



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2012

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 questions are of equal value

Answer **FOUR** questions each worth 30 marks total 120 marks

Paper 1: Veterinary Radiology

Answer four (4) questions only.

Note: in this examination the word 'imaging' is used as a generic term and encompasses all clinical imaging systems. 'Radiographic' refers specifically to radiography.

1. Answer **all** subparts of this question.
 - a) Discuss the fundamental rules of radiation safety - time, distance and shielding. *(15 marks)*
 - b) Explain the photoelectric effect and discuss its importance in the formation of a radiographic image. *(15 marks)*

2. Answer **all** subparts of this question.
 - a) You are planning to purchase a new diagnostic ultrasound machine to perform basic small animal echocardiograms, small animal abdominal examinations and equine tendon studies in your mixed practice. Discuss the types of transducers and the features of the transducers required to perform each of these types of studies so that you can purchase appropriate transducers for your new machine. *(15 marks)*
 - b) Describe in detail your use of imaging to investigate reduced retroperitoneal detail detected on radiographs of a cat recently struck by a car. Include in your answer a detailed description of any imaging procedures. *(15 marks)*

3. Answer **all** subparts of this question.
 - a) Describe the process of thermionic emission and its part in x-ray production. *(10 marks)*
 - b) List the methods employed to reduce the effects of scatter radiation on a radiograph and describe the way in which each method achieves this. *(10 marks)*
 - c) Describe the formation of 'distal acoustic enhancement artifact' and discuss the reason it is important to recognise this artifact during an abdominal ultrasound examination. *(10 marks)*

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4. Briefly describe how to perform a complete, plain radiographic examination in all of the following patients. In your answer, include a description of the method of patient management, patient positioning, radiographic projections, radiographic technique and any additional equipment used:
- a) A two-year-old thoroughbred with suspected stifle osteochondrosis. *(10 marks)*
 - b) A seven-year-old beagle with neck pain. *(10 marks)*
 - c) A two-year-old border collie with suspected elbow dysplasia. *(10 marks)*
5. Describe the process of image formation in film/screen radiography, computed radiography and digital radiography. Discuss the advantages and disadvantages of each of these radiographic systems. *(30 marks)*

End of paper



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Paper 2

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 questions are of equal value

Answer **FOUR** questions each worth 30 marks total 120 marks

Paper 2: Veterinary Radiology

Answer four (4) questions only.

Note: in this examination the word ‘imaging’ is used as a generic term and encompasses all clinical imaging systems. ‘Radiographic’ refers specifically to radiography.

1. Answer **all** subparts of this question.
 - a) List **two (2)** possible causes of mainstem bronchus displacement on a thoracic radiographic study. Describe in detail the effect each has on the bronchi and the possible accompanying thoracic radiographic signs of each condition. *(15 marks)*
 - b) You suspect a distal phalangeal fracture in a four-year-old thoroughbred that has pulled up acutely lame in a forelimb after a race. List the radiographic projections you would acquire and describe the radiographic signs you would look for to make a diagnosis of a distal phalangeal fracture. *(15 marks)*
2. You are presented with a six-year-old female neutered kelpie which has haematuria and increased urinary frequency. List your differential diagnoses for this clinical presentation and discuss in detail how you would use imaging to investigate this problem. Include a detailed description of the expected imaging findings of your differential diagnoses. *(30 marks)*
3. Answer **all** subparts of this question.
 - a) A colleague asks you to give your interpretation on a radiographic study of a seven-year-old Great Dane which has presented with progressive forelimb lameness localising to the right shoulder. He has taken mediolateral and craniocaudal radiographic projections of the right shoulder joint. Describe the radiographic signs you would use to differentiate an osteosarcoma of the proximal humerus from severe degenerative joint disease of the shoulder secondary to long-standing osteochondrosis. *(15 marks)*
 - b) Describe in detail the radiographic signs of tarsal osteochondrosis in Thoroughbreds. Include in your answer a list of the different sites in the tarsus that could be affected by osteochondrosis lesions and the appearance of the lesions at each location. *(15 marks)*

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4. Answer **both** subparts of this question.
- a) A Labrador breeder contacts you for advice regarding hip scoring for hip dysplasia. List the scoring schemes available in Australia/New Zealand for hip dysplasia, list the radiographic projections required for each scoring scheme and comment on the advantages and disadvantages of each scheme. *(15 marks)*
 - b) A Maltese terrier is presented to you with a history of having been gagging and regurgitating for two days. You suspect the presence of an oesophageal foreign body. Describe in detail how you would use imaging in this patient to reach a diagnosis and your expected imaging findings. *(15 marks)*
5. List the radiographic signs of **each** of the following:
- a) discospondylitis in a three-year-old German shepherd dog *(7½ marks)*
 - b) pericardial effusion in a 10-year-old Labrador *(7½ marks)*
 - c) laminitis in a pony *(7½ marks)*
 - d) prostatic neoplasia in a kelpie dog. *(7½ marks)*

End of paper