Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2018

Medicine of Cats

Paper 1

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

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

Answer **ALL <u>FOUR (4)</u>** questions

Answer **<u>FOUR (4)</u>** questions, each worth 30 marks.....total 120 marks

Paper 1: Medicine of Cats

Answer all four (4) questions

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

   a) Describe, in detail, the pathophysiology of feline infectious peritonitis (FIP). Include in your answer how **each** of the following contribute to the development of FIP: *(18 marks)*

      - viral factors
      - environmental factors
      - host-immunological factors.

   b) Compare and contrast the usefulness of viral polymerase chain reaction (PCR) and immunocytochemistry for the diagnosis of FIP. *(12 marks)*

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

   a) Describe the role of the feline kidney in calcium homeostasis. *(10 marks)*

   b) Discuss the pathophysiology of **each** of the following:

      i renal secondary hyperparathyroidism *(10 marks)*

      ii calcium oxalate urolithiasis. *(10 marks)*

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

a) Answer **both** sub-parts of the question:

i Compare and contrast the pathophysiology and clinical presentation of **two (2)** different types of mycobacterial infection in cats. *(8 marks)*

ii Provide a brief assessment of the zoonotic risk of **one (1)** type of feline mycobacteriosis, including key strategies to minimise the risk of human exposure. *(2 marks)*

b) Answer **both** sub-parts of the question:

i Explain the pathophysiology of paracetamol toxicity in relation to the typical clinical signs and strategies for management. *(6 marks)*

ii Briefly explain the physiological and behavioural features that make cats particularly susceptible to toxins. *(4 marks)*

c) Outline the physiological consequences of **each** of the following dietary strategies in cats:

i a vegetarian diet *(5 marks)*

ii a diet composed entirely of raw fish *(3 marks)*

iii a diet entirely composed of liver. *(2 marks)*

Continued over page

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

a) Outline the pathophysiology of retinal detachment in cats. *(10 marks)*

b) Other than the eye, list the 'target' organs that are typically affected by hypertension. For **each** of these organs, outline the pathophysiology resulting from significant, sustained hypertension. *(8 marks)*

c) Considering the pathophysiology of hypertension, discuss the mode of action **and** adverse effects of **each** of the following drugs for the management of hypertension in cats:

i amlodipine *(4 marks)*

ii benazepril *(4 marks)*

iii telmisartan. *(4 marks)*

End of paper

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Paper 2

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

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Answer **ALL <u>FOUR (4)</u>** questions

Answer **<u>FOUR (4)</u>** questions, each worth 30 marks.....total 120 marks

Paper 2: Medicine of Cats

Answer all four (4) questions

1. A 13-year-old cat presents with weight loss despite an increased appetite. The cat has otherwise been bright and well. No diarrhoea or vomiting has been noticed by the owner, but the cat toilets outdoors. The cat is treated six-monthly with a broad-spectrum, generic, gastrointestinal wormer.

   You perform a complete blood count (CBC), serum biochemistry and urinalysis. The results are below:

Parameter	Abbreviation	Units	Result	Reference range
Alkaline phosphatase	ALP	U/L	78	5–50
Alanine transaminase	ALT	U/L	224	19–100
Urea	UREA	mmol/L	11.6	5.0–15
Creatinine	CREA	µmol/L	135	80–200
Total protein	TP	g/L	47	56–80
Albumin	ALB	g/L	19	25–38
Globulin	GLOB	g/L	28	31–52
Glucose	GLU	mmol/L	9.1	3.2–7.5
Symmetric dimethylarginine	SDMA	µg/dL	16	0–14
Total T4	TT4	nmol/L	24	13–52
Comments: other biochemistry parameters, including electrolytes, are in the mid reference range.				

   There is a mild, non-regenerative anaemia; otherwise the CBC and smear are unremarkable.

   Urinalysis: USG>1.050, pH 6; protein, glucose, ketones, bilirubin and blood are all negative; unremarkable sediment.

Question 1 continued over page

Answer **all** parts of question 1:

a) Interpret the clinical pathology results in the context of the clinical presentation **and** include likely differential diagnoses. *(10 marks)*

b) Outline a subsequent, prioritised diagnostic approach to this case **and** include your justification. *(10 marks)*

c) The cat is eventually diagnosed with exocrine pancreatic insufficiency. Describe **and** justify an appropriate management strategy. *(10 marks)*

2. A 12-year-old, female, spayed, domestic shorthair cat was diagnosed with diabetes mellitus two years ago and has been managed by a colleague. The cat originally weighed 5 kg, had been maintained on two units Glargine (Lantus) insulin twice daily and is fed a dry, high protein, low carbohydrate diet twice daily. Water intake had been less than 60 ml/kg/day and the cat's weight and appetite had been consistent.

However, in the last month, weight loss has been noted and the cat is hungrier. Water intake has increased to about 100 ml/kg/day and the cat's hair coat has deteriorated.

The cat now has a body condition score of 3/9 and a poor hair coat. The liver is moderately enlarged, but non-painful. Otherwise, the general physical examination is unremarkable.

The home-monitored blood glucose curve (below) was generated two weeks ago, following the progressive increase of the Glargine insulin to five units twice daily. Water intake has not decreased and the cat weighs 4.2 kg.

Time	**Blood glucose (mmol/L)**	
0700	26.5	Fasting sample followed by 5 U Glargine and standard feed
0900	24.2	
1100	24.1	
1300	23.8	
1500	24.3	
1700	25.5	
1900	27.4	Fasting sample prior to next feed

Question 2 continued over page

Answer **all** parts of question 2:

a) Interpret the blood glucose curve **and** suggest reasons for the results, with consideration to the history and clinical picture. *(5 marks)*

b) Outline an appropriate diagnostic plan for this cat **and** justify any tests you would recommend. *(10 marks)*

The following results were obtained from your initial investigations:

Parameter	Abbreviation	Units	Result	Reference range
Alkaline phosphatase	ALP	U/L	42	5–50
Alanine transaminase	ALT	U/L	290	19–100
Gamma-glutamyltransferase	GGT	U/L	3	0–5
Total bilirubin	TBIL	µmol/L	3	<8
Cholesterol	CHOL	mmol/L	6.8	2.2–5.5
Urea	UREA	mmol/L	14.0	5.0–15.0
Creatinine	CREA	µmol/L	108	80–200
Total protein	TP	g/L	75	60–84
Albumin	ALB	g/L	35	25–38
Globulin	GLOB	g/L	40	31–52
Glucose	GLU	mmol/L	23.8	3.2–7.5
Total T4	TT4	nmol/L	48	12.9–52
Comments: Other measured parameters, including electrolytes, were in the mid reference range.				

There was a mild lymphopenia, with haematology and blood smear otherwise normal.

Urine specific gravity from a cystocentesis sample was 1.036, with 4+ glucose, trace ketones and unremarkable sediment.

c) Interpret the abnormal results in light of the whole clinical picture. *(5 marks)*

d) You consider that this cat may have hyperadrenocorticism.

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

i Outline the difficulties with confirming a diagnosis of hyperadrenocorticism in cats. *(4 marks)*

ii Outline an appropriate diagnostic plan to confirm or refute a diagnosis of hyperadrenocorticism in **this** cat. *(6 marks)*

Continued over page

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

a) You have been tasked with revising your clinic's feline vaccination protocol, taking into consideration current, expert panel recommendations.

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

i. Formulate a protocol for the use of feline immunodeficiency virus (FIV) vaccination. *(5 marks)*

ii. Briefly discuss the risks and limitations of FIV vaccination. *(5 marks)*

iii. A colleague seeks your opinion regarding a positive in-house FIV test. The cat in question is an eight-year-old, female domestic shorthair. She is the sole cat in the household, is housed exclusively indoors and has been owned since she was a kitten. She has never been vaccinated against FIV. Considering test options and limitations, as well as epidemiological factors, briefly discuss the implications of the positive FIV test for **this** cat in these circumstances. Outline your recommendations for follow-up testing. *(5 marks)*

b) A 12-year-old, female, entire Siamese cat is presented with firm and irregular mammary nodules affecting the two most caudal left mammary glands. An incisional biopsy has confirmed a diagnosis of mammary carcinoma.

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

i. Outline the general recommendations for the staging of feline mammary carcinoma. *(10 marks)*

ii. List **five (5)** negative, prognostic indicators associated with feline mammary carcinoma. *(5 marks)*

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4. A 10-year-old, male, neutered Devon Rex cat is presented to your clinic with acute dyspnoea. The owners had not noted any respiratory changes until this morning and there is no history of trauma. Initial observation reveals that the cat has a respiratory rate of 60 beats per minute (bpm) and is open-mouth breathing. Its body condition score is 5/5.

Answer **all** parts of this question:

a) Prioritise the steps for the initial stabilisation of this cat up to the point of imaging. *(5 marks)*

Following stabilisation of the patient, thoracic radiographs are performed. These reveal pulmonary oedema. The cardiac silhouette is indistinct, but you are suspicious of some cardiomegaly.

b) List **all** the causes of non-cardiogenic pulmonary oedema. *(6 marks)*

c) One of your colleagues suggests performing an N-terminal pro-B-type natriuretic peptide (NT-proBNP) test. Briefly discuss the indications, limitations **and** interpretation of this test. *(4 marks)*

d) The dyspnoeic cat is eventually diagnosed with hypertrophic cardiomyopathy (HCM). Its systolic blood pressure is 135 mmhg. On echocardiography, the cat has marked, left-atrial enlargement with spontaneous echo contrast 'smoke' in its left-atrium.

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

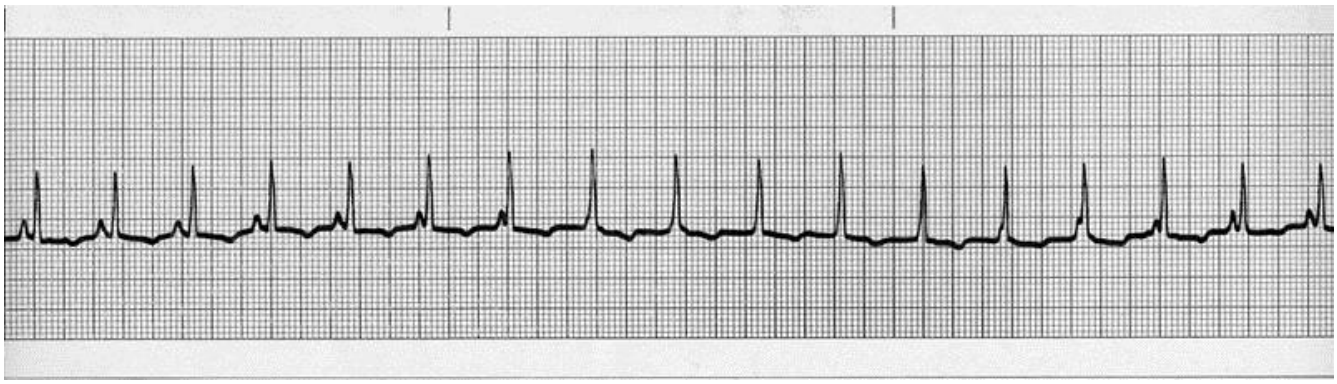
i With respect to the aetiopathogenesis of HCM, outline how **both** beta-adrenergic antagonists **and** calcium channel blockers may be useful in the management of this condition. *(6 marks)*

ii State, with brief reasoning, why the use of these drugs may be considered controversial or contraindicated **in this case**. *(2 marks)*

iii Apart from beta-adrenergic antagonists and calcium channel blockers, state with brief reasoning, which **two (2)** drugs you would consider appropriate to use in this case. *(4 marks)*

Question 4 continued over page

e) The following ECG was obtained from this cat.



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

i Given a paper speed of 50 mm/sec, what is this cat's heart rate? *(1 mark)*

ii List the features of a lead II ECG trace that is used to determine if the trace is consistent with normal cardiac rhythm. *(2 marks)*

End of paper