



Australian and New Zealand College of Veterinary Scientists

Fellowship Examination

June 2014

Small Animal 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: Small Animal Medicine

Answer all five (5) questions

1. Answer **both** parts of this question:
 - a) Describe the mechanisms by which a dog or cat with a congenital or acquired disorder of the portal vasculature can develop ascites. Include in your answer a brief 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 cats **and** dogs. (18 marks)

2. The following terms are commonly used to describe clinical or echocardiographic features of feline hypertrophic cardiomyopathy. Explain **each** term **and** describe the underlying pathophysiological mechanisms for **each** of these abnormalities:
 - a) 'gallop' sound (12 marks)
 - b) midventricular obstruction (12 marks)
 - c) systolic anterior motion (SAM) of the mitral valve (12 marks)
 - d) spontaneous echogenic contrast ('smoke') in the left atrium. (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 compliments 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 review 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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Answer **ALL FIVE (5)** questions

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Paper 2: Small Animal Medicine

Answer all five (5) questions

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

a) Define the terms 'feline lower urinary tract disease' (FLUTD) **and** 'feline idiopathic cystitis' (FIC). (5 marks)

b) Using evidence based medicine, discuss the controversy regarding the acute and long term management of cats with **non** obstructive feline idiopathic cystitis. In your answer:

- Discuss therapies that have been evaluated by controlled clinical trials.
- Relate the mechanism of the treatment to the proposed causes of FIC.

(43 marks)

2. A two-year-old, female standard poodle presents with cutaneous ecchymoses and haematuria. It has been previously healthy apart from transient left thoracic limb lameness which resolved after a short course of meloxicam last week. You collect a blood sample and note that the dog bruises at the site of venepuncture.

You perform the following tests:

An in-house haemogram which was unremarkable, apart from a mild reduction in platelets ($120 \times 10^9/L$, reference range $200\text{--}500 \times 10^9/L$).

Coagulation profile:	Result	Reference range	Units
Activated partial thromboplastin time (APTT)	15	13.1–17.2	seconds
Prothrombin time (PT)	8.8	6.9–8.8	seconds
Activated clotting time (ACT)	82	60–90	seconds
Buccal mucosal bleeding time (BMBT)	14	2–4	minutes

Question 2 continued over page

Answer **all** parts of the question:

- a) Outline your interpretation of the test results provided **and** list the differential diagnoses for the observed bleeding tendency. (12 marks)
- b) Explain the mechanism by which **each** of the differential diagnoses can result in haemorrhage. (12 marks)
- c) Describe how you could distinguish between the differential diagnoses. (12 marks)
- d) For **each** of the differential diagnoses, outline management strategies to minimise the risk of ongoing haemorrhage. (12 marks)

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

- a) Using your knowledge of the mechanism of action of neostigmine, describe the effect of this drug on the nervous system, the indications for its therapeutic use, **and** the clinical signs that may occur with overdose. (24 marks)
- b) Discuss the diagnosis, management and prognosis of dysautonomia. Include in your answer the mechanism of action of any drugs that may be utilised in the management of this condition. (24 marks)

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

- a) A one-year-old, female entire domestic shorthair cat presents with a history of intermittent vomiting and diarrhoea. The cat is lethargic, but otherwise physical examination is normal.

Salmonella spp. is isolated via faecal culture. Discuss the potential significance and implications of this finding. Briefly outline your plan for further evaluation and management. (20 marks)

- b) Refer to the faecal test results below. Discuss the potential significance of these findings in a **six-month-old desexed male** domestic shorthair cat with acute onset haematochezia and tenesmus. (12 marks)

Feline faecal PCR Panel	Result:
<i>Giardia</i> spp.	positive
<i>Cryptosporidium</i> spp.	negative
<i>Salmonella</i> spp.	negative
<i>Clostridium perfringens</i> Enterotoxin A	negative
<i>Tritrichomonas foetus</i>	positive
<i>Toxoplasma gondii</i>	negative
Feline panleukopenia	negative
Coronavirus	negative

Faecal float and Giardia ELISA are negative.

- c) Define the terms probiotic, prebiotic and synbiotic **and** discuss their use in the management of gastrointestinal disease in dogs **and** cats. (16 marks)

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5. The increasing incidence of antimicrobial resistant pathogens has been recognised and acted upon in human medicine in the past 15 years, but only more recently in companion animal veterinary medicine. In 2012, the Australian Veterinary Association called for aggressive measures to minimise the development of antimicrobial resistance using infection control practices and judicious use of antimicrobials by all veterinarians.

Answer **both** parts of this question:

- a) Design a seminar for companion animal veterinarians on points to consider before prescribing empirical antimicrobial therapy, with specific regard to minimising the selection pressure for antimicrobial resistance. Include in your answer specific considerations given to patient factors, microbe factors, and antimicrobial drug factors. *(24 marks)*
- b) Discuss the use of empirical antimicrobial therapy in the following conditions:
- aspiration pneumonia *(6 marks)*
 - prostatitis *(6 marks)*
 - acute pancreatitis *(6 marks)*
 - infectious canine tracheobronchitis. *(6 marks)*

End of paper