



Australian and New Zealand College of Veterinary Scientists

Fellowship Examination

June 2019

Veterinary Ophthalmology Paper 1

Perusal time: **Twenty (20)** minutes

Time allowed: **Three (3)** hours after perusal

Section A: Answer **ALL TWENTY (20)** Questions

Section B: Answer **ALL TEN (10)** Questions

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Section A:

Short Answer: Answer **TWENTY** questions, each worth 4 marks..... total 80 marks

Section B:

Long Answer: Answer **TEN** questions, each worth 10 marks total 100 marks

Paper 1: Veterinary Ophthalmology

SECTION A

Answer all twenty (20) questions

1. With reference to the treatment of glaucoma, state the mechanism of action for:
 - a) Alpha₂ - adrenergic agonists. (2 marks)
 - b) Beta blockers. (2 marks)

2. List **four (4)** proposed functions of the Harderian gland. (4 marks)

3. Briefly comment on the significance of a positive culture identifying a *Staphylococcus* species from the conjunctival fornix of a dog. (4 marks)

4. Briefly outline the ocular pathology associated with Marek's disease. Also state the means of transmission. (4 marks)

5. *Veratum californicum*:
 - a) List **three (3)** ophthalmic congenital malformations that have been described in lambs born from ewes that have ingested the *Veratum californicum* plant during gestation. (3 marks)
 - b) Which day of gestation is the most susceptible period for such abnormalities to develop? (1 mark)

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6. Squamous cell carcinoma (SCC) in cattle:
- a) List **four (4)** risk factors that are associated with SCC. *(2 marks)*
 - b) State the most common location of SCC in cattle. *(1 mark)*
 - c) State the clinical form of SCC that is most often associated with metastasis. *(1 mark)*
7. Accurate assessment of tear production in canine patients is essential for a complete ophthalmic examination and management of common ocular diseases. Explain what factors might influence the results of the Schirmer tear test 1 in normal dogs. *(4 marks)*
8. Corneal sensitivity:
- a) Outline the regional variation in corneal sensitivity that occurs in many species. *(2 marks)*
 - b) List **four (4)** factors which may affect corneal sensitivity. *(2 marks)*
9. Briefly describe the physical properties of the eye that expose it to manifestations of systemic disease. *(4 marks)*
10. Briefly describe the main differences in the vascular permeability and auto-regulation of the choroid and retina. *(4 marks)*

Continued over page

11. List **eight (8)** ophthalmic uses of Fluorescein in animals and humans. *(4 marks)*

12. Describe the anatomical components of the dazzle reflex and explain when it is best utilised. *(4 marks)*

13. Describe the embryological origin and clinical presentation of persistent hyperplastic primary vitreous (PHPV). *(4 marks)*

14. Explain why antiviral drugs are unable to cure cases of persistent feline herpes virus. Include in your answer an explanation of the mechanism of action of famciclovir. *(4 marks)*

15. Briefly outline the roles of the retinal pigment epithelium in the canine eye. *(4 marks)*

16. Describe the ideal properties of the biomaterials used in corneal grafting in animals. *(4 marks)*

17. Discuss the properties of povidone-iodine that make it suitable for the preparation of ocular tissues prior to surgery. *(4 marks)*

18. Briefly describe the immunological basis of equine recurrent uveitis (ERU). *(4 marks)*

19. Briefly compare the innervation of the cat and dog iris. *(4 marks)*

20. Briefly define the concept of neutralisation and explain how it is employed during streak retinoscopy. *(4 marks)*

Section B over page

SECTION B

Answer all ten (10) questions

1. Compare and contrast the use of high-frequency ultrasound biomicroscopy and optical coherence tomography imaging techniques in veterinary ophthalmology. *(10 marks)*

2. Summarise the innervation of the lacrimal gland in the dog. *(10 marks)*

3. Describe the production of aqueous humour. *(10 marks)*

4. Compare and contrast the reasons for transparency of: *(10 marks)*
 - i. the cornea
 - ii. the lens
 - iii. the vitreous.

5. Describe the properties of viscoelastic agents. Discuss the indications for their use in veterinary ophthalmology and indicate which agents are most suitable for which purpose. *(10 marks)*

6. Explain the pathophysiology of hypertensive retinopathy in the cat, secondary to systemic hypertension. *(10 marks)*

7. Answer **all** parts of this question:
 - a) Describe the anatomy and physiology of the nictitating membrane in cats. *(6 marks)*

 - b) How do the secretions of the nictitans gland differ between cats, horses, cattle and pigs? *(2 marks)*

 - c) Which muscles are responsible for the movement of the third eyelid in birds and what is their innervation? *(2 marks)*

Continued over page

8. Phacoemulsification:
- a) Describe the different types of pump systems utilised in phacoemulsification surgery. *(3 marks)*
 - b) What aspect of phacoemulsification does the term, 'fluidics', refer to?
(2 marks)
 - c) What are the advantages and disadvantages of each type of pump system?
(5 marks)
9. Birds are arguably one of the most visually dependant classes of all vertebrates. Relate their ocular features to their visual capabilities. *(10 marks)*
10. Explain the major sequelae of corneal wound repair in a horse. Briefly mention the treatment options that can be employed to limit these complications of wound healing.
(10 marks)

End of paper



Australian and New Zealand College of Veterinary Scientists

Fellowship Examination

June 2019

Veterinary Ophthalmology Paper 2

Perusal time: **Twenty (20)** minutes

Time allowed: **Three (3)** hours after perusal

Section A: Answer **ALL TWENTY (20)** Questions

Section B: Answer **ALL TEN (10)** Questions

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Section A:

Short Answer: Answer **TWENTY** questions, each worth 4 marks.....total 80 marks

Section B:

Long Answer: Answer **TEN** questions, each worth 10 markstotal 100 marks

Paper 2: Veterinary Ophthalmology

SECTION A

Answer all twenty (20) questions

1. List **four (4)** ophthalmic signs that may be seen with malignant catarrhal fever in cattle. (4 marks)

2. List **four (4)** causes of Horner's syndrome in horses. (4 marks)

3. Briefly describe the ocular manifestations of:
 - a) *Angiostrongylus vasorum*. (2 marks)

 - b) *Encephalitozoon cuniculi*. (2 marks)

4. Briefly describe the aetiopathogenesis and appearance of epithelial inclusion cysts. (4 marks)

5. Briefly outline how the distribution of corneal vascularisation provides invaluable information about the location and duration of corneal disease in a dog's cornea. (4 marks)

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6. Briefly describe the advantages and disadvantage of corneoconjunctival transposition grafts. *(4 marks)*
7. Describe the options available to treat aqueous misdirection in cats. *(4 marks)*
8. Briefly discuss the aetiopathogenesis of lipaemic uveitis (lipid aqueous). *(4 marks)*
9. Briefly discuss the aetiopathogenesis of punctate retinal haemorrhages in dogs. *(4 marks)*
10. Briefly describe the benefits and drawbacks of bandage contact lens use in dogs. *(4 marks)*
11. List the advantage and disadvantages of hyaluronic acid subdermal fillers in the treatment of feline entropion. *(4 marks)*
12. Incidence of neuropathies secondary to diabetes mellitus in dogs:
 - a) List the **three (3)** most commonly reported neuropathies that affect the eye in dogs with diabetes mellitus. *(2 marks)*
 - b) State the percentage of dogs affected with a diabetic neuropathy that might be expected to make a full recovery. *(1 mark)*
 - c) In those cases where complete resolution occurs, what is the median reported timeframe for the resolution of symptoms? *(1 mark)*

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13. Partotid duct transposition (PDT):
- a) State when this surgery is indicated. *(1 mark)*
 - b) List **two (2)** advantages of a PDT. *(1 mark)*
 - c) List **two (2)** disadvantages of a PDT. *(1 mark)*
 - d) List **two (2)** technical problems with the surgery. *(1 mark)*
14. Briefly describe the prognostic indicators for primary corneoconjunctival vascular tumours in dogs. *(4 marks)*
15. Cataract surgery (phacoemulsification) in rabbits:
- a) List **three (3)** unique challenges that may be encountered intraoperatively or postoperatively in cataract surgery in rabbits. *(3 marks)*
 - b) To achieve emmetropia, what diopter (state a range) intraocular lens is recommended for use in rabbits? *(1 mark)*
16. Subpalpebral lavage (SPL) systems in horses:
- a) Outline the indications for the use of SPL systems in horses. *(2 marks)*
 - b) List the **two (2)** positions that SPL systems are normally placed in and state **one (1)** advantage of each location. *(1 mark)*
 - c) Small holes often develop in SPL tubing. Without replacing the entire SPL system, how can a small hole in the SPL tubing be repaired? *(1 mark)*
17. List **four (4)** surgical procedures which have been reported to treat upper eyelid agenesis in cats. *(4 marks)*

Continued over page

18. Briefly describe gas bubble disease of fish and the ophthalmic signs that are observed with this condition. *(4 marks)*
19. Briefly outline the aetiopathogenesis of lipid keratopathy in frogs. *(4 marks)*
20. Acute bullous keratopathy in cats:
- a) Outline the aetiopathogenesis of acute bullous keratopathy in cats. *(3 marks)*
 - b) List **two (2)** treatment options for acute bullous keratopathy in cats. *(1 mark)*

Section B over page

SECTION B

Answer all ten (10) questions

1. Describe the different methods of treatment for distichiasis in the dog, including the advantages and disadvantages of each method. *(10 marks)*

2. Surgical techniques used in the treatment of rhegmatogenous retinal detachment in dogs:
 - a) Outline in detail, how vitrectomy is used to repair a retinal detachment and why this has become the treatment of choice for most rhegmatogenous retinal detachments. Include the complications that may be encountered and the success rates that are reported in dogs in your answer. *(7 marks)*

 - b) Other than vitrectomy, **list** the other types of surgery that are available to treat rhegmatogenous retinal detachments in dogs. *(3 marks)*

3. Discuss the causes of keratoconjunctivitis sicca in domestic species. *(10 marks)*

4. Discuss the aetiology of ocular congenital abnormalities in domestic animals. *(10 marks)*

5. Describe the surgical options that have been described to treat primary glaucoma in dogs. *(10 marks)*

Continued over page

6. Explain which factors might influence the results of tonometry in normal animals.
(10 marks)
7. Design an algorithm that identifies the causes of ulcerative keratitis in the domestic species. Include the components of an ophthalmic examination that identify these causes. (10 marks)
8. Summarise the senile ocular changes that occur in dogs and cats. (10 marks)
9. Discuss the ophthalmic evaluation and treatment of acute hyphaema in a dog.
(10 marks)
10. Describe the normal ophthalmoscopic appearance of the equine ocular fundus.
(10 marks)

End of paper