



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2014

# Veterinary Anaesthesia and Critical Care Paper 1

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

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

Answer **ALL FOUR (4)** questions

Question 4 a) 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: Veterinary Anaesthesia and Critical Care

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Answer all four (4) questions

1. Regarding risk assessment in veterinary anaesthesia:
  - a) Define the ASA scoring system. (2 marks)
  - b) Define **each** of the ASA score categories. Include in your answer an example of a patient that would be placed in **each** category. (10 marks)
  - c) Discuss the effect the ASA score may have on anaesthesia. In your answer include a discussion of the mortality rates in dogs, cats, equine and rabbit anaesthesia. (18 marks)
  
2. Regarding breathing circuits:
  - a) Define MAC. (2 marks)
  - b) Briefly describe the relevance of MAC to clinical anaesthesia. (3 marks)
  - c) List the MAC of isoflurane, sevoflurane and desflurane in cats and horses. (3 marks)
  - d) Compare and contrast the clinical uses of **both** of the breathing circuits below. In your answer include advantages and disadvantages. (15 marks)
    - Mapleson D
    - VIC circle circuit
  - e) Write the equation that occurs as soda lime neutralises carbon dioxide. (3 marks)
  - f) List the ways in which exhausted soda lime can be identified. (4 marks)

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3. Knowledge of the pain pathway is vital for providing balanced analgesia.

Answer **all** parts of this question:

- a) List the **four (4)** steps in the pain pathway. For **each** step, briefly describe the process of pain transmission. *(12 marks)*
- b) List **two (2)** analgesic drugs that can be used at **each** step of the pain pathway listed in 3a). *(4 marks)*
- c) Name **two (2)** methods of pain assessment in the postoperative setting. Include in your answer a brief description of how **each** is performed and the advantages and disadvantage of **each** method. *(14 marks)*

4. Answer **both** parts of this question: (answer 4 a, in the answer booklet provided)

- a) Contrast the following intravenous fluids: lactated Ringer's solution (LRS), 0.9% NaCl, Plasmalyte 148 and 6% Pentastarch by completing the table provided in the answer booklet. *(20 marks)*
- b) Briefly describe the indications for the use of **each** of the above fluid types. *(10 marks)*

**End of paper**



# Australian and New Zealand College of Veterinary Scientists

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## Veterinary Anaesthesia and Critical Care Paper 2

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 2: Veterinary Anaesthesia and Critical Care

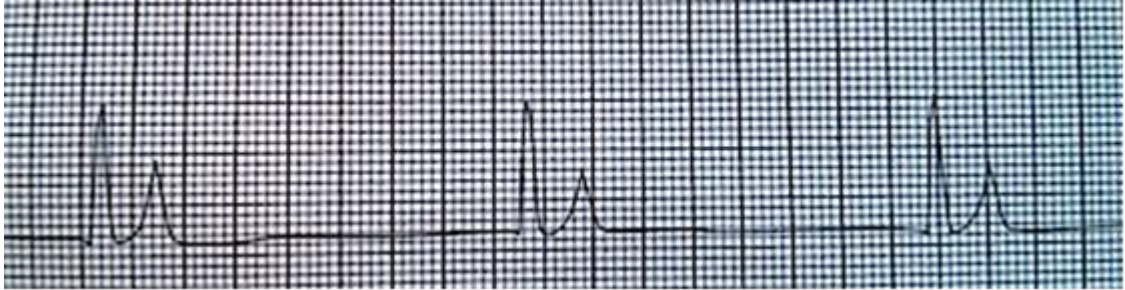
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Answer all four (4) questions

1. Briefly describe the mode of action, indications for use and **three (3)** potential side-effects for **all** of the following drugs: *(30 marks)*
  - bupivacaine
  - tramadol
  - medetomidine
  - ketamine
  - pimobendan.
  
2. Answer **all** parts of this question:
  - a) Draw a diagram **and** describe the **five (5)** major anatomical features used when performing an epidural block in a dog. *(15 marks)*
  
  - b) List **five (5)** benefits of performing an epidural block in a dog. *(5 marks)*
  
  - c) List **five (5)** contraindications to performing an epidural block in a dog. *(5 marks)*
  
  - d) List **five (5)** drugs that can be safely administered into the epidural space of a dog. *(5 marks)*

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3. A two-year-old male neutered domestic short-haired cat is presented with a history of straining to urinate. On physical examination, the heart rate appears abnormal (64 bpm), the bladder is enlarged and unable to be expressed. Blood results reveal a serum potassium of 8.0 mmol/L (normal 3.5–5.5 mmol/L). The following ECG trace is obtained at a rate of 25 mm/sec.



Answer **all** parts of this question:

- Describe the ECG waveform, including calculating the heart rate. (8 marks)
- What is your diagnosis? (2 marks)
- Discuss the medical treatment options for stabilising this patient prior to anaesthesia. Include in your answer fluid therapy, analgesia, and when **each** of the treatment modalities should be instigated. (20 marks)

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4. A horse requires an anaesthetic for emergency colic surgery. Arterial blood gas results obtained 10 minutes after the start of administration of isoflurane in 100% oxygen are as follows. Assume  $FiO_2$  is 100% within the circuit.

pH 7.26 (normal 7.35–7.45)

$PaO_2$  76 mmHg (normal 80–100 mmHg)

$PaCO_2$  58 mmHg (normal 35–45 mmHg)

Bicarbonate 24mmol/L (normal 20–26 mmol/L)

An end-tidal  $CO_2$  measurement obtained at the same time as the arterial blood gas sample was 46 mmHg (normal 35–45 mmHg).

- a) Discuss the abnormalities on the arterial blood gas analysis. For **each** abnormality outline possible causes and the **most** likely cause in this case. (15 marks)
- b) Describe the treatment you would provide to correct the abnormalities. (15 marks)

**End of paper**