



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2014

Small Animal Medicine

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: Small Animal Medicine

Answer all four (4) questions

1. Answer **all** parts of this question:
 - a) Vomiting is a complex reflex, coordinated by the emetic centre in the brain. Describe the relevant receptors and neurohumoral pathways involved in vomiting, and how vomiting can be triggered. (25 marks)
 - b) Regarding maropitant (Cerenia ®) in dogs and cats outline the: (5 marks)
 - i. mechanisms of action
 - ii. indications for use.
2. Answer **both** parts of this question:
 - a) With reference to cell cycle and tumour biology, describe the factors that improve the effect of chemotherapy on tumours. (23 marks)
 - b) List tumours that may be associated with hypoglycaemia **and** briefly describe the mechanisms by which hypoglycaemia occurs. (7 marks)
3. Describe possible reasons for vaccine failure in dogs and cats, **and** how vaccine failure can be reduced. Use examples where possible. (30 marks)

Continued over page

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

- a) Describe the physiology of normal primary haemostasis. You may use a diagram to aid your written answer. *(10 marks)*

- b) Describe the processes that lead to pathological thrombus formation. *(10 marks)*

- c) Explain the mechanisms of action of clopidogrel as a thromboprophylactic medication. *(5 marks)*

- d) Briefly describe the indications, clinical significance and limitations of the buccal mucosal bleeding time test (BMBT) in dogs and cats. *(5 marks)*

End of paper



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Paper 2

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Paper 2: Small Animal Medicine

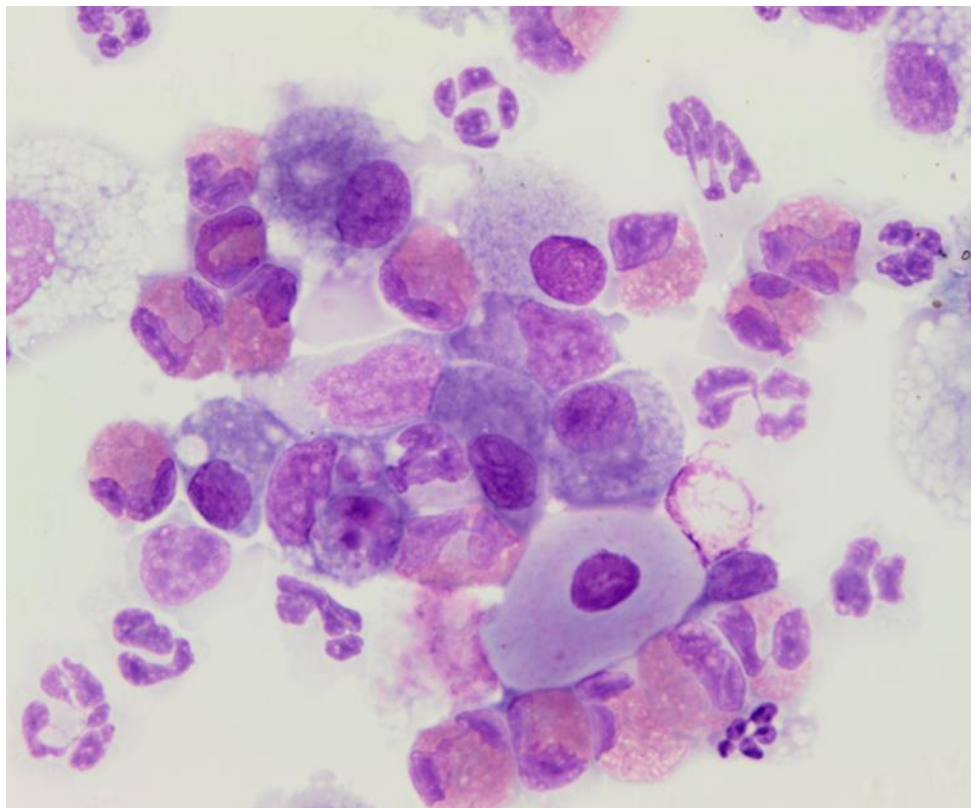
Answer all four (4) questions

1. A three-year-old male neutered domestic shorthair cat presents to you with a four week history of intermittent coughing that is increasing in frequency. The body condition score is six out of nine. On physical examination the resting respiratory rate is 60 breaths per minute with mild increase in expiratory effort. Otherwise the physical examination is normal.

Answer **all** parts of this question:

- Provide a list of differential diagnoses for this patient based on the history and physical examination findings. (5 marks)
- Describe a complete diagnostic approach to this patient. Provide justification for **each** diagnostic evaluation you choose. (10 marks)

Bronchoalveolar lavage was grossly turbid and a representative picture of the cytology follows:



- Describe your cytological interpretation of the above image. (5 marks)
- State the most likely diagnosis. Describe and justify your management plan. (10 marks)

2. A nine-year-old female entire Golden retriever is presented with a two month history of polyuria and polydipsia. The dog weighs 32 kg and the owner reports she has been drinking in excess of five litres per day. The dog has been eating normally but has vomited twice in the last two weeks.

The dog is bright, alert and responsive. Body condition score is five out of nine. Physical examination is normal.

You collect blood for haematology and biochemistry and urine via cystocentesis for urinalysis.

Haematology is normal.

Biochemistry and urinalysis are as follows:

Biochemistry		Results	Reference Values
Total Calcium	mmol/L	3.8	2.10–2.80
Phosphate	mmol/L	0.9	0.9–2.1
Urea	mmol/L	10.1	3.6–8.9
Creatinine	µmol/L	180	60–160
Glucose	mmol/L	6.5	3.3–6.7
Cholesterol	mmol/L	5.8	3.9–7.8
Total Bilirubin	µmol/L	6	0–10
ALT	U/L	60	5–80
AP	U/L	96	10–120
Amylase	U/L	1099	< 2000
Lipase	U/L	82	< 200
CK	U/L	232	50–400
Total protein	g/L	73	54–78
Albumin	g/L	28	24–38
Sodium	mmol/L	155	144–160
Chloride	mmol/L	119	109–122
Potassium	mmol/L	4.5	3.5–5.8

Question 2 continued over page

Urinalysis:

Method of collection: cystocentesis

Urine specific gravity: 1.011

Dipstick results:

Protein	Negative
pH	6.5
Blood	Negative
Ketones	Negative
Bilirubin	Negative
Glucose	Negative

Sediment exam:

Casts	Nil
RBC/HPF	0
WBC/HPF	0
Epithelial cells/HPF	Nil
Crystals	Nil
Bacteria	Nil

Answer **all** parts of this question:

- a) Provide a problem list and for **each** problem, provide a list of differential diagnoses for this patient, based on the history, physical examination and laboratory results. Justify which diagnosis you think is most likely. (10 marks)
- b) Describe and justify your diagnostic approach to this case. (8 marks)
- c) While you await further test results, outline the initial treatment of this patient. (5 marks)

Further testing demonstrates the following:

PTH	12 (Reference interval 2-13 pmol/l)
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- d) Describe **one (1)** specific treatment option for the most likely diagnosis. Include possible complications and prognosis in your answer. (7 marks)

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3. A 10-year-old female neutered domestic shorthair cat presents with an acute onset of generalised tonic-clonic cluster seizures. The cat is housed entirely indoors and eats a complete and balanced commercial diet.

On physical examination, the cat weights 4.5 kg and has a body condition score of 5/9. Heart rate is 160 beats per minute with normal auscultation, respiratory rate is 30/min, and rectal temperature is 38.7°C. Heart/lung field auscultation, abdominal palpation, peripheral lymph nodes and coat condition are all within normal limits.

Answer **all** parts of question three:

- a) List and briefly justify additional diagnostic evaluations you would perform to further investigate this case. *(8 marks)*

- b) Construct a prioritised list of differential diagnoses for this cat's seizures. *(7 marks)*

- c) Assuming there are no abnormalities found on any diagnostic tests, outline the long term management plan for the cat after initial stabilisation, including any monitoring recommendations. *(15 marks)*

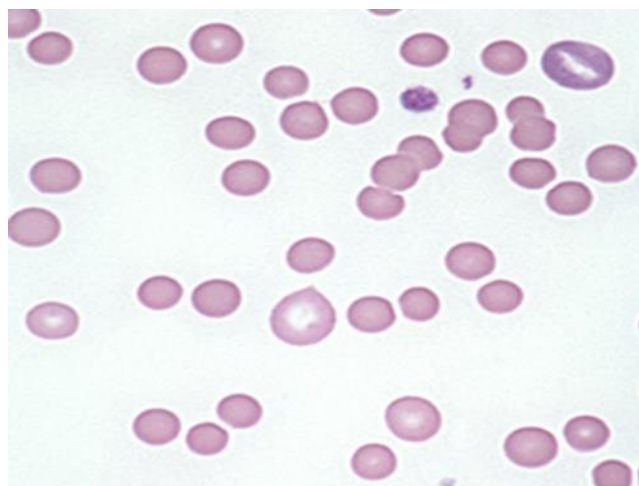
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4. An eight-year-old female entire Cocker spaniel presents following acute collapse. She has been lethargic for the last two days and has vomited twice during this time. On clinical examination she is recumbent, with a heart rate of 160 beats per minute, a respiratory rate of 44 breaths per minute and a rectal temperature of 38.3 °C. Her oral mucous membranes are pale. Physical examination is otherwise normal.

A haemogram is performed:

Haematology	RESULTS	Reference Values
Haemoglobin g/dL	3.8	12.0–18.0
PCV L/L	0.13	0.37–0.55
Red cell count x10 ¹² /L	1.8	5.5–8.5
MCV (PCV/RCC) fL	98	60–75
MCH (Hb/RCC) pg	21	19–24
MCHC (Hb/PCV) g/dL	28	32–38
White cell count* x10 ⁹ /L	25.5	6.0–17.0
Bands	3.1	0–0.3
Neutrophils	17.2	3.–11.5
Lymphocytes	2.9	1.0–4.8
Monocytes	2.3	0.2–1.4
Eosinophils	0.1	0.1–1.3
Basophils	0	Rare
Platelets	285	200–500
NRBC /100 WBC	10%	Rare
Reticulocytes / 100 RBC	3.5	0–1.5
Total solids g/L	76	60–80

A picture of the blood smear follows:



Biochemistry panel (canine)

CK (U/l)	221	47–228
ALP (IU/L)	130	20–184
ALT (IU/L)	220	21–142
Phosphate (mmol/l)	1.34	0.8–2.2
BUN (mmol/l)	7.6	3.6–10
Creatinine (μ mol/l)	121	44–132
Calcium (mmol/l)	2.77	2.25–2.82
T- Cholesterol (mmol/l)	4.9	3.3–6.9
Glucose (mmol/l)	5.2	3.6–6.8
T- Bilirubin (mmol/l)	25	0–8
Protein (g/L)	72	56–80
Albumin (g/L)	32	24–38
Globulin (g/L)	40	25–45
Amylase (IU/l)	928	65–1140
Lipase (IU/l)	187	13–200
Sodium (mmol/l)	138	(136–154)
Potassium (mmol/l)	3.9	(3.4–5.3)
Chloride (mmol/l)	98	(96–113)
Comments	serum yellow	

Question 4 continued over page

Urinalysis:

Method of collection: cystocentesis

Urine specific gravity: 1.038

Dipstick results:

Glucose	Negative
Protein	Negative
pH	6.5
Blood	Negative
Ketones	Negative
Bilirubin	+3

Sediment exam:

Casts	Negative
RBC/HPF	0
WBC/HPF	0
Epithelial cells/HPF	0
Crystals	Negative
Bacteria	Negative

Answer **all** parts of this question:

- State the most likely diagnosis and briefly justify this. (5 marks)
- Discuss further diagnostic tests that are indicated for this patient. Explain your reasoning. (10 marks)
- Outline the initial and long term treatment and monitoring of this patient. (15 marks)

End of paper