



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2019

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 markstotal 120 marks

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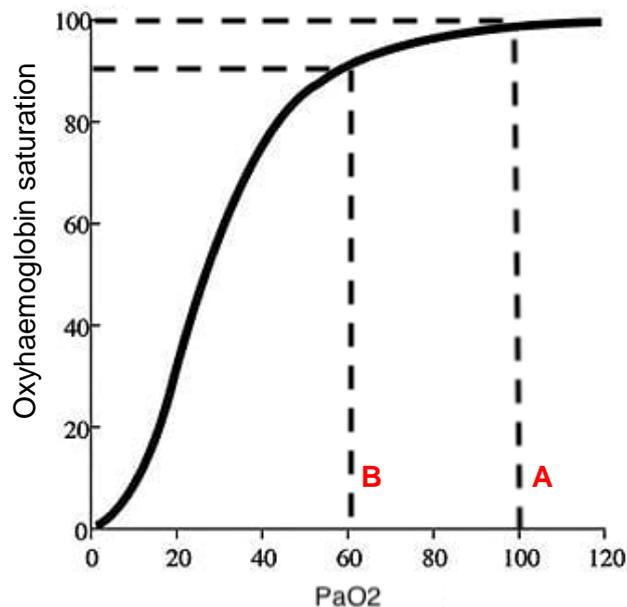
Paper 1: Veterinary Anaesthesia and Analgesia

Answer all four (4) questions

1. Oxygenation.

Answer **all** parts of this question:

a)



- i. Provide the correct identifying title for the figure above. (2 marks)
- ii. Provide the correct units for the X & Y axes on the figure above. (2 marks)
- iii. Interpret and contrast patient oxygenation for result 'A' and result 'B' in the diagram above. (4 marks)

b) Identify and discuss the **five (5)** causes of hypoxaemia in a patient. (10 marks)

Question 1 continued over page

- c) Describe **two (2)** methods by which oxygenation can be monitored in an anaesthetised animal. Include in your answer **two (2)** advantages and **two (2)** limitations for each method. *(12 marks)*

2. With reference to airway management during anaesthesia:

- a) Discuss the importance of the following features of endotracheal tubes:
(12 marks)

- i. diameter
- ii. length
- iii. the Murphy eye
- iv. armoured tube.

- b) For each species listed below, describe **three (3)** considerations for performing endotracheal intubation: *(12 marks)*

- i. horse
- ii. cat
- iii. bird.

- c) Compare and contrast the use of cuffed and uncuffed endotracheal tubes.
(6 marks)

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3. With reference to the cardiovascular system:
- a) Discuss the pharmacological effects of the following anaesthetic drugs on the cardiovascular system in cats and dogs: *(15 marks)*
 - i. acepromazine (please include the receptor site of action)
 - ii. medetomidine (please include the receptor site of action)
 - iii. methadone (please include the receptor site of action)
 - iv. propofol
 - v. isoflurane.
 - b) Discuss **three (3)** methods for measuring arterial blood pressure. In your answer, include a statement as to whether the method is direct or indirect, and describe the advantages and disadvantages associated with each identified technique. *(15 marks)*
4. Pain is often considered to be the ‘5th vital sign’.

Answer **all** parts of this question:

- a) Define the following terms: *(3 marks)*
 - i. Allodynia
 - ii. Hyperalgesia
- b) Describe the nociceptive pathway. You may use a diagram to answer this question. *(8 marks)*
- c) Briefly discuss the importance of pain assessment in terms of improving welfare outcomes for animals. *(6 marks)*
- d) List **three (3)** pain assessment scales that can be used to assess pain in animals. *(3 marks)*
- e) Choose one of the pain assessment scales from your answer above (question 4, part d), and discuss its clinical application in dogs. Include in your answer, **two (2)** advantages and **two (2)** disadvantages. *(10 marks)*

End of paper



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Veterinary Anaesthesia and Analgesia 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 markstotal 120 marks

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Paper 2: Veterinary Anaesthesia and Analgesia

Answer all four (4) questions

1. A five-year-old, obese Labrador weighing 40 kg is to be anaesthetised for tibial plateau-levelling osteotomy (TPLO) surgery.

Answer **all** parts of this question:

- a) Describe the pre-anaesthetic considerations for this dog. (6 marks)
- b) Provide and briefly justify an appropriate analgesia plan for this dog. (8 marks)
- c) Describe an appropriate anaesthetic plan, giving justification for your choices. Include in your answer the pharmacologic agents chosen and their effects and side effects, patient breathing system, fresh gas flow rates, fluid type and rate and any other considerations relevant to patient well-being. (12 marks)
- d) During post-operative radiographs, the dog regurgitates. There is brown malodorous fluid dripping from its mouth. Briefly describe the appropriate management of this complication. (4 marks)

Continued over page

2. A well-handled, three-year-old ram has presented with a slowly progressing ataxia that requires magnetic resonance imaging (MRI) as part of the diagnostic investigations. The ram is otherwise healthy and quiet. You have been asked to anaesthetise the ram for this procedure and imaging should take approximately one hour. You have access to a fully equipped facility.

Answer **all** parts of this question:

- a) Describe **three (3)** important pre-anaesthetic concerns and explain how each of these concerns should be managed. *(12 marks)*
- b) Discuss the use of alpha-2 agonists in the context of anaesthetising sheep. State whether or not you would use an alpha-2 agonist in this sheep and briefly justify your decision. *(8 marks)*
- c) Select and state appropriate drugs for induction and maintenance of general anaesthesia for this sheep. *(4marks)*
- d) Briefly describe an appropriate plan for the recovery of this ram and explain how this might be achieved. *(6 marks)*

Continued over page

3. A local veterinary practice has contacted you because they want to ensure that their staff members are not being exposed to waste anaesthetic gases. They have asked you to visit them to evaluate their practice.

Answer **all** parts of this question:

- a) Discuss the potential hazards of personnel exposure to waste anaesthetic gases. *(4 marks)*
- b) Outline **two (2)** options available for scavenging and briefly discuss the advantages and disadvantages of both of these options. *(8 marks)*
- c) For each of the **three (3)** clinical case scenarios listed below, discuss appropriate management of the waste anaesthetic gas: *(12 marks)*
- i. mask induction of a bird for radiographs
 - ii. the use of an induction chamber to induce a fractious cat
 - iii. recovery of a healthy, small animal patient at the end of the anaesthetic process.
- d) Discuss additional ways that the practice can ensure that exposure to waste anaesthetic gases is minimised. *(6 marks)*

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4. You have been asked to perform field anaesthesia on a healthy, well-handled horse for a leg wound that requires lavage, debridement, suturing and bandaging. It is expected to take 45 minutes.

Answer **all** parts of this question:

- a) Design a comprehensive planning checklist for environmental considerations and equipment needs, in preparation for this field anaesthesia. *(12 marks)*

- b) Describe **three (3)** advantages and **three (3)** disadvantages of total intravenous anaesthesia (TIVA) for the maintenance of general anaesthesia in this horse. *(6 marks)*

- c) Discuss your plan for pre-medication, induction and maintenance with TIVA for this horse. *(12 marks)*

End of paper