



Australian and New Zealand College of Veterinary Scientists

Fellowship Examination

November 2020

Small Animal Medicine

Paper 1

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

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

Answer **ALL FIVE (5)** questions

All five (5) questions are of equal value.

Answer **FIVE (5)** questions, each worth 48 markstotal 240 marks

Paper 1: Small Animal Medicine

Answer all five (5) questions

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

- a) Obesity has recently been considered both an endocrine and inflammatory disease.

Answer **both** parts of this sub-question:

- i. Provide a definition of obesity. (2 marks)
- ii. Briefly describe the endocrine and inflammatory abnormalities associated with obesity, and their effects on the body. (22 marks)
- b) List the pathologic conditions associated with obesity and provide a brief explanation of how obesity causes or contributes to these. (24 marks)

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

- a) Outline and briefly describe the functions of the renin-angiotensin-aldosterone system (RAAS). You may draw a diagram to aid your outline. (16 marks)
- b) Describe how chronic activation of the RAAS negatively affects the cardiovascular and renal systems. (32 marks)

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

- a) Outline the components of the normal gastric mucosal barrier and describe the function of each component. *(16 marks)*
- b) Discuss how the gastric mucosal barrier can be disrupted to result in gastric ulceration. Include in your answer the specific causes of gastric ulcers in cats. *(26 marks)*
- c) Omeprazole has several potential drug interactions. Using examples, outline the different mechanisms by which proton pump inhibitors are known to interact with other prescribed medications. *(6 marks)*

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

- a) Describe the normal pulmonary circulation and outline the factors that contribute to both the regulation of pulmonary arterial pressure in health, and the development of pulmonary hypertension. *(16 marks)*
- b) Outline the aetiopathogenic classification system for pulmonary hypertension and, for each category, explain the mechanism(s) that contribute to the development of hypertension, using disease examples. *(16 marks)*
- c) Explain the methods and principles of the following indirect screening tests for pulmonary hypertension. For each screening test, indicate the findings that would support a diagnosis of pulmonary hypertension: *(16 marks)*
 - i. 2-dimensional echocardiography
 - ii. peak regurgitant flow velocity of tricuspid regurgitation
 - iii. peak regurgitant flow velocity of pulmonary insufficiency
 - iv. right pulmonary artery distensibility (RPAD) index.

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

- a) Outline the normal regulation of phosphorous homeostasis. You may draw a diagram to support your answer. *(20 marks)*

- b) Describe the changes that occur to parathyroid hormone, fibroblast growth factor – 23 and vitamin D analogues with renal secondary hyperparathyroidism. You may draw a diagram to support your answer. *(18 marks)*

- c) Define tertiary hyperparathyroidism and briefly explain its pathogenesis. *(10 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

All **five (5)** questions are of equal value.

Answer **FIVE (5)** questions, each worth 48 markstotal 240 marks

Paper 2: Small Animal Medicine

Answer all five (5) questions

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

- a) Compare and contrast the therapeutic use of prednisolone and cyclosporine in a dog with idiopathic chronic hepatitis. *(16 marks)*
- b) Discuss the prognosis for the medical management of a congenital extrahepatic portosystemic shunt diagnosed in a four-year-old, female, spayed Yorkshire terrier. There are no overt clinical signs of hepatic encephalopathy. The owners have declined surgery. *(16 marks)*
- c) Discuss the prophylactic use of anti-epileptic medications prior to surgery in a dog with a congenital extrahepatic portosystemic shunt. *(16 marks)*

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

- a) Describe the diagnosis and treatment of delayed post-operative bleeding in greyhounds. *(18 marks)*
- b) Outline the predisposing conditions and clinical signs associated with aortic thrombosis in dogs. *(12 marks)*
- c) Discuss the use of clopidogrel in feline aortic thromboembolism (FATE). *(18 marks)*

3. You are asked to give a talk to general practitioners on antibiotic resistance and stewardship. Write the notes that you would provide with your talk. Include in your notes:

- i. the scope of the problem and possible implications for the future *(12 marks)*
and
- ii. a detailed strategy for the judicious use of antibiotics in small animal veterinary practice. *(36 marks)*

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

- a) A 10-year-old, male, neutered Boxer is presented with acute onset of neurological signs. The dog has normal mentation and is ambulatory with a truncal sway. Limb movements in the left thoracic and pelvic limbs are hypermetric with concurrent proprioceptive deficits, and mildly increased myotatic reflexes are also identified. The thoracic and pelvic limbs are normal on the right. There is a right head tilt and horizontal nystagmus with the fast phase towards the right. There is an absent left menace response, but the remainder of the cranial nerve examination is normal.

Provide the neurolocalisation for this patient, outlining the normal components and action of the affected system(s) and explaining how their disruption has resulted in the neurologic findings. (12 marks)

- b) A five-year-old, female, neutered Bengal cat is presented with a six-week history of a reduced appetite and mental dullness. Three seizures have occurred in the last 24 hours. Examination identifies dull mentation and pyrexia (temperature 39.5°C). Neurologic examination demonstrates generalised ataxia with circling to the right. There are subtle postural deficits, with normal myotatic reflexes in the left thoracic and left pelvic limbs. The cat is blind with bilateral normal pupillary light reflexes (PLRs). No other neurological deficits are noted.

Answer **all** parts of this sub-question:

- i. Provide the neurolocalisation for this patient and explain your reasoning. (4 marks)
- ii. You suspect cryptococcosis. Pending a Lecithin-Cholesterol Acyltransferase (LCAT) result from an external laboratory, you perform a point-of-care (POC) rapid antigen test. The latter is positive, whilst the former returns a negative result. Explain the principles of the available serologic test methods and outline the potential reasons for these disparate results. Briefly outline the process of confirming the diagnosis, based upon these confounding results. (8 marks)
- iii. What is the recommended treatment and monitoring plan in this case? Justify your answer. (8 marks)

Question 4 continued over page

- c) A six-month-old, male, neutered Kelpie is presented ambulatory, but with a seven-day history of worsening spinal pain, and now has marked spinal hyperaesthesia and pyrexia (temperature 39.7°C). Neurologic examination identifies normal mentation and no cranial nerve abnormalities. Pelvic limb paraparesis with postural deficits, and reduced proprioception, are noted. The myotatic reflexes are also reduced bilaterally in the pelvic limbs. The thoracic limbs are normal. There is urinary incontinence, with a bladder that is easily expressed: *(16 marks)*
- i. Provide a brief neurolocalisation and outline the main differential diagnoses.
 - ii. Assuming an infectious cause, outline the life cycle of the likely organism and any preventative measures that should be recommended to avoid recurrence or prevention of future cases. You may draw a diagram to support your answer.

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

- a) Outline the diagnostic criteria from the ACVIM consensus guidelines for Stage B2 myxomatous mitral valve disease (MMVD) in dogs (2019). *(14 marks)*
- b) Describe the mechanism of action of pimobendan. *(16 marks)*
- c) Describe the efficacy of pimobendan in MMVD in dogs. *(18 marks)*

End of paper