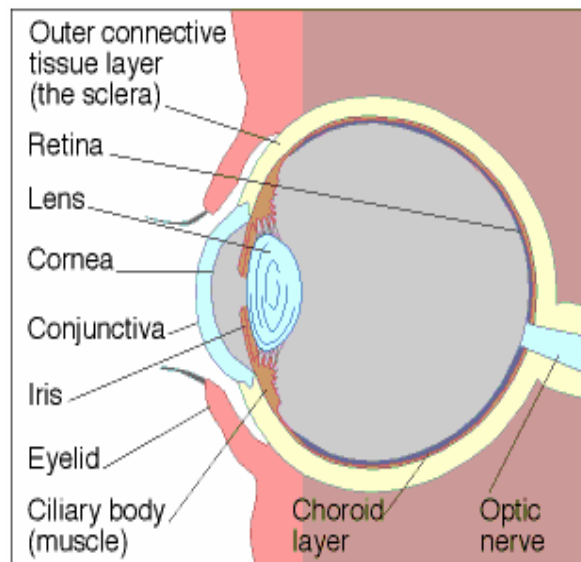


THE EYE

ANATOMY AND PHYSIOLOGY

PHARMACOLOGY

MICROBIOLOGY



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Part 1

ANATOMY AND PHYSIOLOGY

1. With the aid of a diagram, illustrate the prenatal development of the eye.



2. Describe the monthly sequence in the prenatal development of the eye.

3. Name the major artery and vein that supply the eye and its pathway.

4. List the nerves that supply the eye and briefly describe the function of each.

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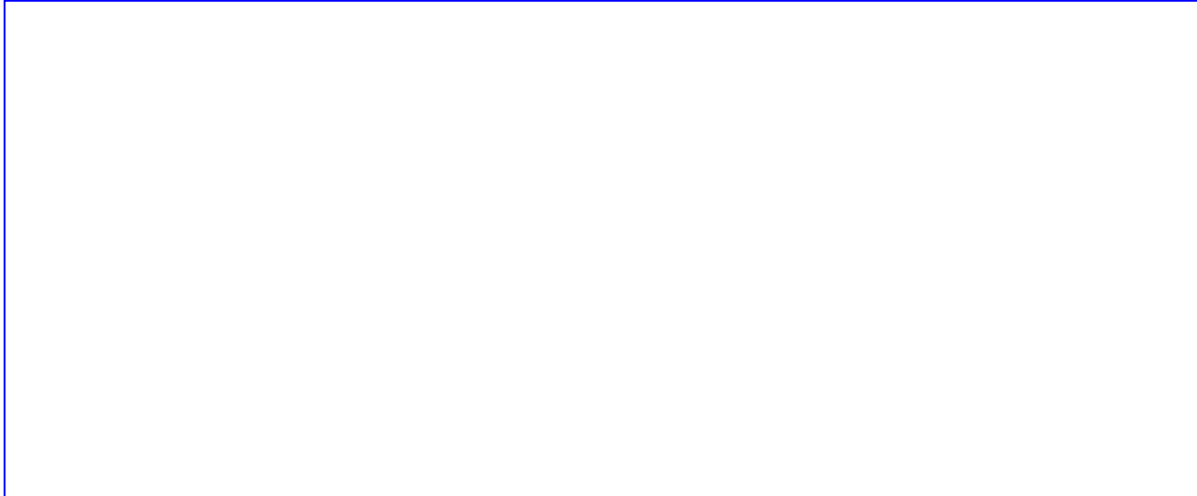
5. Draw a labelled diagram of the eyelid.



6. Describe the structure of the eyelids.

7. What are the functions of the eyelid?

8. Draw a labelled diagram of the lacrimal apparatus indicating how the tears drain away



9. Describe the structure and function of the lacrimal gland.

10. What are the constituents of tears?

11. Briefly describe each layer of the tear film.

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12. What are the functions of tears

13. Describe the structure and function of the conjunctiva.

14. Describe the structure and function of the sclera.

15. Where is the episclera situated?

16. With the aid of a diagram, draw a cross section of the cornea.



17. Describe the structure of the cornea.

18. What are the functions of the cornea?

19. Draw a labelled cross section of the lens.



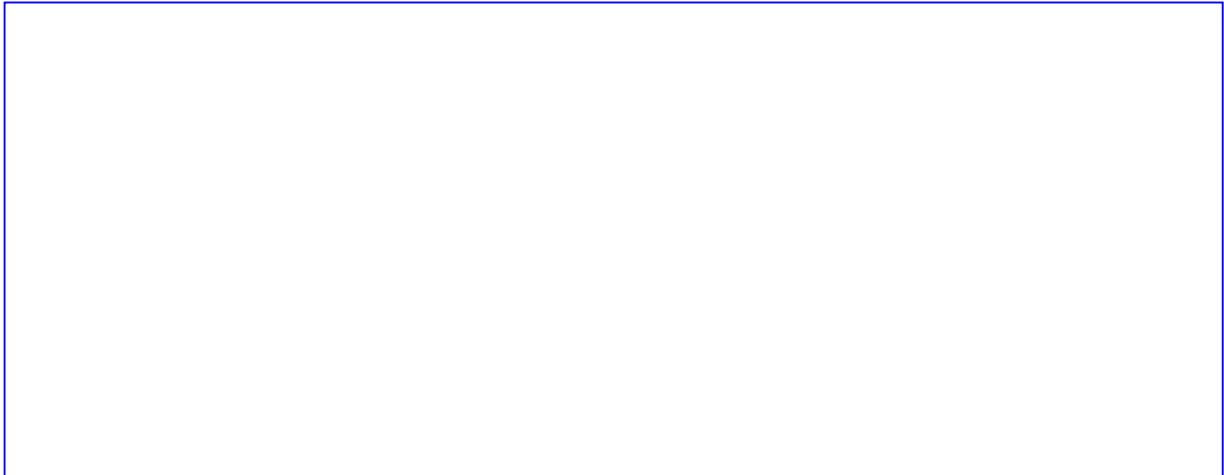
20. Describe the structure of the lens with reference to changes during its development from birth to adulthood.

21. What are the constituents of the lens?

22. Where is the lens situated and how is it attached to the ciliary body?

23. Describe the process of accommodation.

24. Draw a labelled diagram of the anterior chamber and its surrounding structures and indicate the flow of aqueous.



25. What are the constituents of aqueous?

26. Where is aqueous produced and how is it released?

27. Describe the structure and functions of

- The trabecular meshwork -

- The Canal of Schlemm -

28. How is intraocular pressure maintained?

29. What is diurnal variation?

30. What are the three parts of the uveal tract?

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31. Describe the structure and function of the iris.

32. How is the colour of the eye determined?

33. Describe the structure and function of the ciliary body.

34. Describe the structure and function of the choroid.

35. Draw a labelled diagram of the retina.



36. Describe the physiology of the retina.

37. What is the function of;

- Rods

- Cones

38. What is scotopic vision?

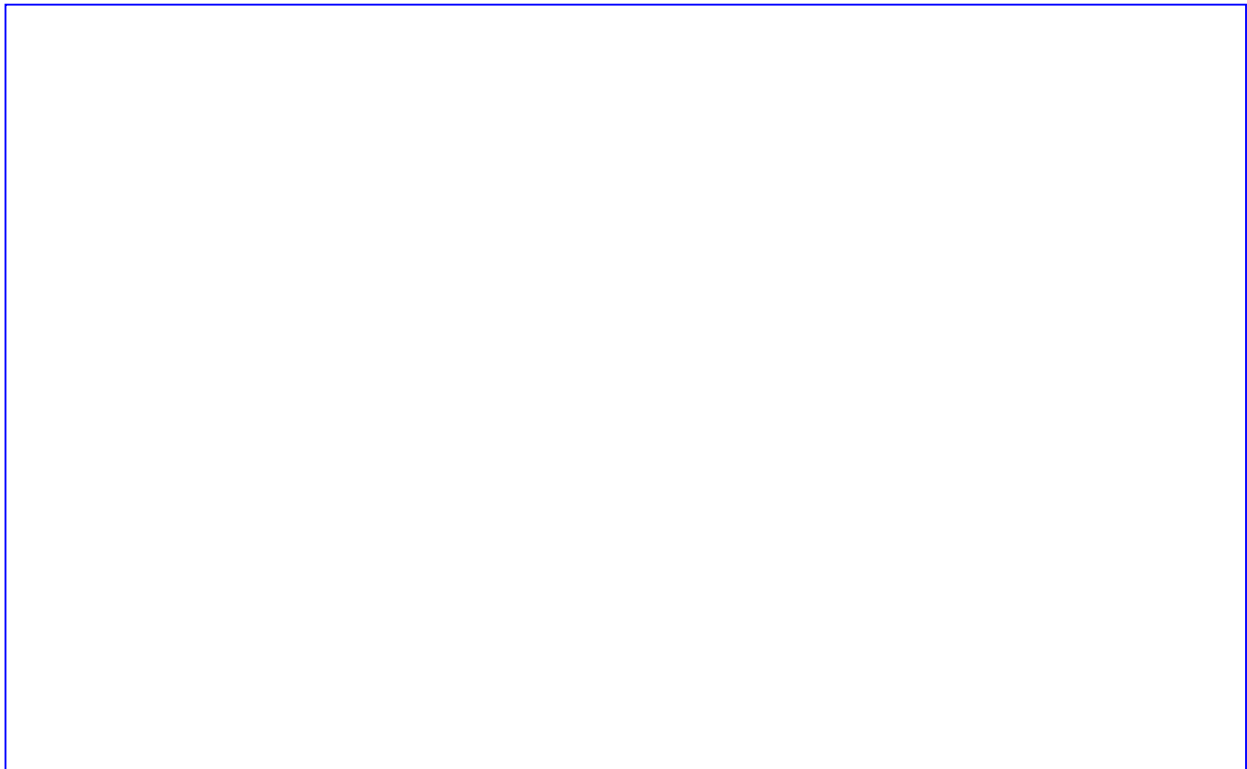
39. What is photopic vision?

40. Describe the structure and function of the macula.

41. What is the 'blind spot'?

42. Describe the function of vitreous.

43. Draw a labelled diagram of the visual pathways.



44. Describe the process of 'seeing'.

45. Seven bones contribute to the orbit. What are they?

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46. Name the openings into the orbit and their function.

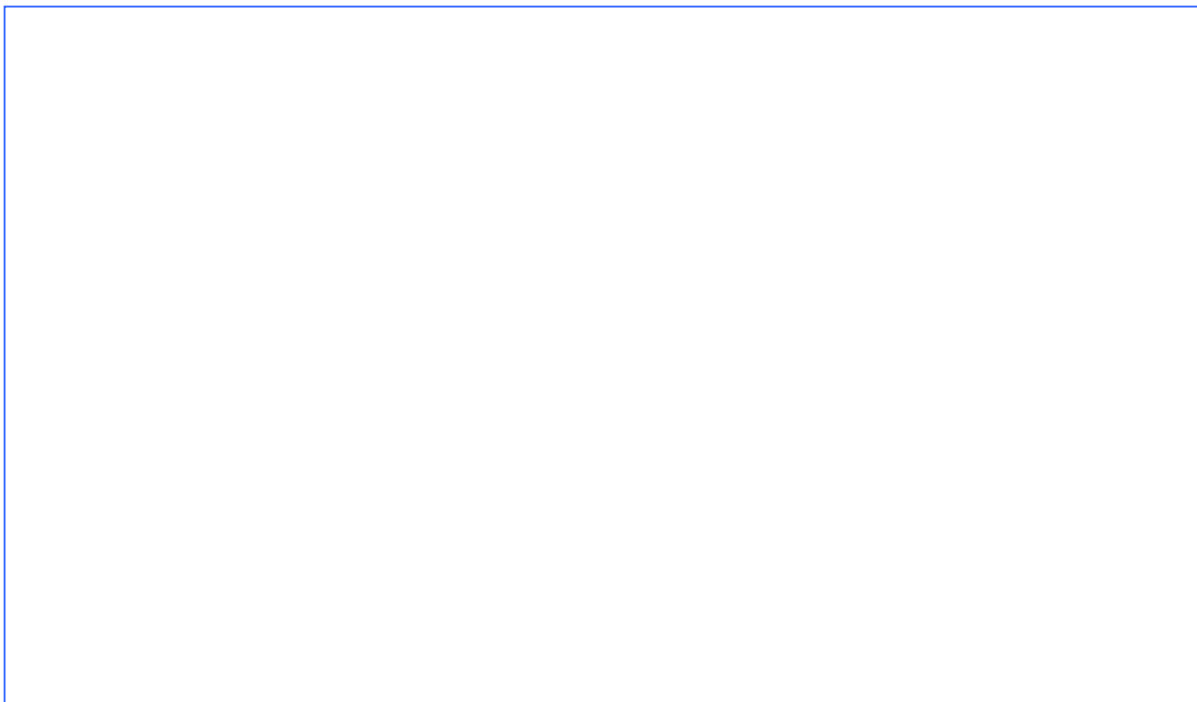
47. What are the contents of the orbit?

48. Where do the extra-ocular muscles originate?

49. What are these muscles called and what are their functions?

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50. Draw a labelled diagram to illustrate the position of the extra-ocular muscles.



Part 2

PHARMACOLOGY

1. Define each of the following means of administering ophthalmic medications

- Topical
- Subconjunctival
- Peribulbar
- Subtenons
- Orbital floor
- Intravitreal

The muscles within the eye are under the control of the autonomic nervous system and are regulated by both parasympathetic and sympathetic nerve endings. The radial muscles in the iris are under the control of.....nerves and stimulation of these nerves can cause the muscles to.....and the pupil to..... The concentric (circular) muscles in the iris contract on stimulation of the parasympathetic nerves and cause the pupil to.....Parasympathetic nerve stimulation causes the ciliary muscles to contract.

It is possible by topical administration of certain drugs, to mimic or block the effect of parasympathetic and sympathetic nerve stimulation and this is utilised in many situations.

2. What is a mydriasis?

3. What is cycloplegia?

4. Describe the action, strengths, side effects and contraindications of the following mydriatics/cycloplegics

- Tropicamide
- Phenylephrine
- Cyclopentolate/mydrilate
- Atropine
- Homatropine
- Adrenaline

5. List the uses for dilating drops.

Glaucoma preparations

6. What is a miotic?

7. Describe the strengths, actions, side effects, contraindications and uses of the following drugs.

- Pilocarpine

- Miochol

Glaucoma is a condition that often requires treatment with drops for the patients' lifetime.

8. Identify and list the glaucoma preparations currently used in your department.

9. For each of the glaucoma preparations identified, describe the action, side effects and contraindications.

10. Describe the action of a carbonic anhydrase inhibitor and give 2 examples.

11. What difficulties can arise from using a beta-blocker eye drop in the treatment of glaucoma?

Patient compliance with treatment is an important factor in the treatment of glaucoma.

12. Name two combination drops and two drops instilled just once a day that may help with compliance issues.

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13. What other preparations may be used if the intraocular pressure remains high in acute glaucoma?

Antibiotics

These are chemical substances produced by microorganisms, which have the capacity in dilute form, to inhibit the growth of or to destroy other organisms ie. They have a bacteriostatic and bacteriocidal action. Their variation of activity is known as the antibiotic spectrum and organisms can be either sensitive or resistant to antibiotics.

14. Describe the action, side effects, contraindications and uses of following commonly used antibiotics.

- Chloramphenicol
- Exocin
- Cefuroxime
- Fucithalamic
- Gentamycin
- Tetracycline
- Vancomycin

- Ciprofloxacin (Ciloxan)
- Brolene (Propamidine isethionate)

15. List any other antibiotics in use within your area of work.

16. What is the other name for acyclovir?

17. Describe its uses and the methods of administration.

Corticosteroids

Adrenal steroids are the hormones produced by the cortex of the adrenal glands. There are many of these compounds and they all exert a profound influence on the body as a whole. Steroids do not cure anything, but if a disease is of short duration, they hasten the process. Steroids inhibit the inflammatory response but should be used with caution where infection is suspected or corneal ulceration is present. Steroids can either be taken orally for conditions indirectly affecting the eye or applied topically within ophthalmology for anterior segment conditions.

18. What are the side effects of steroids?

19. Describe the investigations and their frequency that need to be performed if a patient is undergoing steroid therapy.

20. When and why is a chest X-ray required?

21. Describe the risks of steroid therapy in the eye.

22. Name the ophthalmic preparations of steroids.

23. List their uses within the ophthalmic department.

24. Name the non-steroidal preparations used and describe why they might be used in preference to steroidal preparations.

Local anaesthetics

25. Which is the most commonly used topical anaesthetic used in the ophthalmic department, and why?

26. Name the other commonly used topical anaesthetics.

27. Topical anaesthetics can be used in combination with a stain for measuring intraocular pressure. Which stain is it combined with?

Dry eye therapies

There are many drops available as 'over the counter' medication for the treatment of tear film deficiency. These can be used to replace the natural tear film, which becomes deficient with age, as a result of other eye conditions such as conjunctivitis or as a result of systemic disease such as arthritis. As well as using artificial tear replacements on a regular basis, the patient can also help to keep the eyes comfortable by avoiding highly heated environments and by using humidifiers.

33. List and describe the different artificial tear preparations paying particular attention to its type and related action.

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Miscellaneous

34. What is botulinum toxin?

35. What are its uses in ophthalmology?

36. How must botulinum toxin be disposed of?

37. What are 5FU and Mitomycin C and how are they used in ophthalmology?

38. What are the substances injected into the anterior chamber to protect the posterior surface of the cornea during surgery?

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39. Describe 3 antihistamine preparations that may be used in allergic eye disease.

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40. What is a Patient Group Directive (PGD)? Describe your responsibility in their use.

Part 3

MICROBIOLOGY

5. What is a 'spore'?

6. Define the term 'virus'.

7. Name three viruses that commonly affect the eye.

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8. Define the following terms.

- Saprophytes
- Parasites
- Symbiosis
- Commensalism
- Pathogenicity

9. Name the three sources of transmission of infection.

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10. Name the four modes of entry of infection.

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11. Define the following terms and describe the effects on the eye and the treatments used;

- Chlamydia.

- Acanthamoeba

- HIV and AIDS - cytomegalovirus

12. Describe the following;

- Naturally acquired active immunity.

- Artificially acquired active immunity.

- Naturally acquired passive immunity

- Artificially acquired passive immunity

MAPPING TO KSF OUTLINE
ANATOMY AND PHYSIOLOGY WORKBOOK

Dimension	Level	Indicator/s
C1 Communication	3	Not met in this workbook
C2 Personal and people development	2	C
C3 Health, safety and security	2	A
C4 Service improvement	2	Not met in this workbook
C5 Quality	2	Not met in this workbook
C6 Equality and diversity	2	Not met in this workbook
HWB2 Assessment and care planning to meet health and wellbeing needs	3	D
HWB 5 Provision of care to meet health and wellbeing needs	3	D
HWB7 Interventions and treatments	2	C,D
IK1 Information processing	1	A,B,C
G6 People management	1	Not met in this workbook

