describe the typical climatic and seasonal characteristics of your selected region. *(3 marks)*
- b) Provide an outline of the presentation that you will make at the field day. In the presentation, describe the important management strategies of the ewe and ram flock which a producer should implement in the period from two months pre-joining until two months post-lambing in order to optimise the reproductive performance of Merino ewes. In your outline, highlight some possible production-limiting issues that the farmer may encounter in his flock during pregnancy and lambing and describe how appropriate management will reduce the incidence of adverse events. *(27 marks)*

End of paper