



# Australian and New Zealand College of Veterinary Scientists

## **Fellowship Examination**

June 2019

## **Small Animal Surgery Paper 1**

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

Time allowed: **Three (3)** hours after perusal

Answer **ALL SIX (6)** questions

All **six (6)** questions are of equal value.

Answer **SIX (6)** questions, each worth 30 marks .....total 180 marks

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# Paper 1: Small Animal Surgery

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## Answer all six (6) questions

1. Answer **all** parts of this question:
  - a) Describe the fundamental aim of anti-cancer drug therapy, when considered on a cellular level. *(2 marks)*
  - b) List **five (5)** different classes of anti-cancer drug, based on their mode of action, giving a specific example of a drug for each class and briefly describing how each named class works on a cellular level. *(10 marks)*
  - c) Define the following terms, with regard to cancer chemotherapy:
    - i. therapeutic index *(1 mark)*
    - ii. maximum tolerated dose. *(1 mark)*
  - d) Define the term ‘paraneoplastic syndrome’, and discuss paraneoplastic syndromes in small animal patients. Include in your discussion specific examples of such syndromes. *(13 marks)*
  - e) Briefly describe the proposed underlying causes of hypercalcaemia, as a paraneoplastic process. *(3 marks)*

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

- a) List and describe the structure and function of both the active and passive stabilisers of the canine shoulder joint. You may draw a diagram(s), if you wish. (12 marks)
- b) Describe the macroscopic and microscopic changes seen in the tendon of insertion of the supraspinatus muscle in dogs with supraspinatus tendinopathy. (6 marks)
- c) Discuss, with reference to the literature, the diagnostic modalities utilised to diagnose supraspinatus tendinopathy, and explain how these findings relate to the pathophysiology of supraspinatus disease. (12 marks)

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

- a) Describe the embryological development of the diaphragm. (8 marks)
- b) Define the Valsalva effect, with regard to pulmonary reinflation. (2 marks)
- c) Describe the pathological changes that occur in the thorax due to a diaphragmatic hernia, at a physiological level, and explain how these affect ventilation. (6 marks)
- d) Explain why rapid or forceful pulmonary reinflation after acute or chronic diaphragmatic hernia reduction may contribute to a negative surgical outcome. In your answer, include a detailed explanation of the possible mechanisms involved. (14 marks)

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4. Answer the following questions, with regard to congenital extrahepatic portosystemic shunts (EHPSS).

Answer **all** parts of this question:

- a) Describe the pathophysiology of increased blood ammonia concentration in patients with EHPSS. (2 marks)
- b) Ammonia is often considered to be one of the most important neurotoxic substances in the development of hepatic encephalopathy. List the proposed mechanisms by which it acts to result in encephalopathic signs. (5 marks)
- c) With reference to the literature, describe how you would assess the risk of post-attenuation seizures in a patient with EHPSS, and explain how you would manage this in the **preoperative** period. (12 marks)
- d) Portocaval shunts frequently terminate cranial to the renal veins, at the level of the epiploic foramen:
- i. Describe how the epiploic foramen is surgically accessed. (1 mark)
  - ii. Describe the vascular boundaries of the epiploic foramen. (2 marks)
- e) Explain your reasoning behind choosing:
- i. an anaesthetic induction agent for a canine patient with EHPSS (4 marks)
  - ii. intraoperative analgesia for a canine patient with EHPSS (2 marks)
  - iii. intraoperative fluid therapy for a canine patient with EHPSS. (2 marks)

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

- a) List the functions of the patella. (2 marks)
- b) Briefly outline the diagnostic criteria for patella tendinopathy in the dog and outline the diagnostic imaging findings. (4 marks)
- c) Describe the observed effect of both of the following procedures on patellofemoral contact mechanics and/or patellofemoral kinematics in the dog. References are not required:
  - i. tibial plateau-levelling osteotomy (2 marks)
  - ii. tibial tuberosity advancement. (2 marks)
- d) Discuss the possible causative factors for patellar ligament thickening and patellar tendinopathy, associated with the surgical treatment of cranial cruciate ligament disease, with reference to the literature. (20 marks)

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

- a) Discuss hypotheses regarding the pathogenesis of metallic implant-associated bone neoplasia. (9 marks)
- b) Discuss the evidence for and against an increased risk of osteosarcoma at the site of a long bone diaphyseal fracture repaired with a bone plate, in the dog. (7 marks)
- c) Discuss the evidence regarding aspects of bone plate manufacture that could increase the risk of implant-associated osteosarcoma of the canine proximal tibia. Indicate in your answer how the standard of implant quality can be ascertained when selecting bone plates for clinical use. (10 marks)
- d) Explain the available evidence to support the statement that tibial plateau-levelling osteotomy increases the risk of proximal tibial osteosarcoma in the dog. (4 marks)

**End of paper**



# Australian and New Zealand College of Veterinary Scientists

## Fellowship Examination

June 2019

## Small Animal Surgery

## Paper 2

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

Time allowed: **Three (3)** hours after perusal

Answer **ALL SIX (6)** questions

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Answer **SIX (6)** questions, each worth 30 marks .....total 180 marks

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# Paper 2: Small Animal Surgery

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## Answer all six (6) questions

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

- a) Describe the development and timing of ossification of the canine humeral condyle. (3 marks)
- b) Compare and contrast the clinical and diagnostic imaging features of incomplete ossification of the humeral condyle (IOHC) and humeral intracondylar fissure (HIF). References are not required. (7 marks)
- c) You are presented with a seven-year-old, male, entire Springer Spaniel with a unilateral lateral humeral condylar fracture and a contralateral HIF, which has been diagnosed via computed tomography. The dog has a six-month history of intermittent bilateral lameness.  
Using the surgical literature to support your argument, describe your decision-making process for the treatment of this case. You may use a diagram or an algorithm to support your argument, if you wish. (20 marks)

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

- a) Discuss, using an evidence-based approach, the treatment options and associated prognosis for a 10-year-old Terrier with a 2 cm diameter unilateral anal gland adenocarcinoma, ionised hypercalcaemia on blood work and enlarged sublumbar lymph nodes. (25 marks)
- b) Discuss how your diagnostic approach, treatment and the prognosis may differ from **2 a)** for a 10-year-old cat presented to you with a pea-sized unilateral anal gland adenocarcinoma. (5 marks)

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

- a) Describe the different classification systems used to assess vertebral instability after trauma. You may use a diagram to illustrate your answer. *(10 marks)*
- b) Regarding a suspected acute spinal fracture in a dog:
  - i. justify your choice of diagnostic imaging *(8 marks)* and,
  - ii. justify whether or not you should administer steroids. *(4 marks)*
- c) Compare and contrast the dorsal and lateral approaches for vertebral stabilisation of an L1-2 fracture/luxation, using pins and polymethylmethacrylate, in a dog. *(8 marks)*

4. A nine-year-old, female, spayed domestic shorthair cat presents with a grade 2, open, mildly comminuted, mid-diaphyseal fracture of the left tibia following an unknown trauma.

Answer **all** parts of this question:

- a) Using an evidence-based approach, describe your initial treatment of this injury. *(10 marks)*
- b) With reference to the recent literature, describe the complications associated with the different methods of definitive fracture repair for this injury. *(10 marks)*

After sequential follow-up radiographs, an atrophic non-union is diagnosed.

- c) Describe the radiographic features of an atrophic non-union in cats. *(2 marks)*
- d) Describe further treatment options to progress fracture healing in this case. *(8 marks)*

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

a) For each of the following situations briefly describe the surgical strategies that could be used to reduce the risk of bleeding, and how you would achieve timely haemostasis. State the likely anatomic origin of the bleeding for each situation. Use appropriate referencing in your answers. You may use diagrams:

- i. Profuse haemorrhage from the dissection of a patent ductus arteriosus (PDA) in a 10 kg Border collie pup. *(15 marks)*
- ii. Arterial bleeding associated with the osteotomy during tibial plateau-levelling osteotomy in a 60 kg Bull mastiff. *(5 marks)*

b) As a result of blood loss, a 5 kg cat develops hypotension (mean arterial blood pressure 55 mm Hg, systolic blood pressure 70 mm Hg) during a ventral palatine approach to a unilateral nasal mass.

State the surgical, anaesthetic, pharmacotherapeutic and fluid support strategies that you could institute while blood products are accessed for this patient.

*(10 marks)*

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

a) Draw a diagram(s) explaining the macroscopic anatomy of the pancreas in the dog, and its blood supply. *(5 marks)*

b) Discuss the current understanding of the pathophysiology of the development of gall bladder mucocoeles in dogs. *(15 marks)*

c) Regarding canine insulinoma:

i. Discuss intraoperative surgical considerations. *(5 marks)*

ii. List post-operative complications and prognostic factors.

*(5 marks)*

**End of paper**