



Australian College of Veterinary Scientists

Membership Examination

June 2011

Veterinary Radiology

Paper 1

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

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

Answer your choice of any **FOUR (4)** questions from the five questions **ONLY**

All five main questions are of equal value

Answer **FOUR** questions each worth 25 markstotal 100 marks

Paper 1: Veterinary Radiology

Answer your choice of any **FOUR (4)** questions from the five questions **ONLY**.

1. Write a short instruction manual for a new nurse explaining safe operation of a fixed x-ray system in a small animal practice. Include in the manual the principles of radiation safety, equipment and procedures required for safe operation, procedures for patient management, and personal dose monitoring. *(25 marks)*

2. Answer **all** subparts of this question:
 - a) Outline the formation of a computed radiographic image. *(6 marks)*

 - b) Explain why an x-ray circuit requires rectification. *(6 marks)*

 - c) Define K-characteristic x-rays and discuss their production and importance in the formation of a diagnostic radiograph. *(13 marks)*

3. Answer **all** subparts of this question:
 - a) Define axial resolution and describe the factors affecting axial resolution in diagnostic ultrasound. *(6 marks)*

 - b) Define the heel effect and describe how it can be used advantageously. *(6 marks)*

 - c) Write notes on your radiographic technique for obtaining radiographs of a Shetland pony with acute laminitis. Include in your answer any equipment needed, film/screen selection, positioning, centring and collimation. *(13 marks)*

4. Answer **all** subparts of this question:
 - a) Describe your radiographic technique for thoracic radiographs in small animals, including kVp/mAs selection, film/screen selection, positioning, centring and collimation. How would you alter your technique if you were expecting a significant pleural effusion? *(12½ marks)*

 - b) Describe what determines the speed of radiographic film and discuss how film speed affects image quality. *(12½ marks)*

Examination continued on next page

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

- a) Discuss the advantages and disadvantages of different imaging modalities when investigating possible ectopic ureter in a female puppy. *(12½ marks)*

- b) Artifacts formed in diagnostic ultrasound can be very useful for detection and interpretation of pathology. Describe the formation of **one (1)** artifact encountered in diagnostic ultrasound. Discuss how the artifact you have chosen can give useful information about tissue pathology in a diagnostic ultrasound study.

(12½ marks)

End of paper



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Paper 2

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Paper 2: Veterinary Radiology

Answer your choice of any **FOUR (4)** questions from the five questions **ONLY**.

1. Answer **all** subparts of this question:
 - a) Compare and contrast the radiographic signs of left-sided congestive heart failure in cats and dogs. *(12½ marks)*
 - b) Describe the radiographic signs of osteoarthritis in the equine tarsus (bone spavin). *(12½ marks)*

2. Discuss the radiographic signs of **each** of the following:
 - a) anutritional hyperparathyroidism in a kitten *(6¼ marks)*
 - b) osteochondrosis in the equine stifle *(6¼ marks)*
 - c) cervical spondylomyelopathy (wobbler disease) in a Doberman *(6¼ marks)*
 - d) megaesophagus in the dog. *(6¼ marks)*

3. A nine-year-old male neutered Staffordshire bull terrier presents with stranguria, tenesmus, haematuria and 'back pain'. On rectal examination, you palpate an enlarged prostate gland. Describe in detail how you would use imaging to reach a diagnosis and the imaging signs you might encounter. *(25 marks)*

4. You are presented with an eight-year-old border collie that has collapsed. Clinical examination and abdominocentesis reveal a large volume of ascites. Give **two (2)** differential diagnoses and discuss in detail how you would use imaging to differentiate these conditions. *(25 marks)*

5. A three-year-old thoroughbred filly is presented having pulled up acutely lame after a race. Physical examination reveals grade 3/5 lameness in the left forelimb and marked metacarpophalangeal joint effusion. List the radiographic projections you would obtain. Give your differential diagnoses and describe their radiographic signs. *(25 marks)*

End of paper