

IMPORTANT INFORMATION FOR CANDIDATES

Please note that the RCVS Diploma for this subject has been phased out in favour of the European College of Veterinary Ophthalmologists (ECVO) Diploma. No new applications for this subject will be accepted. Candidates who are already enrolled still have the remainder of their enrolment in which to enter for the examination.

Diploma in Veterinary Ophthalmology

Please view the general documents to obtain copies of:

- B1:** Guidance Notes for candidates on general requirements.
- B3:** General Guidance Notes on preparation for a Dissertation.
- E1:** Application form E.1 - for enrolment and initial approval of experience.
- H:** Role of Advisers to Certificate Candidates.

The following papers are attached:

- B2:** Specific requirements for the Diplomas.
- C:** Syllabus and Commentary for the Diplomas.
- D:** Reading List.
- E:** Application forms E1A, E.2
 - E1A** - for specific details of practice/centre
 - E.2** - for final approval of experience and for permission to submit an entry to the examination
- G:** List of Advisers.

A copy of the most recent Examination Question Paper is enclosed for your information.

April 2010

The Royal College of Veterinary Surgeons
Specialisation and Further Education

THE DIPLOMA IN VETERINARY OPHTHALMOLOGY

SPECIFIC GUIDANCE NOTES FOR CANDIDATES

[These notes must be read in conjunction with the B1 General Guidance Notes to Candidates]

MEMBERSHIP OF THE ROYAL COLLEGE OF VETERINARY SURGEONS

1. It is a requirement of the Veterinary Ophthalmology Board that ALL Candidates entering for the Diploma are Members of the Royal College of Veterinary Surgeons (MRCVS).

SPECIFIC EXPERIENCE

2. No candidate may enter for the Diploma examination unless he/she will have spent, by the time of the examination, not less than two calendar years devoting at least 75% of his/her time to the study and practice of veterinary ophthalmology since passing the Certificate examination. This period must include at least one year spent full time at a centre approved by the Board. Those not in full time attendance at an approved centre may offer the equivalent aggregated amount of time (minimum 230 working days) **in periods of at least two and preferably four weeks gained over a period not greater than five years**. It is considered that periods of less than two weeks do not allow candidates to take full advantage of all the opportunities offered by an approved centre and applications for enrolment on such a basis are unlikely to be accepted.
3. No period of experience can be offered to meet the requirements of more than one RCVS Certificate/Diploma.
4. **Applications for approval of a Centre must be made directly by the Centre to the RCVS and not by the candidate. An application form can be obtained from the RCVS.**
5. **There is no separate application form other than the candidate applications forms included with this Information Pack. Practices are approved for each individual candidate.**
6. The Board has discretion to increase the requirements for experience for any candidate above the minimum specified if it is considered to benefit the candidate.

FINAL APPROVAL OF EXPERIENCE

7. Candidates will be required to submit a suggested title and description of the work on which the dissertation will be based for approval by the Board. The description should be less than 250 words in length and should outline the methods which will be used, or which were used, to study the proposed topic. This description should be submitted either with the application for initial approval of experience **or** with the application for final approval of experience.

THE EXAMINATION

8. The examination consists of three Sections:
 - (a) A Dissertation
 - (b) TWO x 3 hour written papers, and
 - (c) a clinical, oral, and practical examination.

SUBMITTED WORK FOR EXAMINATION

Dissertation

9. Candidates are required to submit a dissertation on the subject of clinical and/or laboratory based investigation, which they have conducted into any aspect of veterinary ophthalmology. Prospective and retrospective studies are both acceptable.
10. The purpose of the dissertation is to demonstrate that the candidate is able to follow good scientific method, to present the results of an investigation in a proper manner, to draw conclusions from these results using appropriate statistical and other methods and finally to evaluate and discuss the implications of the findings. Essentially the dissertation should be of publishable quality and will be evaluated by the normal criteria used in peer-review assessment of papers submitted for publication.
11. The layout should normally follow conventional lines, and the word count should be appended:
 - Summary;
 - Introduction/Literature review;
 - Materials and methods;
 - Results;
 - Discussion; and
 - Bibliography/References.

12. Candidates should select one of two possible methods of citing references and use that method consistently throughout the text. In the first method references are cited in the text by the name of the author(s) followed by the year of publication with all references cited listed in A–Z order of the first author’s name at the end of the dissertation. Full details of this method should be consulted in the ‘Instructions to Authors’ in the Journal of Small Animal Practice. In the second method references are cited by number. References are assigned a number according to the order of their appearance in the text. The bibliography then lists the references by number in the same order in which they are cited in the text. Full details of this method should be consulted in the ‘Instructions to Authors’ in Veterinary Ophthalmology.
13. **Three copies** of the dissertation should be submitted. The dissertation should be typed on A-4 paper, with one-and-a half line spacing and adequate margins (e.g. 1 inch) especially at the binding side. The copies should be bound but the method is not specified.
14. Candidates may **not** use all or part of the work prepared and submitted for another postgraduate qualification, including Diploma of Fellowship, as all or part of their dissertation for an RCVS Diploma.
15. Candidates are asked to submit an electronic version of their submitted work together with their hard copy. This will be retained at RCVS unless requested by the examiners for purposes such as checking the word count. The electronic version should be Microsoft Office 2000 or XP compatible and should be submitted on either CD or floppy disc/s. Please ensure that the disks are easily identifiable by placing them in an envelope with your name, and ‘Electronic version of submitted work for the Diploma in Veterinary Ophthalmology marked clearly on the front

Word Count

16. A word count must be shown on the front cover of the Dissertation. The dissertation should be **approximately 7000 words and should not exceed 10,000 words**, excluding the list of references. **Candidates will be penalised for exceeding the maximum number of words.**

Grading Scheme

17. The submitted work will be graded “Good Pass”, “Pass”, or “Fail”.
 - **Good Pass**—(60% or over)—the work will be lodged in the RCVS Library as a suitable example for future candidates.
 - **Pass (defined as 50%)**—The work is adequate to enable the candidate to proceed to the remaining sections of the examination, but the submitted work may need to be revised by the date of the clinical, oral, and practical

for lodging in the Library if the candidate is successful in the examination as a whole.

- **Fail (below 50%)**—The work is not adequate to enable a candidate to proceed to the remaining sections of the examination for the year in question.

WRITTEN EXAMINATION

18. Candidates are warned that answers should be given specifically and that illegible handwriting may result in examiners being unable to award marks for information which candidates intended to convey. In addition, the Examiners will take into consideration spelling and whether or not the question has been answered in the form requested.

Format

19. This Section consists of 2 three-hour written papers.

Paper I—will consist of ten short-answer questions, all of which must be attempted.

Paper II—will consist of six essay-type questions of which five must be answered

Marks Scheme

20. **Paper I** will be marked out of 50 marks

Paper II will be marked out of 50 marks

Total Mark for this Section (b) = 100 marks

CLINICAL, ORAL, AND PRACTICAL EXAMINATION

21. Questions regarding the dissertation may be asked during the examination.

22. The examination will last one day and will consist of long and short clinical cases (to include a minimum of dog, cat, farm animal and horse), cadaver surgery, a slide session, and an oral.

Marks Scheme

23. The Clinical/Practical examination will be marked out of 50 marks.

The Oral will be marked out of 50 marks

TOTAL Mark for this Section (c) = 100 marks

SYLLABUS AND READING LIST

24. A syllabus, with a brief commentary, and a reading list for the Certificate are provided for reference. There are no separate reading lists for the Diploma as candidates at this level are expected to be familiar with all literature in the area of their elective and most particularly so in the topic of their dissertation or submitted papers.
25. Candidates should note that the Certificate reading list was frozen in 2002 and will eventually be withdrawn.

ADVISERS

26. Candidates are expected to have a suitably qualified adviser who works at the approved centre attended by the candidate, and are urged to seek their advice on their Diploma studies and dissertation.

ABBREVIATION FOR QUALIFICATION

27. Successful candidates may use the following abbreviations after their names in the RCVS Register of Members, and on practice plate, stationery, etc. Certificate holders who obtain the Diploma in the same subject cease to use the Certificate abbreviation "**DVOphthal**".

Amended June 2000/January 2002/ January 2003/ March 2006, April 2007, April 2008.

THE ROYAL COLLEGE OF VETERINARY SURGEONS

SYLLABUS FOR CERTIFICATE & DIPLOMA EXAMINATION IN VETERINARY OPHTHALMOLOGY

COMMENTARY

1. The syllabus is presented as a guide to candidates, which sets out systematically the areas of study upon which both the Certificate and Diploma examinations will be based. It should not be considered exhaustive. In both examinations, questions may be set within the broad field of veterinary ophthalmology and examiners will expect that candidates have a sound knowledge of the principles of pathology, medicine, and surgery, including anaesthesia.
2. The study of ophthalmology is one single subject and it is impractical to separate the syllabus for the Certificate examination from that for the Diploma examination. Any such division would necessarily be quite arbitrary and could give the impression that Certificate candidates should not be concerned with the subject areas that were listed for the Diploma examination. The distinction between Certificate and Diploma studies rests with the breadth and depth to which the candidates are expected to work and it is hoped that the manner in which the syllabus is set out will encourage all candidates to read widely in the literature and to develop their appreciation of ophthalmology as fully as possible.
3. Certificate candidates should possess both the theoretical and practical knowledge of veterinary ophthalmology as it applies to modern veterinary practice, a field of study, which is constantly enlarging. To achieve this level of expertise it is expected that candidates will be required to devote 10–20% of their professional time to this work. In the Certificate examination emphasis will be placed on:
 - (a) ability to conduct ophthalmic examinations;
 - (b) familiarity with the use of the diagnostic instruments employed in practice;
 - (c) ability to describe clinical findings and to indicate how these substantiate diagnoses;
 - (d) examples of advice that should be given to the animal's owner together with an outline of any therapy that may be indicated;
 - (e) systematic case recording will be assessed on the series of case reports that are to be submitted as part of the examination.
Discussion on these case reports may be included in the examination.

Any of the regularly occurring ocular diseases may be discussed including those conditions, which are certified and are under investigation for the BVA/KC/ISDS Eye Scheme.

4. Diploma candidates will be expected to possess the extensive knowledge of veterinary ophthalmology required at specialist level. This requires an in-depth understanding of the scientific basis of ophthalmology including:
- (a) full anatomical details of the eye and adnexa (gross and microscopic);
 - (b) thorough knowledge of ocular embryology and associated developmental abnormalities;
 - (c) the pathology and pathogenesis of eye disease, including exfoliative cytology;
 - (d) the physiology and biochemistry of the eye;
 - (e) knowledge of electrophysiological and ultrasonographical techniques will also be expected.

Familiarity with the full range of case investigation required to establish diagnoses and to elucidate aetiology and pathology of conditions that require special investigation is expected. Candidates should be able to discuss all forms of therapy, including intra-ocular surgical techniques and be able to give well reasoned advice to animal owners or colleagues on management regimes for any form of ocular disease of individual animals or groups. To achieve this level of expertise candidates will be required to read extensively in both veterinary and medical ophthalmological literature and to be familiar with recent research activities in both fields.

SYLLABUS

1. STRUCTURE AND FUNCTION OF THE EYE

1.1 Embryology

The embryological development of the normal mammalian eye, including tissue differentiation, vascular development, and post-natal development.

Developmental abnormalities of the eye and adnexa.

1.2 Anatomy

The gross and microscopic structure of the eye and adnexa:

- orbit, extraocular muscles and orbital fascia
- eyelids
- lacrimal apparatus
- conjunctiva
- cornea, limbus, episclera and sclera
- uveal tract (including tapetum)
- lens and zonule
- vitreous body
- retina
- optic nerve
- vascular and nerve supply

1.3 **Physiology**

The physiology and biochemistry of the eye:

- tear film, lacrimal secretion and drainage
- corneal hydration and transparency
- aqueous formation, circulation and drainage;
 intraocular pressure control
- lens metabolism and transparency
- retinal physiology (including photochemistry of
 vision and electrophysiology)
- visual pathways
- extraocular muscles and their action;
 proprioceptive reflexes
- pupillary light reflexes, effects of drugs on
 pupil size
- protective and other ocular reflexes
- principles of optics, image formation,
 accommodation, refractive errors

2. **EXAMINATION OF THE EYE**

- routine examination procedures
- clinical ophthalmic instruments and their optics
- examination of the eyelids, ocular surface and anterior
 segment employing focal and general illumination
- precorneal tear film investigation
- slit-lamp biomicroscopy
- intraocular pressure assessment (tonometry)
- gonioscopy
- examination of the fundus (direct and indirect
 ophthalmoscopy)

- fundus photography
- electroretinography, visual evoked responses
- diagnostic radiology of the eye and nasolacrimal
 apparatus
- other imaging techniques (e.g. ultrasonography, CT scans and MRI)
- exfoliative cytology
- biopsy techniques, tissue fixation and processing
- systematic case recording

3. **DISEASES OF THE EYE AND ADNEXA**

(for injuries and neoplasia see separate sections)

3.1 Upper and lower eyelids

- entropion
- ectropion
- distichiasis
- ectopic cilia
- trichiasis
- ankyloblepharon
- symblepharon
- lagophthalmos
- ptosis
- blepharitis
- chalazion
- hordeolum
- dermatoses

3.2 Third eyelid

- deformities (eversion, inversion, scrolling)
- prolapsed nictitans gland
- prominence
- inflammatory conditions (including plasma cell infiltration)

3.3 Lacrimal system

- lacrimation
- epiphora
- diseases of the lacrimal and accessory lacrimal glands; keratoconjunctivitis sicca
- dacryocystitis and dacryoadenitis
- congenital and acquired anomalies of the puncta, canaliculi and nasolacrimal duct

3.4 Conjunctiva

- dermoids
- conjunctival inflammation (chemosis, hyperaemia, haemorrhage, discharge)

3.5 Cornea

- dermoids
- keratitis: specific (e.g. chronic keratitis - pannus, feline corneal sequestrum, feline eosinophilic/proliferative keratitis, infectious bovine and ovine keratoconjunctivitis) and non-specific forms
- ulceration
- degenerations, dystrophies and infiltrations
- distortions (keratoconus, keratoglobus)
- differential diagnosis of corneal opacification, vascularisation and pigmentation

3.6 **Episclera and sclera**

- episcleritis
- benign fasciitis
- scleritis
- scleral ectasia

3.7 **Uveal tract**

- congenital defects (eg. persistent pupillary membrane, colobomata, anomalies of pigmentation)
- anterior uveitis, posterior uveitis and panuveitis
- abnormalities of pupil size, shape and mobility
- aqueous opacities (eg. flare, hyphaema, hypopyon)

3.8 **Glaucoma**

- primary glaucoma
- secondary glaucoma

3.9 **Lens**

- congenital and developmental lens defects
- heritable cataracts
- acquired cataracts
- lens luxation

3.10 **Vitreous**

- congenital abnormalities (e.g. persistent hyperplastic primary vitreous - PHPV)
- acquired conditions (e.g. opacities, degenerations)

3.11 **Retina and choroid**

- collie eye anomaly - (CEA)
- retinal dysplasia
- hereditary retinopathies (central progressive retinal atrophy - CPRA, generalised progressive retinal atrophy - PRA, hemeralopia, nyctalopia)
- acquired non-inflammatory retinopathies (e.g. nutritional, metabolic, sudden acquired retinal degeneration - SARD)
- retinitis and chorioretinitis
- retinal detachment
- retinal haemorrhage

3.12 **Optic nerve**

- aplasia, hypoplasia
- coloboma
- optic neuritis

- papilloedema
- cupping of optic disc
- optic atrophy
- equine proliferative optic neuropathy

3.13 **Neuro-ophthalmology**

- visual pathways and visual fields
- reflex pathways
- autonomic pathways (e.g. Horner's syndrome)
- nystagmus and disorders of ocular mobility
- blindness of central origin

3.14 **Orbital and periorbital conditions**

- Congenital and acquired conditions of the orbit and globe
- microphthalmos, anophthalmos, congenital cystic eye
 - exophthalmos
 - enophthalmos
 - orbital cellulitis, and abscessation
 - myositis
 - neoplasia
 - hydatidosis
 - periorbital conditions (eg. malar abscess, neoplasia, equine ethmoid haematoma)

4. **OCULAR NEOPLASIA**

Primary and secondary neoplasia of the eye and adnexa and its management.

5. **INJURIES**

- open and closed injuries of the eye and adnexa
- foreign bodies
- thermal and chemical injuries
- orbital and periorbital fractures
- wound healing

6. **OCULAR SIGNS OF SYSTEMIC DISEASE**

Many systemic, or generalised, diseases and disorders can have ocular manifestations. Some examples are given.

- 6.1 **Viral and rickettsial diseases:** canine distemper, infectious canine hepatitis, feline leukaemia, feline peritonitis, feline herpes virus infection, rabies, bovine virus diarrhoea - mucosal disease complex, infectious bovine rhinotracheitis, bovine malignant catarrhal fever, ovine scrapie, hog cholera.

- 6.2 **Bacterial diseases:** many potential organisms, eg. listeriosis, leptospirosis, tuberculosis, brucellosis, chlamydia species, mycoplasma spp.
- 6.3 **Protozoal infections:** babesiosis, toxoplasmosis, ehrlichiosis.
- 6.4 **Mycotic and algal infections**
- 6.5 **Parasitic infections:** dirofilariasis, toxocariasis, leishmaniasis, onchocerciasis, angiostrongylosis.
- 6.6 **Neoplastic diseases:** ocular lesions the result of metastases from primary tumours elsewhere in the body, eg. lymphoma, carcinoma, melanoma.
- 6.7 **Metabolic and nutritional diseases:** diabetes mellitus, dyslipoproteinaemias, inborn errors of metabolism, hypovitaminosis A, thiamine deficiency, taurine deficiency.
- 6.8 **Toxic agents:** lead poisoning, bracken poisoning.
- 6.9 **Immune mediated diseases:** allergies, autoimmune diseases.
- 6.10 **Vascular disorders:** congenital heart disease, hypergammaglobulinaemia, polycythaemia, blood dyscrasias, anaemia, hypertension.
- 6.11 **Non-specific findings:** pallor, vessel engorgement, cyanosis, haemorrhage, jaundice.

7. INHERITED OCULAR DISEASE

- principles of genetics
- modes of inheritance
- test mating
- control measures
- pedigree data analysis
- breed predispositions

8. THERAPEUTICS

- routes of administration of ocular therapeutic agents
- vehicles and preparations
- cleansing agents
- lubricants and tear replacement preparations
- therapeutic soft contact lenses, collagen shields, methacrylate glue etc.
- local anaesthetics
- systemic analgesics
- cauterising agents
- mydriatics: cycloplegics and non-cycloplegics
- miotics
- agents used in the treatment of glaucoma
- antihistamines

- antibacterials, antifungals, antivirals, parasiticides
- steroidal and non-steroidal anti-inflammatory agents
- immunosuppressants
- neutraceuticals
- chemotherapy
- radiotherapy
- cryotherapy, hyperthermia
- electrocautery, catholysis
- medical lasers

9. **OCULAR SURGERY**

9.1 **Principles of ophthalmic surgery**

Consideration should be given to the instruments, suture materials and magnification required for extraocular surgery. Species differences must be taken into account with respect to techniques used and response to surgery. Candidates for the diploma must have a working knowledge of intraocular surgery, including pre-operative and post-operative care of the patient and general anaesthesia. Certificate candidates should possess a basic knowledge of the principles of ophthalmic surgery.

9.2 **Eyelid surgery**

- correction of congenital and acquired lid abnormalities
- canthotomy
- tarsorrhaphy
- reconstructive lid surgery including grafts

9.3 **Third eyelid**

- correction of congenital and acquired abnormalities
- correction of prolapsed nictitans gland
- third eyelid flaps
- surgical techniques for neoplasia

9.4 **Conjunctiva**

- conjunctival grafts

9.5 **Lacrimal system**

- correction of punctal and nasolacrimal duct abnormalities
- parotid duct transposition

9.6 **Cornea**

- treatment of erosions, ulcers
- keratectomy
- reconstructive surgery
- lamellar and penetrating keratoplasty

9.7 **Anterior chamber**

- surgical approaches
- paracentesis

9.8 **Uvea**

- iris prolapse
- iridectomy
- iridotomy
- ciliary body surgery: cryotherapy, cyclophotocoagulation

9.9 **Glaucoma**

- drainage procedures
- cryosurgery
- diathermy
- laser surgery

9.10 **Lens**

- luxation
- cataract extraction

9.11 **Retina**

- biopsy
- detachment surgery

9.12 **Vitreous**

- vitrectomy

9.13 **Orbit and globe**

- exploratory techniques
- prolapse of the globe
- enucleation
- evisceration
- exenteration
- prosthesis

10. **OCULAR TOXICOLOGY**

The effect of drugs and toxic substances on the eye.

- methods of examination and recording
- toxic effects on the conjunctiva, lacrimal secretions, cornea, uvea (including tapetum), lens (including cataractogenic drugs), retina, visual pathways

- ocular conditions of common laboratory species (eg. congenital lesions, dacryoadenocystitis, light-induced retinopathy)
- selection of species for toxicity testing, species differences relating to toxic effects
- drug-testing and safety evaluation protocols
- role of regulatory authorities

October 1987/PW

December 1994/JW

August 1996/JW

January 2002.

November 2002

ROYAL COLLEGE OF VETERINARY SURGEONS**SPECIALISATION AND FURTHER EDUCATION****Certificate and Diploma in Veterinary Ophthalmology****READING/REFERENCE LIST**

Candidates should note that the reading list for the Certificate and Diploma in Veterinary Ophthalmology was frozen in 2002 and will eventually be withdrawn. Candidates are expected to research the literature for themselves and are recommended to make use of the RCVS Library and Information Service for this purpose (<http://www.rcvslibrary.org.uk/>, e-mail library@rcvs.org.uk or telephone 020 7222 2021). Candidates should also seek advice on suitable reading matter from their advisers.

The books marked below by the following symbol * are those that the Board considers useful for Certificate candidates. Diploma candidates are expected to read widely in the course of their studies and should therefore be able to exercise their own preferences.

STANDARD TEXTS**GENERAL OPHTHALMOLOGY**

Barnett KC (1996). Veterinary Ophthalmology. London, Mosby-Wolfe. Paperback edition of 1990 Colour Atlas.

*Gelatt KN (ed) (1998). Veterinary Ophthalmology. 3rd edition. Philadelphia, Lipincott, Williams & Wilkins.

Slatter DH (1990). Fundamentals of Veterinary Ophthalmology. 3rd edition. Philadelphia, W B Saunders.

Gelatt KN (2000) Essentials of Veterinary Ophthalmology. Philadelphia, Lipincott, Williams & Wilkins.

SMALL ANIMAL

Gelatt KN and Gelatt JP (2001). Small Animal Ophthalmic Surgery: Practical Techniques For The Veterinarian. Oxford, Butterworth-Heinemann

*Peiffer RL and Petersen-Jones SM (eds) (2001). Small Animal Ophthalmology: A Problem-Oriented Approach. 3rd edition. London, W B Saunders.

*Petersen-Jones SM and Crispin SM (eds) (2002). Manual of Small Animal Ophthalmology. 2nd edition. Cheltenham, BSAVA Publications.

*Riis RC (2002) Small Animal Ophthalmology Secrets. Philadelphia, Hanley & Belfus

CANINE

*Barnett KC, Heinrich C, Sansom J (2002). Canine Ophthalmology: An Atlas and Text. London, W B Saunders

FELINE

*Barnett KC and Crispin SM (1998). Feline Ophthalmology: An Atlas and Text. London, WB Saunders.

Ketring KL and Glaze MB (1994). Atlas of Feline Ophthalmology. Trenton, N J, Veterinary Learning Systems Co Inc.

EQUINE

Barnett KC *et al* (eds) (1983). Equine Ophthalmology. Equine Veterinary Journal Supplement 2.

Barnett KC *et al* (eds) (1990) Equine Ophthalmology II. Equine Veterinary Journal Supplement 10.

*Barnett KC, Crispin SM, Lavach JD and Matthews AG (1995). Colour Atlas and Text of Equine Ophthalmology. London, Mosby-Wolfe (2nd edition in preparation).

Brooks D E (2002). Ophthalmology for the Equine Practitioner. Wyoming, Teton NewMedia.

Parker J and Habin DJ (1995). Prior to Purchase Examination of the Equine Eye. Equine Veterinary Education Manual No1.

FARM ANIMAL

*Lavach, JD (1990). Large Animal Ophthalmology. St Louis, C V Mosby.

TEXTS CONTAINING USEFUL MATERIAL ON THE EYE

*Auer JA (ed) (1999). Equine Surgery (2nd edition) Philadelphia, W B Saunders.

Birchard SJ and Sherding RG (eds) (1994). Saunders Manual of Small Animal Practice. W B Saunders Co., Philadelphia.

Bojrab MJ *et al* (eds) (1997). *Current Techniques in Small Animal Surgery*. 4th edition. Baltimore, Williams and Wilkins.

Day MJ (1999). *Clinical Immunology of the Dog and Cat*. London, Manson Publishing.

De Lahunta A. *Veterinary Neuroanatomy and Clinical Neurology*. 3rd edition Philadelphia, W B Saunders (In Press for 2003).

Dunn JK (ed) (1999) *Textbook of Small Animal Medicine* W B Saunders

Evans SA (ed) (1993). *Miller's Anatomy of the Dog*. 3rd edition. Philadelphia, W B Saunders.

Gorman, N T (ed) (1998). *Canine Medicine and Therapeutics*. 4th edition. Oxford, Blackwell Scientific.

Morgan, R V *et al* (eds) (2002). *Handbook of Small Animal Practice*. 4th edition. Philadelphia. W B Saunders.

Slatter, D H (ed) (2003). *Textbook of Small Animal Surgery*. 3rd edition. Philadelphia, W B Saunders.

*Smith BP (ed) (2002). *Large Animal Internal Medicine*. 3rd edition. St Louis, Missouri, Mosby.

Wheeler SJ (ed) (1995). *BSAVA Manual of Small Animal Neurology*. 2nd edition. Cheltenham, BSAVA Publications.

USEFUL TEXTS - OUT OF PRINT (but may be available at the RCVS library or as interlibrary loan)

Bistner SI *et al* (1977). *Atlas of Veterinary Ophthalmic Surgery*. Philadelphia, W B Saunders.

Gelatt KN (ed) (1981). *Textbook of Veterinary Ophthalmology*. 1st edition. Philadelphia, Lea & Febiger.

Gelatt KN (ed) (1991). *Veterinary Ophthalmology*. 2nd edition. Philadelphia, Lea & Febiger.

Nicolas E (1923). *Veterinary and Comparative Ophthalmology*. Trans. H Gray. London, H & W Brown.

Peiffer RL (ed) (1983). *Comparative Ophthalmic Pathology*. Springfield, Illinois, CC Thomas.

Petrick S W (1983). *Veterinary Eye Surgery*. Durban, Butterworth.

Prince J H (1960). *The Anatomy and Histology of the Eye and Orbit in Domestic Animals*. Springfield, Illinois. CC Thomas.

*Rubin L F (1974). *Atlas of Veterinary Ophthalmoscopy*. Philadelphia, Lea & Febiger.

Rubin LF (1989) *Inherited Eye Diseases in Purebred Dogs*. Baltimore. Williams and Wilkins.

(see also ACVO publication 1999: *Ocular Disorders Presumed to be Inherited in Purebred Dogs*).

Saunders LZ and Rubin LF (1975). *Ophthalmic Pathology of Animals*. Basle, S Karger.

Tabbara K F and Cello R M (eds) (1984). *Animal Models of Ocular Diseases*. Springfield, Illinois, CC Thomas.

Walls GL (1967). *The Vertebrate Eye and its Adaptive Radiation*. New York, Hafner Publishing Co.

VETERINARY CLINICS OF NORTH AMERICA

Aguirre G (ed) (1973). *Ophthalmology*. *The Veterinary Clinics of North America (Small Animal Practice)* 3(3).

Peiffer RL (ed) (1980). *Ophthalmology*. *The Veterinary Clinics of North America (Small Animal Practice)*. 10(2)

Moore CP (ed) (1984). *Large Animal Ophthalmology*. *The Veterinary Clinics of North America (Large Animal Practice)* 6(3).

Millichamp N J and Dziezyc J (eds) (1990). *Small Animal Ophthalmology*. *The Veterinary Clinics of North America (Small Animal Practice)* 20(3).

Roberts S M (ed) (1992). *Ophthalmology*. *The Veterinary Clinics of North America (Equine Practice)* 8(3).

Nasise M P (ed) (1997). *Surgical Management of Ocular Disease*. *The Veterinary Clinics of North America (Small Animal Practice)* 27(5).

Stiles J (ed) (2000). *Infectious Disease and the Eye*. *Veterinary Clinics of North America (Small Animal Press)* 30(5)

MEDICAL OPHTHALMOLOGY – USEFUL BOOKS

Chong NHV (1996). *Clinical Ocular Physiology: An Introductory Text*. Oxford, Butterworth Heinemann.

Duke-Elder S (1958-1974). *System of Ophthalmology*. 15 vols. London. Henry Kimpton.

Forrester J V *et al* (2001). *The Eye - Basic Sciences in Practice*. 2nd edition London. W B Saunders.

Pavan-Langston D (ed) (1996). *Manual of Ocular Diagnosis and Therapy*. 4th edition. Boston, Little, Brown.

OPHTHALMOLOGY JOURNALS (some also available on line)

Progress in Veterinary and Comparative Ophthalmology (1991-1993).

Veterinary and Comparative Ophthalmology (1994-1997).

Veterinary Ophthalmology 1998 onwards.

British Journal of Ophthalmology

Investigative Ophthalmology and Visual Science

Eye.

ADDITIONAL INFORMATION

CAB Abstracts database – (online/CD-ROM/Internet equivalent of Index Vet, Vet Bull etc). CAB Abstracts – (fee-based service on Internet).

MEDLINE database – (online/CD-Rom/Internet version of Index Medicus) (freely available as 'PUBMED' or 'Internet GratefulMed' on Internet).

Unit for Veterinary Continuing Education incorporating Veterinary Audio-Visual Library, Royal Veterinary College, London. Contact Unit VCE for catalogue with current programmes available.

Veterinary Bulletin.

Vetstream.

The accessing of recent publications, as well as useful texts that are now out of print, can be done through the RCVS library website: www.rcvslibrary.org.uk

PLEASE ENSURE THAT YOU COMPLETE A FORM E1 (TO BE FOUND IN THE COMMON DOCUMENTS) AND ATTACH IT TO THIS FORM

**THE ROYAL COLLEGE OF VETERINARY SURGEONS
SPECIALISATION AND FURTHER EDUCATION**

DIPLOMA IN VETERINARY OPHTHALMOLOGY

Details of the veterinary practical centre in which experience is being gained to meet the requirements of the byelaws (see schedules) with periods of time amounting to or equivalent to at least two years which shall include 200 days in an approved centre of substantial experience in the subject concerned).

If more than one practice/centre, please photocopy this form and complete in respect of each such practice/centre.

Name of practice and address

Date of commencement of employment: _____

(and date of leaving if you are no longer employed at this address): _____

Please indicate if this is your base or primary workplace OR Other/second establishment

Please indicate if this is a practice or an approved centre

Numbers of veterinary surgeons usually working in your place of employment

CHECKLIST

Based on the approximate figures for the last twelve months, please provide the details below.

Species	Number of ophthalmology cases for which you have personal responsibility per month	Number of ophthalmology cases seen each month for you do not have primary responsibility
Dogs		
Cats		
Other small mammals (rabbits etc)		
Non-mammals (e.g. birds, fish, reptiles amphibians)		
Farm animals		
Horses		
Other (specify)		

Additional future experience

Please indicate how you intend to gain experience of species that you have not yet included, but which are listed above.

Place where experience is planned

Type of experience to be gained

Tick yes or no in the box provided.

	Yes	No		Yes	No
Ophthalmic Equipment			Facilities		
Focal illumination	<input type="checkbox"/>	<input type="checkbox"/>	Examination area that can be darkened	<input type="checkbox"/>	<input type="checkbox"/>
Condensing lens(es)	<input type="checkbox"/>	<input type="checkbox"/>	Diagnostic disposables		
Magnifying loupe	<input type="checkbox"/>	<input type="checkbox"/>	Ophthalmic stains fluorescein	<input type="checkbox"/>	<input type="checkbox"/>
Slit lamp biomicroscope	<input type="checkbox"/>	<input type="checkbox"/>	Ophthalmic stains rose bengal	<input type="checkbox"/>	<input type="checkbox"/>
Direct ophthalmoscope	<input type="checkbox"/>	<input type="checkbox"/>	Schirmer tear test papers	<input type="checkbox"/>	<input type="checkbox"/>
Monocular indirect ophthalmoscope	<input type="checkbox"/>	<input type="checkbox"/>	Tropicamide	<input type="checkbox"/>	<input type="checkbox"/>
Binocular indirect ophthalmoscope	<input type="checkbox"/>	<input type="checkbox"/>	Topical local anaesthetic	<input type="checkbox"/>	<input type="checkbox"/>
Tonometer	<input type="checkbox"/>	<input type="checkbox"/>	Equipment for obtaining samples	<input type="checkbox"/>	<input type="checkbox"/>
State type			Lacrimal cannulae	<input type="checkbox"/>	<input type="checkbox"/>
Gonioscopy lens	<input type="checkbox"/>	<input type="checkbox"/>	Other diagnostic equipment		
State Type			Electroretinography	<input type="checkbox"/>	<input type="checkbox"/>
Surgical equipment			Radiology	<input type="checkbox"/>	<input type="checkbox"/>
Operating microscope	<input type="checkbox"/>	<input type="checkbox"/>	Ultrasonography	<input type="checkbox"/>	<input type="checkbox"/>
Instruments for extraocular surgery	<input type="checkbox"/>	<input type="checkbox"/>	Other	<input type="checkbox"/>	<input type="checkbox"/>
Microsurgical instruments	<input type="checkbox"/>	<input type="checkbox"/>	Specify		

Signature: _____ Date: _____

Proposed subject for dissertation:

Candidates are required to submit, as part of the examination, a dissertation based on a research project in any aspect of Veterinary Ophthalmology, or on an evaluation of preventive medicine or disease control scheme in which the candidate is personally involved.

Please state below the proposed title for your dissertation, and give a brief outline of the project or scheme on which it will be based and your own involvement therein:

Signature: _____ Date: _____

PLEASE RETURN ORIGINAL FORM PLUS FOUR COPIES

**THE ROYAL COLLEGE OF VETERINARY SURGEONS
SPECIALISATION AND FURTHER EDUCATION**

DIPLOMA IN VETERINARY OPHTHALMOLOGY

Application for FINAL approval of experience and for permission to submit an entry to the next examination to be completed and returned to the RCVS, Belgravia House, 62–64 Horseferry Road, London, SW1P 2AF, **by 1 November** of the year in which you wish to sit the examination.
NO LATE APPLICATIONS WILL BE ACCEPTED.

1. **TITLE** _____

2. **NAME** in full (block letters)

3. **DEGREES/DIPLOMAS/CERTIFICATES** _____
(in abbrev. form)

4. **ADDRESS** for all correspondence (block letters)

5. (a) **TELEPHONE No(s)** (for contact during the day) _____

(b) **FAX No.** (for contact during the day) _____

(c) **EMAIL** _____

6. **DATE OF ENROLMENT** _____ (MONTH/YEAR)

If application for enrolment is being submitted concurrently with this application, please state 'concurrent'.

7. **PERIODS OF EXPERIENCE BEING OFFERED** to meet the requirements of the byelaws

Veterinary branch of other branch of profession (name and address)	Period of employment (from/to)	Certified by Adviser

If there has been any change in the work-load of the practice/centre, or in your personal work load, since you applied for enrolment, please give details below:

8. ATTENDANCE AT RELEVANT SHORT COURSES OVER PAST THREE YEARS

Title of course attended: _____

Dates and venues: _____

9. OTHER INVOLVEMENT IN RELATION TO VETERINARY OPHTHALMOLOGY

List any attendances at relevant congresses, conferences, meetings, symposia, etc., with dates:

10. PUBLICATIONS/ARTICLES/PAPERS/LECTURES

Give details below (including involvement in the instruction of others):

11. OTHER POSTGRADUATE STUDIES

During the period of experience being offered, have you been or are you studying for any other postgraduate qualification? YES/NO

If Yes, please give brief details:

12. SUBMITTED WORK

Title of dissertation: _____

Has an outline been submitted [on form E1(a)] and approved by the Board?
YES/NO.

13. I HEREBY APPLY FOR FINAL APPROVAL OF EXPERIENCE AND FOR PERMISSION TO SUBMIT AN ENTRY TO THE NEXT DIPLOMA EXAMINATION IN VETERINARY OPHTHALMOLOGY

I certify that the period of experience being offered has not been/is not being offered to meet the requirements of the byelaws for any other RCVS Certificate or Diploma.

14. CONFIRMATION OF INTENT TO SIT THE EXAMINATION

If approval of experience is granted, I do/do not (delete as appropriate) intend to submit an entry to the next examination (closing date for receipt of entries is 1 March).

Signature: _____ Date: _____

THE FOLLOWING SECTION SHOULD BE COMPLETED BY YOUR ADVISER.

I confirm that I am acting as this candidate's Adviser.

Name: _____

Signature: _____ Date: _____

PLEASE RETURN ORIGINAL FORM PLUS FOUR COPIES

DIPLOMA IN VETERINARY OPHTHALMOLOGY

Candidates should refer to the lists of Specialists and Diploma holders published in Section 3 of the RCVS Register of Members

April 2008

THE ROYAL COLLEGE OF VETERINARY SURGEONS

DIPLOMA IN VETERINARY OPHTHALMOLOGY

**MONDAY 19 OCTOBER 2009
(SPECIAL ARRANGEMENT)**

PAPER I
(3 hours)

Candidates are required to answer **ALL TEN** questions on this paper, and only short answers are required.

Allow 18 minutes per question.

The use of simple labelled diagrams, where appropriate, is encouraged.

Illegible handwriting or failure to answer the question in the form requested may result in examiners being unable to award marks for information which candidates intended to convey.

1. **List** the DNA-based tests available for hereditary eye diseases in dogs. For **each** test include the condition and the gene involved.
2. What is a visually evoked potential (VEP)? How can it be recorded and how can it be of value in the assessment of a visually impaired patient?
3. **Discuss** neuroprotection as a potential treatment for glaucoma.
4. **Describe** the types of neoplasm that affect the eyelid of:
 - (a) the cat
 - (b) the rabbit.
5. **Compare and contrast** band keratopathy and lipid keratopathy in the dog.
6. **List** the various factors in intra-ocular regional immunity.
7. **Provide an annotated diagram** of the visual cycle.

P.T.O. for Questions 8 - 10

8. **Describe** the mode of action of **each** of the following therapeutic agents:
- a) L-Lysine
 - b) Interferon α (Interferon alpha)
 - c) Fusidic acid
 - (d) Brinzolamide.
9. **Briefly describe** the venous and lymphatic drainage of the orbit in the dog.
10. **Indicate** the site and function of the following proteins found within the eye:
- a) Melanopsin
 - b) Carbonic anhydrase
 - c) Alpha crystallin
 - d) Retinal guanylate cyclase 1.
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THE ROYAL COLLEGE OF VETERINARY SURGEONS

DIPLOMA IN VETERINARY OPHTHALMOLOGY

MONDAY 19 OCTOBER 2009
(SPECIAL ARRANGEMENT)

PAPER II

(3 hours)

Candidates are required to answer **FIVE** out of the following **six** questions.

Allow 36 minutes per question.

The use of simple labelled diagrams, where appropriate, is encouraged.

Illegible handwriting or failure to answer the question in the form requested may result in examiners being unable to award marks for information which candidates intended to convey.

If insufficient time is available to answer a question fully, it will be acceptable to complete in note form.

-
1. **Discuss** hereditary glaucoma in dogs. Provide an evidence-based rationale for using gonioscopy as a tool to reduce the incidence of glaucoma in a chosen breed of dog.
 2. **Discuss** abnormalities in pupillary function.
 3. **Discuss** the management of retinal detachment.
 4. **Discuss FOUR** ophthalmic conditions of your choice that affect birds.
 5. **Discuss** ocular and adnexal neoplasia in the ox **and** the horse with respect to tumour type and possible management.
 6. **List and discuss** the viral infections which can cause ocular disease in:
 - a. the ox **and** horse

OR

 - b. the dog **and** cat.
-