



# Australian and New Zealand College of Veterinary Scientists

## **Membership Examination**

June 2013

## **Medicine of Dairy Cattle**

### **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

# Paper 1: Medicine of Dairy Cattle

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Answer all four (4) questions

1. Answer **all** parts of this question, i.e. parts a), b) **and** c)
  - a) Jejunal haemorrhage syndrome (JHS) or haemorrhagic bowel syndrome is an acute and severe abdominal disorder of mature dairy cattle, both overseas and in Australasia.
    - i. Discuss the aetiology and the risk factors of this condition, and briefly describe its clinical presentation and progression. (10 marks)
    - ii. Briefly discuss the prognosis of this condition, and describe how you would manage a suspected case of JHS, where the animal is showing signs of dehydration and shock, is passing small amounts of haemorrhagic faeces, but is still standing. Include in your answer any control measures that you would suggest. (5 marks)
  - b) The virus-associated disease of enzootic bovine leukosis (EBL) has now been eradicated from both the Australian and New Zealand national dairy herds. However, it is possible to encounter sporadic bovine leukosis (which is not virus related) in dairy practice.

Sporadic bovine leukosis is commonly classified on the basis of age and distribution of lesions into three syndromes or forms. Using this classification, describe the lesions found in **each** of the three forms of sporadic bovine leukosis highlighting their similarities and differences. (10 marks)
  - c) Collection and examination of urine is an essential part of the clinical examination of a cow.
    - i. Outline the methods that can be used to obtain a urine sample in a mature dairy cow. (1 mark)
    - ii. Describe how you would assess and analyse a urine sample from a cow. Include in your answer the common abnormalities you might find and the diseases/conditions these abnormalities might indicate. (4 marks)

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2. Facial eczema is one of the major liver diseases affecting grazing ruminants in Australasia.

Answer **all** parts of this question:

- a) Discuss the aetiology, pathogenesis and risk factors of this disease. (10 marks)
- b) Describe the clinical signs and diagnosis (including diagnostic aids and post-mortem findings) of the disease. (10 marks)

Zinc supplementation is the most commonly used control measure implemented in the control of facial eczema on dairy farms. Nevertheless, this practice of zinc supplementation has the potential to cause zinc toxicity in dairy cattle.

- c) List the clinical signs that you might expect to see in a dairy herd suffering from zinc toxicity and at what levels these might be seen. (6 marks)
- d) Outline how a presumptive diagnosis of zinc toxicity could be confirmed in the live animal (2 marks) and at post-mortem examination. (2 marks)

3. Abomasal displacement (either to the left side or the right side of the abdominal cavity) is a common abdominal disorder in high-producing adult dairy cows.

Answer **all** parts of this question:

- a) Discuss the aetiology, including risk factors, of left displaced abomasum in cattle. (10 marks)
- b) Discuss the control measures that could be implemented in order to minimise the occurrence of left displaced abomasum in a given herd. (10 marks)

Several procedures to correct left abomasal displacement (LDA) in cattle have been described in the relevant literature. In general terms, these procedures can be categorised as either a minimally invasive, closed procedure, or an open procedure.

- c) Describe, step by step, one method of a minimally invasive, closed procedure to correct an LDA in a recently calved, four-year-old Friesian-Jersey cross cow. (10 marks)

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4. Undifferentiated neonatal diarrhoea or the so-called ‘calf diarrhoea complex’ is a complex, multifactorial disease that involves an interaction between the young calf, its environment, nutritional factors and infectious agents.

Answer **all** parts of this question:

- a) List the **five (5)** pathogens that are most commonly involved in this calf diarrhoea complex (i.e. affecting dairy calves less than four weeks of age). (2 marks)
- b) Describe your general approach to the prevention of neonatal diarrhoea, as well as the specific strategies that you would employ for **each** of the above five causes. (12 marks)
- c) Describe in detail and justify the fluid therapy regimen that you would recommend for a case of diarrhoea in a one-week-old Jersey calf that is still able to stand and suckle. The animal shows a slight separation between the eyeball and the orbit, and its mucous membranes are slightly tacky. (8 marks)
- d) Describe in detail and justify the fluid therapy regimen that you would implement for a case of profuse diarrhoea in a recumbent (collapsed), 10-day-old Holstein-Friesian calf. The animal has a 0.5 cm gap between the eyeball and the orbit, and its mucous membranes are noticeably tacky. (8 marks)

**End of paper**



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## 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

*Medicine of Dairy Cattle Paper 2*

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# Paper 2: Medicine of Dairy Cattle

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Answer all four (4) questions

1. In early October, you are contacted by the manager of a 600-cow, seasonal-calving dairy herd. For the last couple of years, the herd has been experiencing a significant lameness problem. At present, approximately 10% of the herd is lame, the majority of them being first-calf cows. The herd is grazing irrigated perennial ryegrass/clover pastures, and has a mating start date of October the 15th.

The herd manager is doing most of the lame cow treatments himself and from his records you deduce that the main lesions involved are (in order of importance): septic traumatic pododermatitis (sole abscess, underrun sole), white line disease, excessive wear, and aseptic traumatic pododermatitis (bruising). He not only wants you to investigate this herd lameness problem and develop preventative measures, but also seeks your advice on how to properly treat these particular lesions.

Answer **all** parts of this question:

- a) Discuss your approach for investigating this problem; in particular indicate the aspects on which you would focus your investigation. (8 marks)
- b) Describe and justify the recommendations that you would make to reduce the overall incidence of lameness in this herd. (14 marks)
- c) Describe in detail the recommended treatment for **each** of the following **two (2)** lesions: septic traumatic pododermatitis and excessive wear. (8 marks)

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2. While on duty on the weekend, you are called to investigate a problem involving a group of about 30 'springing', Friesian × Jersey dairy cows. The animals are kept in a small calving paddock where they are being fed a transition diet in a feed bunk. According to the farmer, these cows are all due to calve within the next week or so.

On arrival, you find that 15 of these cows are recumbent and unable to rise, while many of them appear to be severely dehydrated.

The transition diet is made up of approximately 2 kg of pasture dry matter (DM), 2.5 kg of wheat, 9 kg of cereal hay DM, and anionic salts. The wheat and anionic salts components are mixed with 3 kg of hay DM per cow, using a mixer wagon.

The previous morning the farmer had to go to a funeral and instructed one of his staff to mix and feed the transition diet later in the day, at which stage all 30 cows appeared normal according to the farm worker.

Answer **all** parts of this question:

- a) Given the history and the presenting signs, list **four (4)** conditions that you might consider **BEFORE** you carry out a more detailed investigation of the problem. Also, briefly justify why you include these **four (4)** diseases in your list of differential diagnoses. (2 marks)

You consider acute rumen acidosis (grain overload) to be the most likely cause of this problem. Following thorough questioning of the farm worker involved it turns out that 750 kg of wheat had mistakenly been added into the cows' daily mix, rather than the 75 kg which would have been needed to provide the planned 2.5 kg of wheat per cow per day.

- b) Discuss the pathophysiology of acute rumen acidosis and how it impacts on the severity of the condition. (8 marks)
- c) Describe features of your evaluation (clinical assessment) of this group of 30 cows which allow you to group the animals according to the level/degree of disease. (10 marks)
- d) Describe and justify your approach to the treatment of this group of 30 cows, taking into consideration that the animals are likely to be affected with a variable degree of severity. (10 marks)

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3. In the middle of December, a herd manager contacts you because she is concerned about the high incidence of clinical mastitis in her seasonal-calving dairy herd. Prior to contacting you, she had submitted 20 individual milk samples from cows that had cell counts of  $>10^6$  cells/mL at the latest herd test. The culture results of these samples were as follows:

- *Corynebacterium bovis* × 3
- *Streptococcus uberis* × 2
- *Staphylococcus aureus* × 8
- *Streptococcus agalactiae* × 1
- Mixed skin flora × 2
- No growth × 4

On close examination of the milk records it becomes clear that over the last four months the herd's bulk milk cell count has risen from 200,000 to 375,000 cells/mL and that the percentage of clinical mastitis cases after calving has risen from 5% to 10%.

Answer **all** parts of this question:

- a) Discuss the initial logical approach that you would take to investigate the manager's concern (5 marks) and; assuming that a mastitis problem does exist, how you would continue your investigation. (15 marks)
  - b) Outline the recommendations that you would make in order to minimise this particular mastitis problem. (10 marks)
4. You are working in a predominantly dairy cattle practice in either Australia or New Zealand, and you are asked to produce some text for the upcoming issue of the practice newsletter. You choose to write a short article on the dietary cation-anion difference (DCAD) concept in the prevention of parturient hypocalcaemia (milk fever) in dairy cows.

Write a short essay on the DCAD concept and how DCAD diets are supposed to help prevent milk fever. (15 marks)

In your essay include:

- herd dietary management; (5 marks)
- use of anionic salts and any associated disadvantages/risks; (5 marks)
- and a brief description of how to monitor the degree of metabolic acidification of the ration. (5 marks)

**End of paper**