



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2017

## Veterinary Anaesthesia and Analgesia 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 marks .....total 120 marks

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# Paper 1: Veterinary Anaesthesia and Analgesia

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## Answer all four (4) questions

1. Before anaesthetising a patient the anaesthetic machine and breathing system must be checked. The following questions relate to the performance of this procedure:
  - a) Briefly describe the sequence of events that should be followed when preparing an anaesthetic machine for use (without the breathing system). *(10 marks)*
  - b) Describe the sequence of events to check the integrity of a circle breathing system. *(10 marks)*
  - c) Describe the sequence of events to check the integrity of the Bain breathing system. *(10 marks)*
2. Discuss the causes, consequences and prevention of perioperative hypothermia in a cat during anaesthesia. *(30 marks)*
3. For **each** of the following drugs, name the therapeutic or pharmacological class of the drug **and** make a list of the mode of action and indication(s) for use:
  - a) sugammadex *(10 marks)*
  - b) dexmedetomidine *(10 marks)*
  - c) vasopressin. *(10 marks)*
4. Briefly describe the changes that occur to the cardiovascular, respiratory and gastrointestinal systems during pregnancy in the dog, **and** the implications of these changes during the perioperative period. *(30 marks)*

**End of paper**



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## Paper 2: Veterinary Anaesthesia and Analgesia

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**Answer all four (4) questions**

1. An otherwise healthy four-year-old male castrated Labrador retriever dog is presented for suspicion of an acute oesophageal foreign body.

The dog requires general anaesthesia for diagnostic imaging and endoscopic retrieval of the foreign body. If this procedure is unsuccessful, the patient might require surgery to remove the foreign body.

Answer **all** parts of this question:

- a) Describe the pre-anaesthetic consideration for this dog. *(7 marks)*
- b) In regards to premedication for this dog, create a table of the advantages **and** disadvantages for **each** of the following agents: *(total 7 marks)*
  - acepromazine
  - morphine
  - methadone
  - butorphanol
  - medetomidine
  - midazolam.
- c) Discuss the most appropriate way to manage the induction of anaesthesia for this dog with reference to the potential complications specific to this case. *(8 marks)*
- d) Describe the recovery/post-anaesthetic considerations for this dog. *(8 marks)*

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2. A two-year-old male neutered cat is presented for urethral obstruction. The cat will undergo surgery to eliminate the obstruction.

The patient is depressed, heart rate of 200 beats per minute, respiratory rate of 25 breaths per minute with painful abdomen on palpation and distended bladder.

Answer **all** parts of this question:

- a) Hyperkalaemia (increased K+) is a commonly observed electrolytes abnormality in patients suffering from urethral obstruction.

Describe the most likely electrocardiogram changes associated with hyperkalaemia (increased K+) and discuss the approach to the correction of the electrolyte abnormality prior to anaesthesia. *(15 marks)*

- b) Anaesthesia:

- i. In regards to premedication for this cat, create a table of the relevant advantages **and** disadvantages for **each** of the following agents:

*(7 marks)*

- acepromazine
- medetomidine
- diazepam.

- ii. In regards to peri and post-operative analgesia, create a table of the relevant advantages **and** disadvantages for **each** of the following analgesics: *(8 marks)*

- epidural lignocaine
- epidural morphine
- meloxicam.

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3. A 10-year-old 500 kg Warmblood presented for abdominal pain of at least four hours duration. A nasogastric tube was placed, and a large quantity of fluid was removed from the stomach. The abdomen was distended, and multiple loops of small intestine were palpated during rectal examination. The horse was administered xylazine (250 mg; estimated 0.5 mg/kg, IV) for pain relief and scheduled for an immediate exploratory laparotomy.

Answer **all** parts of this question:

- a) Detail an appropriate induction regimen for the horse described above. *(3 marks)*

The horse was positioned in dorsal recumbency and connected to a circle anaesthesia machine with an attached ventilator. Anaesthesia was maintained with isoflurane in 100% oxygen. The initial oxygen flow was 10 L per minute. The ventilator was set to deliver 6 breaths per minute and tidal volume of 6 L to an inspiratory pressure of 30 cm H<sub>2</sub>O.

Thirty minutes after starting surgery, it was noted that the oxygen saturation (SpO<sub>2</sub>) was 90% and the blood pressure was 90/40 with a mean pressure of 50 mmHg.

- b) Describe potential causes and treatment of the low oxygen saturation in this horse. *(10 marks)*
- c) Describe what appropriate treatments there are to treat the low blood pressure in this horse. *(8 marks)*
- d) What are the **most** likely complications particular to anaesthesia recovery in horses? Outline how **each** of these complications could be minimised. *(9 marks)*

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4. A six-month-old English bulldog is presented to your clinic for an elective airway surgery after being diagnosed with brachycephalic airway syndrome.

Answer **all** parts of this question:

- a) Describe the **three (3)** most important pre-anaesthetic concerns when performing anaesthesia on a brachycephalic dog. *(6 marks)*
- b) List the anatomical or functional abnormalities this dog is likely to have given his diagnosis of brachycephalic airway syndrome. *(3 marks)*
- c) Nominate the stages of anaesthesia associated with the highest risk for airway obstruction in brachycephalic dogs. *(3 marks)*
- d) Describe the challenges the anaesthetist faces in the immediate post-operative period for a brachycephalic patient undergoing this procedure. *(9 marks)*
- e) Following extubation, the dog becomes agitated and dyspnoeic. Briefly describe options for management of this patient. *(6 marks)*
- f) Briefly describe a post-operative analgesic protocol for this dog. *(3 marks)*

**End of paper**