



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2019

## 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 marks ..... total: 120 marks

*© 2019 Australian and New Zealand College of Veterinary Scientists ABN 00 50 000894 208 This publication is copyright. Other than for the purposes of and subject to the conditions prescribed under the Copyright Act, no part of it may in any form or by any means (electronic, mechanical, microcopying, photocopying, recording or otherwise) be reproduced, stored in a retrieval system or transmitted without prior written permission. Enquiries should be addressed to the Australian and New Zealand College of Veterinary Scientists.*

# Paper 1: Medicine of Sheep

---

## Answer all four (4) questions

1. Describe the physiological factors that influence the breeding season, cyclic activity and ovulation rate of ewes. In your answer, discuss:
  - photoperiodic effects and seasonality (7 marks)
  - breed effects (6 marks)
  - the 'ram effect' (8 marks)
  - the influence of condition score and nutrition. (9 marks)
  
2. Answer **all** parts of this question:
  - a) Briefly describe the chemical and physical processes by which sheep are able to digest forages (such as pasture plants and hay) and then absorb energy-containing nutrients from the gastrointestinal tract. (15 marks)
  
  - b) Identify **one (1)** food type that is commonly used as a supplementary feed for sheep. State the energy content and protein content of this supplementary feed (a range of values may be provided if appropriate). Clearly state the units used in each case. (6 marks)
  
  - c) Briefly discuss the conditions under which young sheep might experience reduced growth rates or ill health as a result of vitamin D deficiency. (4 marks)
  
  - d) Briefly explain why cobalt is an essential dietary nutrient for sheep. (3 marks)
  
  - e) State **one (1)** or more common clinical manifestations of disease in flocks of sheep fed diets that are iodine-deficient. (2 marks)

**Continued over page**

3. Describe the life cycle of:
- a) *Haemonchus contortus*. (12 marks)
  - b) *Fasciola hepatica*. (18 marks)
4. Discuss the aetio-pathogenesis, risk factors and preventative strategies for each of the following conditions:
- a) Infectious arthritis in young sheep. (8 marks)
  - b) Abortion in ewes caused by *Toxoplasma gondii*. (10 marks)
  - c) Polioencephalomalacia in feedlot lambs. (5 marks)
  - d) Tetanus in lambs. (7 marks)

**End of paper**



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2019

## Medicine of Sheep

## Paper 2

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

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

Answer **ALL FOUR (4)** questions

Answer **FOUR** questions, each worth 30 marks ..... total: 120 marks

*© 2019 Australian and New Zealand College of Veterinary Scientists ABN 00 50 000894 208 This publication is copyright. Other than for the purposes of and subject to the conditions prescribed under the Copyright Act, no part of it may in any form or by any means (electronic, mechanical, microcopying, photocopying, recording or otherwise) be reproduced, stored in a retrieval system or transmitted without prior written permission. Enquiries should be addressed to the Australian and New Zealand College of Veterinary Scientists.*

# Paper 2: Medicine of Sheep

---

Answer all four (4) questions

1. The sheep industries are under increasing public scrutiny over aspects of animal welfare associated with sheep management.

Answer **all** parts of this question:

- a) Identify **four (4)** major animal welfare issues faced by the sheep industries in either Australia or New Zealand. *(2 marks)*
- b) For **each** identified issue, describe the reasons why the issue raises public concern about animal welfare. *(12 marks)*
- c) For **two (2)** of these identified issues, describe solutions or improvements that have been or could be introduced to improve the welfare of sheep. *(16 marks)*

2. A client contacts you for advice after receiving feedback from the abattoir about the quality of carcasses in the line of 18-month-old late finished lambs that have just been killed.

Four percent (4%) were reported to have had CLA, 78% had sheep measles, 5% had bladder worm, 11% had sarco, one condemned due to sarco.

Answer **all** parts of this question:

- a) These **four (4)** conditions have been described using meat inspection terminology. Provide the correct veterinary terminology for each of these conditions including, where applicable, the causative agent/s for each condition. *(6 marks)*
- b) Describe the aetiopathogenesis of each of these **four (4)** conditions. *(10 marks)*
- c) Discuss management changes the producer could implement in order to control and possibly prevent each of these **four (4)** conditions in future lines of lambs. *(14 marks)*

Continued over page

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

- a) Name **four (4)** major biosecurity risks caused by endemic diseases for sheep farms in Australia or New Zealand. *(2 marks)*
- b) Justify the inclusion of **each** of the biosecurity risks stated in part 3 a) including a summary of the financial and other consequences of the disease being introduced to a farm previously free from the condition. *(20 marks)*
- c) For **one (1)** of these disease risks, describe how sheep producers could manage the risk of introduction. *(8 marks)*

4. A producer asks you to investigate the problem of weight loss and death in older sheep. The problem was detected at shearing time in early winter. The number of sheep shorn was less than expected, with a proportion being far lower in body weight than anticipated. Some of the lightest sheep had tender fleeces and a few had wool 'breaks'. The producer also reports seeing an occasional sheep with yellow colouration of the skin, eyes or gums, and two with crusty skin on their ears or muzzle.

Answer **both** parts of this question:

- a) Create an initial problem list from the history provided and, for each problem identified, list possible patho-physiologic mechanisms and differential diagnoses. Indicate and briefly justify which differential diagnoses would be the most likely. *(12 marks)*
- b) Discuss a rational investigation of this problem and explain how the results of each component of the investigation would assist to rule-in or rule-out the differential diagnoses. *(18 marks)*

**End of paper**