



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2016

## Small Animal Medicine

## Paper 1

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

Time allowed: **Two (2)** hours after perusal

Answer **ALL FOUR (4)** questions

**Question 2 b)** requires completion of the table located in the answer booklet you have been provided.

Answer **FOUR** questions each worth 30 marks .....total 120 marks

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# Paper 1: Small Animal Medicine

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## Answer all four (4) questions

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

- a) Describe the pathophysiological mechanisms which lead to the electrolyte and acid-base derangements most commonly seen in naturally occurring primary canine hypoadrenocorticism. *(10 marks)*
- b) Discuss the pathogenesis of anaemia in chronic kidney disease. *(10 marks)*
- c) Define ‘metronomic chemotherapy’ **and** explain mechanisms by which this form of chemotherapy might be effective. *(10 marks)*

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

- a) Outline the regulation of thyroid hormone production and release (a flow chart can be used). *(8 marks)*
- b) Complete the table provided in the answer booklet to indicate the most common result (high, low or normal) for **each** of the scenarios (hypothyroid dog, hyperthyroid cat and dog with nonthyroidal illness). *(6 marks)*
- c) Discuss the factors that influence the diagnostic performance of serum total thyroxine (T4) measurement in the diagnosis of canine hypothyroidism. *(12 marks)*
- d) State the diagnostic test that uses synthetic triiodothyronine (liothyronine) to diagnose occult feline hyperthyroidism **and** briefly explain how the result of this test differs in a cat with occult hyperthyroidism compared to a normal cat. *(4 marks)*

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

- a) Describe the neurological pathways involved in normal micturition, including relevant anatomy and neurotransmission. Your response should differentiate storage and voiding phases of micturition. You may use a labelled diagram as part of your answer. (20 marks)
- b) Briefly discuss indications, mechanisms of action and major adverse effects of the following drugs when used in the treatment of micturition disorders: (10 marks)
  - i. bethanechol chloride
  - ii. diethylstilboestrol
  - iii. prazosin.

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

- a) Describe the pathophysiological processes by which pulmonary oedema can develop in dogs and cats. In your answer, include examples of diseases that can be associated with **each** process. (20 marks)
- b) Discuss the mechanisms by which pulmonary vascular and parenchymal lesions develop in canine heartworm disease. (10 marks)

**End of paper**



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## Paper 2

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Time allowed: **Two (2)** hours after perusal

Answer **ALL FOUR (4)** questions

Answer **FOUR** questions each worth 30 marks .....total 120 marks

# Paper 2: Small Animal Medicine

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Answer all four (4) questions

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

- a) A two-year-old male neutered Rhodesian ridgeback cross dog is presented for acute collapse. The day prior to presentation the owners noted that the dog appeared crouched with stiff, stilted back legs and his bark was softer than normal. He was having trouble rising and this morning was unable to get out of bed. He is still eating and drinking normally.

On examination the dog is generally weak and unable to support his weight, though conscious proprioception is present when assisted to stand. Muscle tone is absent in all limbs. Spinal reflexes and withdrawal reflexes are absent in all four limbs. Palpebral and menace responses are reduced; the rest of the cranial nerve exam is normal. The perineal reflex is normal.

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

- i. Provide a neuroanatomical localisation based on the physical examination findings. *(1 mark)*
- ii. Provide a prioritised list of common differential diagnoses for this dog's presenting signs and briefly justify your ranking. *(8 marks)*

**Question 1 continued over page**

- b) A one-year-old female neutered Burmilla cat is presented for decreased appetite, lethargy and her head ‘falling forward’ for three days. She was previously healthy. There is no history of vomiting or regurgitation. The cat is fed a complete and balanced commercial diet for adult cats, and has shown no previous clinical signs. She is walking with a stiff, stilted gait before lying down in the consult room. Significant findings from her clinical examination include severe cervical ventroflexion and profound weakness in the hindlimbs. She is generally uncomfortable with handling.

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

- i. Provide a list of differential diagnoses for cervical ventroflexion in cats. (4 marks)

You perform haematology, biochemistry and urinalysis; haematology is within normal limits and the results for biochemistry and urinalysis are provided below.

Biochemistry and urinalysis are as follows:

<b>Biochemistry</b>		<b>Results</b>	<b>Reference interval</b>
Urea	mmol/L	9.8	5.7–12.9
Creatinine	µmol/L	109	71–212
Phosphate	mmol/L	1.57	1.00–2.42
Total calcium	mmol/L	2.59	1.95–2.83
Total protein	g/L	84	57–89
Albumin	g/L	33	22–40
Globulin	g/L	51	28–51
ALT	U/L	110	12–130
ALKP	U/L	66	14–111
Total bilirubin	µmol/L	8.0	0–15
Cholesterol	mmol/L	2.33	1.68–5.81
Amylase	U/L	1385	500–1500
Glucose	mmol/L	8.10	4.11–8.83
Sodium	mmol/L	149	147–156
<b>Potassium</b>	mmol/L	<b>2.1</b>	<b>4.0–4.5</b>
Chloride	mmol/L	119	115–130

Urine specific gravity is 1.035 with pH 6.5 and dipstick analysis negative/unremarkable.

- ii. Briefly outline your assessment of the serum biochemistry results provided in relation to this case. (2 marks)
- iii. Describe how you would approach further diagnosis in this case, including your justification for any diagnostic tests to be performed. (15 marks)

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2. A three-year-old female neutered ragdoll cat presents with a two day history of anorexia, lethargy and vomiting. She is the only pet in the house and has an indoor-outdoor lifestyle.

The cat is obtunded, 15% dehydrated and bradycardic on presentation. You immediately elect to perform haematology, biochemistry, arterial blood gas analysis and urinalysis. The results are as follows:

Haematology: all parameters within normal limits.

<b>Biochemistry</b>		<b>Result</b>	<b>Reference interval</b>
Total protein	g/L	58	57–89
Albumin	g/L	27	22–40
Globulin	g/L	31	28–51
<b>Glucose</b>	mmol/l	<b>11</b>	<b>4–8.8</b>
Sodium	mmol/L	150	150–165
<b>Potassium</b>	mmol/L	<b>9.6</b>	<b>3.5–5.8</b>
<b>Sodium: potassium</b>	ratio	<b>15.6</b>	<b>&lt;27</b>
<b>Chloride</b>	mmol/L	<b>94</b>	<b>112–129</b>
<b>Anion gap</b>	mmol/L	<b>54.6</b>	<b>12–20</b>
Ca	mmol/L	1.95	1.95–2.83
<b>Phosphorus</b>	mmol/L	<b>5.5</b>	<b>1–2.4</b>
<b>Urea</b>	mmol/L	<b>79</b>	<b>5.7–12.9</b>
<b>Creatinine</b>	mmol/L	<b>1500</b>	<b>71–212</b>
Total bilirubin	µmol/L	5	0–15
ALT	U/L	100	12–130
AST	U/L	22	10–60
ALKP	U/L	23	10–120
CK	U/L	132	50–300
Cholesterol	mmol/L	3.0	1.8–5.9
<b>pH</b>		<b>7.12</b>	<b>7.31–7.46</b>
<b>PaCO<sub>2</sub></b>	mmHg	<b>20</b>	<b>26–36</b>
PaO <sub>2</sub>	mmHg	100	90–110
<b>HCO<sub>3</sub><sup>-</sup></b>	mmol/L	<b>11</b>	<b>14–22</b>
<b>Base excess</b>	mmol/L	<b>-15</b>	<b>-2 to -8</b>

**Question 2 continued over page**



**Urinalysis:**

Appearance	clear
RCC x 10 <sup>6</sup> /L	0
WCC x 10 <sup>6</sup> /L	0
Transitional epithelium	nil
Casts	multiple tubular casts
pH	6.0
Glucose	negative
Bilirubin	negative
USG	1.012
Protein	+1
Ketones	negative
Blood	negative

Answer **all** parts of question 2:

- a) State the most likely diagnosis for this cat's clinical signs and clinicopathological findings. Justify your answer by explaining the pathophysiological basis for the specific problems present. (10 marks)
- b) Discuss appropriate initial management of this patient, including justification for any additional diagnostic tests required. (18 marks)
- c) State the expected prognosis for this patient. (2 marks)

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3. A seven-year-old entire male Rottweiler presents with a two-day history of lethargy and anorexia. He has recently been imported from the USA after undergoing mandatory pre-exportation infectious disease screening. He is a valuable stud dog and was mated several times six weeks before exportation. He has presented to your clinic seven days into his stay in quarantine.

On physical examination you identify a generalised lymphadenomegaly, rectal temperature of 39.6°C, a scrotal dermatitis and his left testicle and epididymis are painful and swollen to the touch.

Answer **all** parts of this question:

- a) You suspect this dog may be infected with *Brucella canis*. Before further testing discuss your initial management of this case with reference to the potential canine and human public health risk if brucellosis is confirmed. (12 marks)
  - b) Provide an outline of your diagnostic approach to this case. Explain how results of your chosen tests may support a diagnosis of brucellosis. (15 marks)
  - c) Briefly explain why brucellosis is a valid differential diagnosis in this case given the negative pre-export screening result. (3 marks)
4. A nine-year-old male neutered Golden retriever is presented for halitosis and blood-stained saliva. On physical examination you find a lobulated, pigmented two centimetre oral mass between the right lower canine and second premolar.

Answer **all** parts of this question:

- a) Provide a prioritised differential diagnosis list. (4 marks)
- b) Describe an appropriate approach to diagnostic investigation in this case, including establishing a diagnosis and any relevant staging. (12 marks)
- c) Histopathology confirms a diagnosis of a malignant melanoma with local mandibular bone involvement but there is no evidence of local or distant metastases. List the treatment modalities available, and provide a brief comment on the efficacy of **each**. (5 marks)
- d) Comment briefly on prognosis in this case. (1 mark)
- e) A feeding tube is required for nutritional support during treatment. Briefly describe the technique for placement of an oesophagostomy tube. (8 marks)

**End of paper**