



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2015

Veterinary Parasitology and Parasitic Diseases

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: Veterinary Parasitology and Parasitic Diseases

Answer all four (4) questions

1. Outline how nematode parasites of ruminants evade and manipulate host immunity. (30 marks)
2. Coccidiosis is a disease of young, crowded animals.

Answer **all** parts of this question:

- a) Describe the life cycle (5 marks) and epidemiology (7 marks) of the parasites that may produce coccidiosis in a flock of commercial breeder chickens in Australia. In your answer, explain the significance of 'young, crowded animals' in the epidemiology of this disease. Briefly explain how a diagnosis can be established (3 marks).
 - b) Explain how the life cycle and diagnosis of the parasites that produce coccidiosis in a cat shelter differ from that described in your answer to 2 a). (3 marks)
 - c) Describe, at the **cellular level**, how apicomplexan parasites are thought to invade and survive in host cells. Your answer should include some reference to differences between apicomplexan groups. (12 marks)
3. Resistance against anthelmintic drugs developed relatively quickly among populations of small ruminant nematodes yet is absent or rarely encountered in nematode parasites of cats.
Analyse this difference. Your answer should include reference to current understanding of how resistance develops, as well as your knowledge of the major nematode infections in **each** host. (30 marks)

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

a) Canine flea allergy dermatitis is very common in veterinary practice. Describe the pathophysiology of this condition. *(10 marks)*

b) Equine colic is another common clinical presentation.

Describe how different helminth parasites may contribute to equine colic. For **each** parasite, describe the disease mechanisms that lead to this presentation.

(20 marks)

End of paper



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Paper 2

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

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Answer **ALL SIX (6)** questions

Answer **SIX** questionstotal 120 marks

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Paper 2: Veterinary Parasitology and Parasitic Diseases

Answer all six (6) questions. Questions carry the marks indicated (not all questions are of equal value).

1. You are contacted by a producer in the New England Tablelands (northern New South Wales). The anthelmintic drench he usually uses appears to be no longer working and sheep are still dying following treatment. The producer has used a number of drench types over a number of years.

Outline, in detail, what steps you would take to investigate and address this problem. Your answer should include advice to ensure the sustainability of the enterprise in the event that multi-drug resistance is confirmed on the property. Justify your advice.

(30 marks)

2. A client presents to a Melbourne veterinary clinic with a 10-week-old Burmese kitten, recently purchased from a breeder. The kitten was bought as a gift for the client's 5-year-old daughter. The kitten has diarrhoea.

Answer **all** parts of this question:

- a) List helminth and protozoal parasites that may be contributing to this presentation. Justify your choices. Briefly explain the mechanism by which **each** parasite produces diarrhoea. *(10 marks)*
- b) Outline a diagnostic plan for determining which, if any, of the parasites you listed in 2 a) are contributing to this kitten's illness. *(10 marks)*

The client's daughter is undergoing chemotherapy for leukaemia.

- c) Describe the risk of parasitic zoonoses that might be associated with this presentation, **and** how you would advise the family to manage these risks.

(10 marks)

Continued over page

3. Although it has declined in prevalence, heartworm remains a significant veterinary parasite in Australia.

Answer **both** parts of this question:

- a) A veterinary colleague practising in coastal, tropical Queensland seeks your advice. She has examined a blood smear from a five-year-old dog and identified microfilariae on the smear. A heartworm antigen test for this dog is negative.

The dog was recently acquired and its history, including history of heartworm prophylaxis, is unknown. The dog is not exhibiting any clinical signs consistent with heartworm disease.

Explain your advice to this practitioner. Include in your answer possible causes of these discordant test results, as well as strategies on how to investigate further if warranted. (6 marks)

- b) Briefly review current knowledge about anthelmintic resistance in *Dirofilaria immitis*. (4 marks)

4. Describe the epidemiology and impacts on production and health of parasites affecting the **intensive** pig industry in Australia. In your answer, discuss impacts at both the individual pig **and** herd levels. (10 marks)
5. Review control strategies available for the management of buffalo fly (*Haematobia irritans exigua*) in Australian cattle, **and** identify those strategies you would recommend for a beef property in northern New South Wales. (10 marks)

Continued over page

6. This question deals with **three (3)** ‘current topics’ in veterinary parasitology.

Answer **all** parts of this question:

- a) *Chrysomya bezziana* represents one of the most significant exotic parasite threats to Australia’s animal populations:
- i. Discuss how infections with this fly are recognised. Your answer should include identification of the fly as well as pathological features of fly infestations. (5 marks)
 - ii. Briefly describe the control and eradication techniques likely to be deployed should this fly be identified in Australia. (5 marks)
- b) *Theileria orientalis* infection has, in recent years, emerged as a cause of significant disease in Australian and New Zealand cattle:
- i. Summarise the factors contributing to this parasite producing disease in Australian and New Zealand cattle. Include in your answer knowledge gaps impacting our capacity to manage this disease. (5 marks)
 - ii. Briefly outline the steps you would recommend to a colleague seeking to minimise the impact of this parasite in his clients’ herds. (5 marks)
- c) Locally acquired *Leishmania* infections of animals in Australia:
- i. Summarise current understanding of this topic, including a description of lesions and hosts in which this infection has been reported. (5 marks)
 - ii. Describe what is known about the potential risks for zoonotic transmission of this parasite within Australia, and establishment of exotic *Leishmania* strains in Australia. (5 marks)

End of paper