



Australian and New Zealand College of Veterinary Scientists

Fellowship Examination

June 2014

Canine Medicine

Paper 1

Perusal time: **Twenty (20)** minutes

Time allowed: **Four (4)** hours after perusal

Answer **ALL FIVE (5)** questions

All five questions are of equal value.

Answer **FIVE** questions each worth 48 markstotal 240 marks

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Paper 1: Canine Medicine

Answer all five (5) questions

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

- a) Describe the mechanisms by which a dog with a congenital or acquired disorder of the portal vasculature can develop ascites. Include in your answer a description of the normal portal anatomy and the type of disorders that can result in ascites along this pathway. *(30 marks)*
- b) Explain the mechanism(s) by which liver disease may result in anaemia in dogs. *(18 marks)*

2. The following terms are commonly used to describe clinical or electrocardiographic features of various canine cardiac diseases. Explain **each** term **and** describe the underlying pathophysiological mechanisms for **each** of these abnormalities:

- a) differential cyanosis *(12 marks)*
- b) 'gallop' sound *(12 marks)*
- c) ejection murmur *(12 marks)*
- d) pre-excitation syndrome. *(12 marks)*

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

- a) A polymerase chain reaction for antigen receptor rearrangement (PARR) assay on blood/tissue aspirates has recently become available in Australia.

Answer **all** of the following:

- i. Describe the principles of the PARR assay. (5 marks)
- ii. Explain how this test complements other existing diagnostic methods. (4 marks)
- iii. Discuss the sensitivity, specificity and any limitations of the PARR assay. (7 marks)

- b) The Oncept® canine melanoma vaccine has recently become available to veterinary practitioners.

Answer **both** of the following:

- i. Outline the proposed mechanism of action, possible indications and adverse effects of the canine melanoma vaccine. (8 marks)
- ii. Briefly summarise the evidence to support or refute the efficacy of this product. (8 marks)

- c) Define the term ‘metronomic chemotherapy’ and briefly discuss the proposed mechanisms of action. (16 marks)

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

- a) Create a diagram which shows how the mammalian body detects a decrease in effective circulating blood volume, the specific sites where this detection occurs, and the normal physiological responses to a decrease in effective circulating blood volume. (12 marks)
- b) Discuss the pathogenesis of myelinosis following rapid correction of hyponatraemia with fluid therapy. (4 marks)
- c) Provide **two (2)** examples of specific underlying diseases that may be associated with **each** of the following:
 - hypervolaemic hypernatraemia
 - hypovolaemic hypernatraemia
 - hypervolaemic hyponatraemia
 - hypovolaemic hyponatraemia

For **each** disease, briefly outline the pathogenesis of the sodium disturbance and the expected total body sodium content. (32 marks)

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

- a) Describe the direct and indirect physiological effects and regulation of growth hormone. (18 marks)
- b) Discuss the pathogenesis and clinicopathologic consequences of acromegaly and pituitary dwarfism in dogs. (18 marks)
- c) Outline hormonal production and control in the posterior pituitary, listing any clinical conditions that can occur with dysregulation. Briefly compare this with a global description of how hormones are regulated in the hypothalamic-anterior pituitary-systemic axis. (10 marks)
- d) Briefly explain why the cortisol pathway is preserved in dogs with pan-pituitary dwarfism. (2 marks)

End of paper



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Paper 2

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Time allowed: **Four (4)** hours after perusal

Answer **ALL FIVE (5)** questions

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Answer **FIVE** questions each worth 48 markstotal 240 marks

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Paper 2: Canine Medicine

Answer all five (5) questions

1. A four-year-old female entire cross-bred dog presents with acute-onset generalised weakness of 24 hours duration. The dog is unable to support its weight or ambulate voluntarily. Initial physical examination is otherwise unremarkable. No previous episodes of collapse are reported.

Answer **all** parts of this question:

- a) Outline the differential diagnoses for this patient. *(8 marks)*
- b) Devise a diagnostic plan for this patient. *(8 marks)*
- c) Define the terms compound muscle action potential (CMAP), motor nerve conduction velocity (MNCV), F-wave latency and cord dorsum potential (CDPs) **and** indicate how these assessments may be clinically useful. *(8 marks)*
- d) Explain the underlying clinical principles of electromyography (EMG) and how EMG may be utilised to investigate neuromuscular disorders. *(8 marks)*
- e) Labrador retrievers appear to be predisposed to **three (3)** different myopathies. Compare and contrast the clinicopathological and electromyographic findings that may help to differentiate between these conditions. As part of your answer indicate any known modes of inheritance and indicate the prognosis for **each** myopathy. *(16 marks)*

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2. For **both** of the following scenarios, discuss the management options for the affected dog **and** indicate whether the dog represents a zoonotic risk. If a zoonotic potential is identified, then also discuss methods of minimising the risk of zoonotic transfer.

Answer **both** of the following:

a) **First scenario:**

A three-year-old male neutered Beagle is diagnosed with acute leptospirosis (high titres for *Leptospira interrogans* serovar Copenhageni). The dog is inappetent, lethargic and jaundiced. It is moderate azotaemic with isosthenuria (USG 1.010) and proteinuria (3+). The liver enzymes are moderately increased as is bilirubin. The dog was hospitalised for intravenous fluid therapy 24 hours ago and its urine output has been averaging 4mls/kg/hr. (24 marks)

b) **Second scenario:**

Gastroduodenoscopy is performed in a six-year-old female neutered Yorkshire terrier with chronic vomiting, small bowel diarrhoea, weight loss, and mild hypoalbuminaemia. Histopathology of endoscopic duodenal mucosal biopsies confirms a diagnosis of moderate to severe lymphoplasmacytic enteritis. Gastric mucosal biopsies have relatively normal histopathology except for the presence of large numbers of spiral-shaped and curved bacteria inhabiting the glands, parietal cells and mucus of the stomach. Based on positive staining with Warthin-Starry stain, the pathologist suspects the bacteria to be *Helicobacter* species. (24 marks)

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

- a) Discuss the potential causes, clinical signs, laboratory findings, prognostic significance and management of cobalamin deficiency in the dog. (24 marks)
- b) A one-year-old, desexed female Cocker spaniel presents with a history of poorly formed, voluminous stools, coprophagia and flatulence. Weight loss has been observed despite an adequate caloric intake. The dog is in poor body condition (BCS 2/9). The clinical examination is otherwise unremarkable.

A complete blood profile is normal apart from a mild non-regenerative, normocytic, normochromic anaemia.

A faecal float and *Giardia* ELISA were negative.

A canine faecal pancreatic elastase test is low (5ug/g, reference range >20ug/g).

A trypsin-like immunoreactivity assay is normal (9ug/L, reference range 5.7–45.2 ug/L).

Outline your interpretation of the clinicopathological findings **and** then use this information to justify how you would proceed with the diagnostic investigation. (24 marks)

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

- a) Discuss the current recommendations for the prevention of calcium oxalate uroliths in dogs. Include in your answer:

- How the current recommendations relate to the proposed pathogenesis.
- The controversies surrounding the current recommendations.

(32 marks)

- b) Discuss treatment options for benign prostatic hyperplasia in dogs. (16 marks)

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

- a) Excluding primary immune mediated haemolytic anaemia, discuss the potential causes of haemolysis in the dog **and** outline the diagnostic tests that may aid in differentiation between these haemolytic disorders. *(33 marks)*

- b) Flow cytometry has recently become available to Australian clinicians:
 - i. Describe the principles of flow cytometry. *(4 marks)*

 - ii. Discuss the clinical applications of flow cytometry in dogs. *(11 marks)*

End of paper