Candidates are required to attempt ALL 15 questions on this paper, and only short answers are required. Allow 8 minutes per question. The use of simple labelled diagrams is encouraged.

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

1. Define nystagmus. In what circumstances can it occur in small animals?

2. **List FIVE** conditions affecting the nictitating membrane in domestic animals. For each condition indicate which species is most commonly affected.

3. What do you understand by corneal oedema? Name **FOUR** ocular conditions in which corneal oedema may be a presenting sign.

4. **List** **FOUR** pharmacological agents which can be used to treat primary glaucoma in the dog. For each **briefly** describe its mode of action.

5. **List** the uses of contact lenses in domestic animals. With the aid of a table compare their advantages and disadvantages in each case.

6. Illustrate by means of an annotated diagram how you would repair a simple perpendicular laceration through the lower eyelid of a horse. Discuss your choice of suture material.

   Compare and contrast applanation and indentation tonometers. According to the public literature ranges, what are the normal introacular pressures in the dog, cat, horse and cow?

P.T.O. for questions 8, 9, 10, 11, 12, 13, 14, and 15
8. Define the following:-
   a. Asteroid hyalosis
   b. Retinal dysplasia
   c. Mittendorf’s dot
   d. Ptosis.

9. What are the clinical and ophthalmoscopic signs of generalised progressive retinal atrophy (gPRA) in the dog? List EIGHT canine breeds affected.

10. With the aid of a labelled diagram describe ONE method for performing an auriculopalpebral nerve block in a horse and indicate which structures are anaesthetised by this procedure.

11. List the sites for ocular squamous cell carcinoma in cattle. How does this condition differ in this species compared to the cat?

12. Use annotated diagrams to describe the fundoscopic appearance of the optic nerve head and retinal blood vessels in dog, cat, horse, and pig.

13. Describe the embryological development of the canine lens. List the congenital abnormalities which can occur in this structure.

14. Which conditions may lead to a change in colour of the iris in the cat? Briefly describe the pathogenic processes involved in this colour change.

15. Compare and contrast direct and indirect ophthalmoscopy.

* * * * *
 Candidates are required to answer **THREE** questions out of the following **FIVE** questions on this paper. The use of simple labelled diagrams is encouraged.

*Illegible handwriting or failure to answer the questions in the form required 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.*

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1. Describe the neurological pathways for pupil control in a named species. Which pharmacological agents can be used to alter pupil size? Describe how they work and their clinical uses.

2. Discuss canine and equine uveitis.

3. Write an essay on equine ocular neoplasia (including adnexal and intraocular tumours).

4. A 5 year old Chinchilla cat is presented with a painful right eye which has an obvious black lesion on the central cornea. Discuss the aetiology, treatment and possible sequelae of this condition.

5. Describe the aetiology, clinical signs, management and prognosis of infectious bovine keratoconjunctivitis (IBKC). **Briefly** compare it with infectious ovine keratoconjunctivitis (IOKC).
Candidates are required to attempt **ALL 15** questions on this paper, and only short answers are required. The use of simple labelled diagrams is encouraged.

Allow 8 minutes per question.

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

1. Describe the ocular signs associated with immune-mediated thrombocytopenia in the dog.

2. **List** the clinical signs of Collie eye anomaly and affected breeds. What is understood by the term ‘go-normal’?

3. **Outline** the options in the management of the blind and hydrophthalmic globe with a persistent increased intraocular pressure. **List** advantages, disadvantages and, if present, contraindications for each of the chosen treatments. You may use a table if you wish.

4. Describe, with the aid of an annotated diagram, the anatomy of the nictitating membrane in the bird and explain the mechanism of third eyelid movement in this species.

5. **Briefly outline** the embryology of the vitreous. **List** conditions that are associated with abnormal vitreal development in the dog.

6. Write **short notes** on the actions of the following drugs and **list** indications and contraindications for each agent:
   
   i. ketorolac trometamol
   ii. prednisolone acetate.
7. **Briefly outline** the characteristics of the following suture materials and give indications for ocular use:
   
i. 8.0 (0.4 metric) polyglactin  
ii. 10.0 (0.2 metric) polyamide-nylon  
iii. 4.0 (1.5 metric) silk.

8. Define the term anterior chamber paracentesis. Describe the correct technique for this procedure in the dog. **List** indications and possible complications.

9. Draw a **labelled diagram** of the gonioscopic appearance of the normal iridocorneal angle in a named mammal.

10. **Briefly** describe, using a labelled diagram if you wish, the anatomy of the nasolacrimal duct in the rabbit and explain why dacryocystitis is a common problem in this species.

11. Write **short notes** on feline eosinophilic keratoconjunctivitis.

12. **List FOUR** nutritional deficiencies that cause ocular disease and describe each condition in a named species.

13. **List FOUR** conditions which can present with a unilateral constricted and poorly light responsive pupil in the cat. Which diagnostic tests would you require in order to minimise your differential list?

14. Describe the practicalities of ocular ultrasonography in the dog and outline indications for ocular ultrasonography as an important diagnostic aid.

15. **List** the possible ocular manifestations of feline ocular toxoplasmosis. **Outline** laboratory tests to confirm the diagnosis. What advice would you give to the pregnant owner regarding the zoonotic potential of the condition?
Candidates are required to answer THREE questions out of the following FIVE questions on this paper. The use of simple labelled diagrams is encouraged.

Allow 40 minutes per question.

Illegible handwriting or failure to answer the questions in the form required 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. Describe the anatomy and physiology of the mammalian conjunctiva. Illustrate your essay with the help of an annotated diagram. Explain how the appearance of the conjunctiva can be helpful in the diagnosis of systemic disease and briefly describe the most common conditions of the conjunctiva in cattle.

2. A four year old Border Collie is presented with bilateral anterior uveitis. The dog has competed extensively in agility competitions all over Europe and has re-entered the U.K. under the Pet Passport Scheme. Outline your diagnostic work up of this case and discuss the possible aetiologies of the intraocular inflammation. Outline treatment options based on the underlying cause.

3. Compare and contrast generalised progressive retinal atrophy (GPRA), retinal pigment epithelial dystrophy (RPED) in the dog. Include clinical and ophthalmoscopic findings and list four affected breeds for each of the conditions. You may use a table if you wish.

4. Illustrate the anatomy of the mammalian eyelid with an annotated diagram including eyelid musculature and innervation. Describe in detail the most common conditions of the eyelids in the horse and outline management options for each condition.

5. You are presented with a three year old Pekingese that has suffered uniocular proptosis following a road traffic accident. Describe in detail how you would manage this case including your assessment of vision and advice regarding the long term prognosis. Compare the condition with the similar situation in a domestic short hair cat.
Candidates are required to attempt **ALL 15** questions on this paper, and only short answers are required. The use of simple labelled diagrams is encouraged.

Allow 8 minutes per question.

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

1. **Briefly** describe the ocular effects of vitamin A deficiency in calves.

2. With the **aid of a diagram**, describe the phototransduction cascade.

3. **List** the classes of anti-glaucoma drugs available. For **each** class, indicate its mechanism of action and give an example of such a drug (using the generic name not the trade name). You may present the information **as a table** if you wish.

4. How does the cornea maintain transparency?

5. With the **aid of a diagram**, show how glucose is metabolised within the lens. Indicate how its metabolism changes during prolonged hyperglycaemia.

6. **List** the causes of optic neuritis in the dog.

P.T.O. for Questions 7 - 15
7. **List** the causes of infectious conjunctivitis in cats. **Briefly outline** the diagnostic tests and treatment available in the United Kingdom (using the generic name not the trade name). You may present the information as a table if you wish.

8. What methods are available for the treatment of canine distichiasis?
   **List** the factors that would influence your choice of technique and the complications that can occur.

9. Use a **diagram** to explain the neurological defect that may cause the convergent strabismus with exophthalmos seen in cattle.

10. What techniques would you use to examine the vitreous?
    How would you perform diagnostic hyalocentesis (vitreocentesis)?

11. What tissues of the adult mammalian eye are derived from the layers of the embryonic optic cup?

12. What signs may indicate that a horse had previously suffered from equine recurrent uveitis?

13. Describe **TWO** techniques (naming the materials used) for the surgical repositioning of the canine nictitans gland following its permanent prolapse. **List** possible complications.

14. Write **notes** on the ocular aspects of:
    a) Hypovitaminosis A in young rapidly growing turtles and terrapins.
    b) Canine pemphigus group disease.

15. Describe the possible clinical signs of symblepharon in the cat.
1. A TB yearling has been treated unsuccessfully for recurrent unilateral conjunctivitis with a mucopurulent ocular discharge.
   Describe your examination of this animal.
   Suggest possible causes for the clinical appearance and outline your treatment for TWO of the conditions you mention.

2. A 2 year-old rabbit is presented with chronic bilateral conjunctivitis. During your examination, you note that manual compression of the medial canthal area leads to the expulsion of mucopurulent discharge from the nasolacrimal punctum.
   What is the most likely diagnosis?
   Discuss the aetiology of this condition and describe the possible diagnostic work-up and treatment.
   What advice would you give the owner regarding management and prognosis?

3. A 12-year-old cat is presented with unilateral hyphaema. Discuss the differential diagnosis and your diagnostic work-up in this case.

4. You are presented with an adult shar-pei suffering from extensive bilateral upper and lower eyelid entropion. Review the surgical techniques available for the treatment of the condition in this case.

P.T.O. FOR Question 5
5. a) Discuss the differential diagnosis of cataracts in dogs.

b) A four-year-old Labrador retriever is presented with bilateral total cataracts. The owner is keen to be referred for cataract surgery. List the steps in the diagnostic work-up of such a case, for each step indicating why it is important.
1. Write short notes on TWO of the following infectious diseases of the rabbit. For each condition list in point form the aetiology & mode of transmission, clinical signs (with particular reference to those affecting the eye), diagnostic tests, treatment, control and prognosis.

   a. Myxomatosis.
   b. Encephalitozoonosis.
   c. Pasteurellosis.

2. You are asked to give a talk to a group of horse owners entitled ‘the role of the ophthalmic examination in the pre-purchase examination’. In point form list your approach to an ophthalmic examination for a pre-purchase examination. Make reference to the structures examined and the common diseases associated with each one.

3. Using a table, compare and contrast the aetiology, treatment and prognosis for globe prolapse in a Shitz-zu, a domestic short haired cat and a hamster.

4. You receive a phone call from a worried farmer who reports that a number of young beef cattle appear to have gone blind. List the differential diagnoses and briefly explain the aetiology, diagnosis, treatment and prognosis for each condition.

5. List the causes of Horner’s syndrome in the horse.

6. Describe the causes of secondary glaucoma in the dog.

7. List the Herpesviruses which are associated with pathological ocular changes.
8. Explain the causes of third eyelid (membrane nictitans) protrusion in animals.

9. **List** the causes of keratoconjunctivitis sicca in domestic species.

10. Describe the ocular uses of fluorescein.

11. Describe the ocular manifestations of:
    a) Leishmaniasis.
    b) Angiostrongylus vasorum.
    c) Canine Distemper virus.

12. Write **short notes** on lens induced uveitis in the dog.

13. Write **short notes** on the ocular actions of the following pharmacological agents:
    a) Atropine.
    b) Phenylephrine.
    c) Latanoprost.

14. **With the aid of a line drawing** describe the Khunt-Helmbold technique for the correction of ectropion.

15. What ocular features may accompany granulomatous meningoencephalitis (GME) in the dog?
CANDIDATES ARE REQUIRED TO ANSWER THREE QUESTIONS OUT OF THE FOLLOWING FIVE QUESTIONS ON THIS PAPER. THE USE OF SIMPLE LABELED DIAGRAMS IS ENCOURAGED.

ALLOW 40 MINUTES PER QUESTION.

ILLEGIBLE HANDWRITING OR FAILURE TO ANSWER THE QUESTIONS IN THE FORM REQUIRED MAY RESULT IN EXAMINERS BEING UNABLE TO AWARD MARKS FOR INFORMATION WHICH CANDIDATES INTENDED TO CONVEY.

1. An 11 year-old flat coat retriever presents with a history of unilateral blindness and hyphaema. The dog has no history of previous ophthalmic disease. However a toe had been amputated some 5 months previously due to the presence of an ulcerating mass, but histology was not performed.

**Outline** your approach to investigating this case to include details of the history taking, physical examination, ophthalmic examination and further ophthalmic and systemic diagnostic tests you would perform. Your answer must include **FOUR** differential diagnoses and you must discuss **TWO** of these in terms of the diagnostic tests you would perform to confirm the diagnosis, treatment and prognosis.

2. **With the aid of a diagram(s) briefly** explain how you would describe the various types of canine cataract with regards to their stage of development, clinical appearance or position within the lens.

**List** the diagnostic steps in assessing the suitability of a patient for cataract removal and **briefly outline** the techniques available for this surgery. In your answer you must **list** the advantages and disadvantages of **each** technique and describe the possible intra-operative and post-operative complications.

3. Discuss the aetiology of congenital ocular abnormalities in domestic animals.

P.T.O. for Questions 4, and 5
4. A colleague asks you to examine a 12 year-old male domestic shorthaired cat that has gone blind suddenly. You diagnose bilateral intraocular haemorrhage and retinal detachment. Suspecting systemic hypertension, you perform blood pressure readings and discover a systolic blood pressure of 230mmHg.

**List** the causes of systemic hypertension in cats and describe how you would investigate each of these. In your answer discuss **briefly** the other possible causes of retinal haemorrhage.

Describe the aetiopathogenesis of the ocular changes associated with systemic hypertension?

How would you manage this case?

5. You are presented with a 7 year-old female Welsh Springer Spaniel with a 48 hour history of a painful left eye. There is episcleral congestion, mild corneal oedema and a dilated, non-light responsive pupil. The menace response and dazzle response are absent in the affected eye. Tonometry reveals an intra-ocular pressure of 48mmHg. Discuss your approach to this case and the management options that are available to treat this patient. You must include an explanation of the mechanism of action of each treatment option.
Candidates are required to attempt **ALL 15** questions on this paper, and only short answers are required. The use of simple labelled diagrams is encouraged.

Allow 8 minutes per question.

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1. **List** the main anatomical features contributing to transparency in:
   a. The cornea.
   b. The lens.
   c. The vitreous.

2. Write **brief notes** on congenital abnormalities of the canine lens.

3. Using a table, **compare and contrast the physiological features of rod and cone photoreceptors in dogs**. State **how the differences in their physiology influence rod and cone function**.

4. Make **brief notes** on the structure and function of the tapetum lucidum in mammalian species.

5. Write **short notes** on topical non-steroidal anti-inflammatory drugs (NSAID’s) available for ocular use.

6. Describe, **using diagrams**, the ultrasonographic appearance(s) of the following:
   a. Retinal detachment in a dog.
   b. Mature diabetic cataract in a dog.
   c. Vitreal haemorrhage in a cat.
   d. Optic neuritis in a dog.

P.T.O. for Questions 7 - 15
7. Write **short notes** on the following antibacterial agents for topical ocular use:
   
   a. Neomycin  
   b. Chloramphenicol  
   c. Fluoroquinolones

8. Write **brief notes** on age-related cataract in dogs.

9. **Using a table, list FOUR techniques used for imaging the canine orbit and indicate the limitations and advantages of each technique in the investigation of retrobulbar disease.**

10. Make **short notes** on the aetiology of:

    a. corneal lipidosis  
    b. corneal calcification.

11. **What suture needle type would you recommend for corneal microsurgery? Explain your choice.**

12. **List the possible post-operative complications of phacoemulsification cataract surgery.**

13. **List the causes of blepharoconjunctivitis in the rabbit. Indicate aetiology, diagnosis, treatment and prognosis.**

14. a. **Briefly describe the common causes of ulcerative keratitis in the horse.**  
    b. **List the possible sequelae of ulcerative keratitis in the horse.**

15. **In short note form, describe the aetiopathogenesis and funduscopic appearance of the following conditions:**

    a. Equine motor neuron disease.  
    b. Equine ‘senile’ retinopathy.  
    c. Bright blindness in sheep.  
    d. Hypovitaminosis A in growing cattle.
Candidates are required to answer **THREE** questions out of the following **FIVE** questions on this paper. The use of simple labelled diagrams is encouraged.

Allow 40 minutes per question.

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

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1. **Using an annotated diagram**, describe the lifecycle of *Toxoplasma gondii*. How does this organism cause uveitis in neonatal and adult cats? **Discuss** the difficulties in reaching a clinical diagnosis of toxoplasmosis in a cat presented with bilateral anterior uveitis.

2. **Describe** the disorders of the vitreous in the dog and make notes on their clinical significance. Include in your answer those other ophthalmic disorders that may have a vitreal abnormality associated with the condition.

3. **Discuss**, with the aid of diagrams, the anatomy of the equine irido-corneal drainage. **Describe** aqueous outflow in this species.

   **Briefly discuss** the aetiology, diagnosis, treatment options and prognosis for glaucoma in the horse.

4. **List FOUR infectious causes of ocular disease in cattle. In each case, discuss their epidemiology, aetiology, clinical signs, diagnosis, treatment and control.**

5. **With the aid of diagrams**, describe the main surgical options available to correct lateral canthal instability/laxity contributing to entropion in large breed dogs.
candidates are required to attempt all 15 questions on this paper, and only short answers are required. The use of simple labelled diagrams is encouraged.

Allow 8 minutes per question.

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1. Write short notes on the following agents for ophthalmic use:
   a. Interferon (topical).
   b. Brinzolamide.
   c. Tissue plasminogen activator (TPA).
   d. Carbomer gel (polyacrylic acid).

2. Define gonioscopy. **Describe** how you would perform this in a dog, horse and cat.

3. What is equine non-ulcerative keratouveitis (NUKU)? **Briefly outline** the aetiology, pathogenesis and treatment of this condition.

4. **List four** causes of infectious ocular disease in the sheep. For each condition describe the ophthalmic abnormalities usually encountered and indicate your treatment choice.

5. **List** the possible causes of bilateral sudden onset blindness in a 10 year-old West Highland White Terrier.

6. **Compare and contrast** two different methods of enucleation for the cat. **List** the complications of enucleation.

P.T.O. for Questions 7 - 15

7. **Describe** four ocular conditions which are encountered in snakes. For each condition mentioned, **briefly outline** treatment options.

8. **Define** the following terms with respect to location and function:
9. Write **brief notes** on:
   a. Corneal cytology.
   b. Bacteriology of the conjunctival sac.

10. **Describe, with the aid of labelled diagram(s)** corneal wound healing when the wound is one third of the depth of the cornea.

11. **List** the congenital ocular conditions encountered in cattle. For **each** condition indicate the aetiology.

12. A 3 year-old neutered male cross-bred dog returned from Spain with a red eye. **List** the main differential diagnoses relevant to the travel history and indicate for **each** condition the most appropriate diagnostic test(s).

13. **Describe** the clinical presentation of Horner’s syndrome in a horse. **List** **FOUR** possible aetiologies for this condition in this species.

14. **Briefly describe, with the use of diagrams**, the embryology of the canine lens.

15. **Describe, by using a table**, the spectrum of activity, corneal penetration and main ophthalmic indications for the following antibiotics:
   a. Gentamicin.
   b. Ciprofloxacin.
   c. Fusidic acid.
1. **Discuss** canine retinal dysplasia, with reference to aetiology, clinical features, management and prognosis. Include a **list** of the breeds of dog in which this condition is considered inherited in the United Kingdom.

2. **Compare and contrast** **TWO** surgical techniques for replacement of a prolapsed nictitans gland (‘cherry eye’) in a cat. **Describe** the surgical techniques **with the aid of diagrams**.

3. **Discuss** the aetiology, pathogenesis, treatment and prognosis for cataracts in the horse.

4. **Describe** the ocular anatomy in a named raptor, with the aid of annotated diagram(s). **Discuss**, in detail, **TWO** commonly encountered ophthalmic conditions in this species.

5. You are presented with a 10 year-old Boxer dog with a unilateral indolent superficial corneal ulcer. **Describe, with the aid of diagrams**, your approach to the management of this case. Include the various techniques available for treatment, and **briefly discuss** whether you would recommend the same techniques for the treatment of a similar ulcer in a cat.
Candidates are required to attempt ALL 15 questions on this paper, and only short answers are required. The use of simple labelled diagrams is encouraged.

Allow 8 minutes per question.

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

1. With the aid of annotated diagrams, compare the appearance of the normal fundus, including the term for the pattern of the retinal vasculature, in the following THREE species:
   a. Dog.
   b. Rabbit.
   c. Horse.

2. LIST FOUR ocular conditions with TWO important clinical signs for each in the rabbit.

3. LIST the clinical and ophthalmic signs of retinal pigment epithelial dystrophy (RPED), also known as central progressive retinal atrophy (CPRA). Give examples of FOUR breeds of dog in which RPED is considered to be inherited in the United Kingdom.

4. Describe how you would perform pharmacological testing in a four year-old Golden Retriever with unilateral Horner’s syndrome.

5. LIST the ocular signs of acute anterior uveitis in the cow. Give THREE possible causes of infectious bovine uveitis.

P.T.O. for QUESTIONS 6 - 14

6. Write short notes on the following:
   a. Hemeralopia.
   b. Nyctalopia.
   c. PCR (polymerase chain reaction).
7. Describe the components of the normal electroretinogram (ERG) in an adult dog with the aid of a labelled diagram. What ERG result would you expect to find in:
   a. canine SARD (sudden onset retinal degeneration)?
   b. canine optic neuritis (bilateral)?

8. Draw and label ONE diagram to illustrate the nerve pathways for the pupillary light reflex and vision in the cat.

9. Write short notes on the following agents for ophthalmic use:
   a. Sodium hyaluronate (topical and intracameral).
   b. Atropine (topical).
   c. Pilocarpine (topical).
   d. Latanoprost (topical).

10. Briefly describe the mechanism of action of cyclosporine. LIST the clinical benefits of topical cyclosporine for canine ocular surface disease.

11. Briefly describe the ophthalmic manifestations of feline herpesvirus (FHV-1) infection.

12. What is the primary vitreous? LIST the normal and pathological remnants of the canine primary vitreous.

13. By means of annotated diagrams describe the anatomical location of the:
   a. blood-aqueous "barrier" within the anterior uvea.
   b. blood-retinal "barrier".

14. Write brief notes on equine periocular sarcoid. LIST available treatment options.

P.T.O. for QUESTION 15

15. Describe in bullet points how you would perform ocular ultrasound in a conscious dog.

   Draw labelled line diagrams to illustrate the ultrasonographic appearance of the following conditions in a one year-old dog:
   a. A total retinal detachment
   b. An anterior lens luxation
   c. Persistent hyperplastic primary vitreous (PHPV).
Candidates are required to answer THREE questions out of the following FIVE questions on this paper. The use of simple labelled diagrams is encouraged.

Allow 40 minutes per question.

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

1. Compare and contrast the clinical application of anti-inflammatory drugs in veterinary ophthalmology.

2. Describe the management of an axial descemetocoele in a one year-old Pug.

3. A mare from the South of England presents with a unilateral 'melting' ulcer (keratomalacia). Describe the non-surgical management for this case.

4. How would you investigate the aetiology of bilateral hyphaema in a nine year-old German Shepherd dog?

5. A middle-aged cat presents with unilateral exophthalmos. Describe your approach to this case.
Candidates are required to attempt **ALL 15 questions** on this paper, and only short answers are required. The use of simple labeled diagrams is encouraged.

Allow 8 minutes per question.

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1. **List** the uses of both fluorescein and Rose Bengal in veterinary ophthalmology. **Briefly** explain the reasons for their different uses.

2. **Draw and label** a cross-sectional diagram of the canine nictitating membrane (third eyelid).

   What is the embryological tissue(s) of origin for the cornea and the nictitating membrane?

3. You are required to anaesthetise a healthy four year-old Labrador with a descemetocoele for a conjunctival pedicle graft. **List** the specific considerations surrounding the premedication, general anaesthetic and postoperative recovery of your patient.

4. **Briefly describe** the function(s) of the:

   a. retinal ganglion cell
   b. retinal pigment epithelium.

   **List** the conditions in which these structures may be affected in ocular disease in common domestic species.

5. **Describe by means of labeled diagrams** how you might surgically manage upper eyelid agenesis affecting half the eyelid length in an adult domestic short-haired (DSH) cat.

P.T.O. for Questions 6 - 14

6. Write **short notes** on potential ocular manifestations of the following drugs, when administered systemically:

   a. enrofloxacin
   b. sulphonamides.
7. **List** the extraocular muscles and the eyelid muscles in a dog and indicate the nerve supply for **each** muscle.

8. Write **short notes** on the different mechanisms for retinal detachment and give **ONE** example of a clinical condition (in any species) for **each** type.

9. **List** the refractive structures of the mammalian eye.

   Define the following terms:
   
   a. pseudophakia
   b. astigmatism.

10. Write **short notes** on eosinophilic diseases that may affect the eye in common domestic species.

11. Describe, with the aid of a labeled diagram(s), **ONE** regional nerve block frequently used in the management of equine ocular disease.

12. You are asked to examine an owl following a road traffic accident. The owl is alive and appears stable with respect to basic parameters (temperature, pulse and respiratory rate, and body condition).

   a. **List** **FOUR** clinical signs suggestive of ocular trauma.

   b. **Briefly describe** **TWO methods** of mydriasis for this species to facilitate examination of the posterior segment.

13. Write **short notes** on **each** of the following:

   a. Marcus Gunn pupil
   b. Esotropia.

14. Use a **table** to compare and contrast the aetiology, clinical signs, management and prognosis of corneal stromal abscess in the cow and the horse.

   **P.T.O. for Question 15**

15. **List** the disorders of the canine lens. **Draw and label a simple line diagram** to demonstrate how slit-lamp biomicroscopy assists in the diagnosis of **ONE** of these conditions.
Candidates are required to answer THREE questions out of the following FIVE questions on this paper. The use of simple labeled diagrams is encouraged.

Allow 40 minutes per question.
Illegible handwriting or failure to answer the questions in the form required may result in examiners being unable to award marks for information which candidates intended to convey.

1. **Compare and contrast** the different types of ocular melanomas in the dog, cat and horse.

2. **With the aid of a labeled diagram**, describe the components of the pre-corneal tear film. **Discuss** both quantitative and qualitative tear film disorders in the dog.

3. **Compare and contrast** squamous cell carcinoma of the third eyelid (nictitating membrane) in the cat, dog, cow and horse.

4. Equine recurrent uveitis (ERU) – is this an immune mediated disease? **Describe** both the medical and surgical management options for ERU, including complications and likely efficacies.

5. A breeder of Golden Retrievers approaches you for advice on inherited eye disease in the breed. **Describe** inherited eye diseases(s) in this breed in the United Kingdom, including any advice for the breeder.
Candidates are required to attempt ALL 15 questions on this paper, and only short answers are required. The use of simple labelled diagrams is encouraged.

Allow 8 minutes per question.

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

1. **List FOUR** breeds of dog predisposed to primary glaucoma in the United Kingdom.

   What tests are available for confirmation of your diagnosis and what equipment is required?

2. **Write short notes** on:
   
   (a) The aetiology and ocular manifestations of bright blindness in sheep.
   
   (b) Lead poisoning in calves.
   
   (c) Ocular manifestations of bovine diarrhoea virus in the bovine.

3. What is sudden acquired retinal degeneration syndrome (SARDS)?

   **List** the clinical signs and **describe** with the aid of **labelled diagrams** how you would confirm your diagnosis.

4. **Write short notes** on the pharmacological properties of the following agents for topical ocular use:

   (a) Ofloxacin
   
   (b) Chloramphenicol
   
   (c) Timolol
   
   (d) Travoprost.

**P.T.O. for Questions 5 – 12**
5. **Compare and contrast** the medical approach to glaucoma in the dog, horse and cat.

6. **List FIVE** conditions that might lead to systemic hyperlipoproteinaemia.
   
   Make **short notes** on **TWO** ocular manifestations of systemic hyperlipoproteinaemia in the dog.

7. **Describe with the aid of an annotated diagram** the neurological pathway associated with Horner’s syndrome.
   
   How can you differentiate the types of Horner’s syndrome in clinical practice?

8. **List** the main causes of uveitis in domestic birds.
   
   OR
   
   Write **short notes** on **TWO** infectious diseases with ocular involvement in chickens.

9. Write **short notes** on the ocular manifestations of feline herpes virus (FHV-1).

10. **List** the breeds of dog in the United Kingdom in which lens luxation is considered hereditary.
    
    **Outline TWO** alternative disease processes which may result in lens luxation/subluxation.

11. Write **short notes** on **FIVE** conditions affecting the equine optic nerve. For any of these **describe** appearance, cause and significance.

12. **Define and describe** the following terms:
    
    (a) Pseudoterygium.
    
    (b) Synophthalmos.
    
    (c) Dermoid.
    
    (d) Rhytidectomy.

   **P.T.O. for Questions 13 – 15**
13. In what situations would an intrascleral prosthesis be indicated?

List the **advantages and disadvantages** of performing this procedure.

14. Write **short notes** on:

   (a) Trigeminal neuropathy in the dog.
   
   (b) Neurogenic control of lacrimation.

15. **Describe with the aid of labelled diagrams**, the funduscopic appearance of:

   (a) Equine senile retinopathy.
   
   (b) Systemic hypertension in the cat.
   
   (c) Geographic retinal dysplasia in the dog.
THE ROYAL COLLEGE OF VETERINARY SURGEONS
CERTIFICATE IN VETERINARY OPHTHALMOLOGY
TUESDAY 21 JULY 2009

PAPER II
(2 hours)

Candidates are required to answer THREE questions out of the following FIVE questions on this paper. The use of simple labeled diagrams is encouraged.

Allow 40 minutes per question.

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

1. The Kennel Club has asked you to advise certain pedigree dog breeders on how to improve the ocular health of TWO specific dog breeds: the Cavalier King Charles spaniel and the English Cocker spaniel.

   Discuss the range of ocular problems commonly encountered and how these might be improved or prevented by selective breeding.

2. A 14 week-old puppy is presented with an acutely painful eye after being scratched by a cat.

   Describe in detail your approach to this case, including any factors which may affect prognosis.

3. Describe with the use of annotated diagrams the development of the bovine lens and the aetiology of cataract in this species.

4. Discuss the applications of lasers in veterinary ophthalmology.

5. Outline your approach to the ophthalmic examination of the horse making special note of anatomical features and examination techniques which are different from the canine patient.