



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2014

Veterinary Radiology (Small Animal) 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 Radiology (Small Animal)

Answer all four (4) questions

1. Answer **all** parts of this question:

- a) List the radiographic projections required for a complete study in the following clinical situations, **and** explain in detail the restraint and positioning of the patient for **each** projection:
 - i. metastasis check on an eight-year-old, 45 kg Labrador retriever presented with an aggressive bone lesion in the right proximal humerus
(5 marks)
 - ii. screening for discospondylitis in a four-year-old German shepherd dog
(5 marks)
 - iii. suspected cranial cruciate ligament rupture in a Staffordshire bull terrier. (5 marks)
- b) Assessment of radiographic image quality is an important step in a radiographic examination.

Answer **both** of the following:

- i. Describe in detail the features to be assessed when evaluating image quality of film/screen radiographs, and the way in which radiographic technique has an impact on **each** of these features. (10 marks)
- ii. Discuss the ways in which these features differ when evaluating quality of digital radiographs. (5 marks)

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2. Answer **both** parts of this question:

a) Describe in detail the **three (3)** major ways in which x-ray photons interact with matter in the diagnostic imaging energy range and discuss the contribution these interactions make to the formation of the radiographic image. (15 marks)

b) Answer **all** of the following:

i. List **three (3)** reported side effects of intravenous iodinated contrast agent **and** the ways in which these side effects may be mitigated or avoided. (5 marks)

ii. Describe the function and purpose of the time gain control on a diagnostic ultrasound machine. (5 marks)

iii. Define distal acoustic enhancement **and** give an example of its application in interpretation of diagnostic ultrasound. (5 marks)

3. Answer **both** parts of this question:

a) Describe the basic principles of radiation safety and how they may be implemented when obtaining radiographs of a Labrador for hip dysplasia assessment. (15 marks)

b) List **three (3)** types of ultrasound transducer. For **each** type, list its applications in small animal veterinary diagnostic imaging and the features that make it appropriate for **each** application. (15 marks)

4. A five-year-old male Shih Tzu is presented with severe pelvic fractures following a motor vehicle accident.

Describe in detail the use of imaging to assess for possible rupture of the urinary tract in this patient. Include in your discussion the advantages **and** disadvantages of the different imaging modalities in this situation. (30 marks)

End of paper



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Paper 2

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Answer **ALL FOUR (4)** questions

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

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Paper 2: Veterinary Radiology (Small Animal)

Answer all four (4) questions

1. Briefly describe the radiographic features seen with the following conditions:
 - a) discospondylitis (7.5 marks)
 - b) canine prostatic carcinoma (7.5 marks)
 - c) persistent right aortic arch in a 12-week-old kitten (7.5 marks)
 - d) hypertrophic osteodystrophy. (7.5 marks)

2. Answer **both** parts of this question:
 - a) A dog presents to you with unilateral purulent nasal discharge and intermittent unilateral epistaxis. List the radiographic projections that are appropriate for imaging the nasal cavity and describe the radiographic findings that would differentiate fungal rhinitis (aspergillosis) from nasal adenocarcinoma. (15 marks)

 - b) A Rottweiler is presented six weeks following reduction and stabilisation of a humeral fracture with a plate and screws. The dog is very painful and lame in the affected leg, and the two main differential diagnoses are osteomyelitis or a pathologic fracture from an osteosarcoma.
Describe the radiographic signs that would differentiate these **two (2)** complications from **each** other, and from normal callus production. (15 marks)

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3. Answer **both** parts of this question:

- a) Describe in detail the radiographic signs of left-sided congestive heart failure in the cat caused by hypertrophic cardiomyopathy, including the radiographic signs of any pulmonary involvement. List **two (2)** ways in which these differ from the radiographic signs of left-sided congestive heart failure in dogs. *(20 marks)*
- b) A whelping bitch is presented for examination after straining for 12 hours with no pups produced. Describe the ways in which imaging can be used in the management of such a patient, including the imaging signs that may be encountered. *(10 marks)*

4. A four-year-old Beagle is presented for acute, severe vomiting and abdominal pain.

Answer **all** parts of this question:

- a) List **three (3) common** differential diagnoses. *(3 marks)*
- b) Describe an appropriate approach to the use of imaging in this patient in a general practice context. *(6 marks)*
- c) Describe the expected imaging findings for **each** of the **three (3)** common differential diagnoses listed in part 4 a). *(21 marks)*

End of paper