



The Royal Australian and New Zealand College of Ophthalmologists

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OPHTHALMIC BASIC SCIENCE EXAMINATIONS OPTICS 7 August 2007

Duration of paper:	3 hours	Total Marks: 180
Total No. of questions:	18 (10 marks each)	

- ◆ **Candidates must attempt all questions**
- ◆ **Write your answers in the answer pad using CLEAR and LEGIBLE writing, use diagrams and point form where appropriate**
- ◆ **Start a new page for each question, do not write on the reverse of any answer page. Make sure to put your candidate number on each page**
- ◆ **If you cross out an area of your own writing, it will not be considered by the examiners**

Question 1

Explain fluorescence and how it can be applied in ophthalmology.

Question 2

What is meant by the absolute and the relative refractive index? Give examples.

Question 3

Analyse bifocals, multifocals and single vision lenses. What are the advantages of each?

Question 4

Indirect ophthalmoscopy is a very common method used to examine the retina. Explain the optical principles of the viewing system of indirect ophthalmoscopy.

Question 5

What is the electromagnetic theory? Draw and label the electromagnetic spectrum with emphasis on visible light.

Question 6

Explain chromatic aberration? How can it be minimised?

Question 7

What are Purkinje images and their significance?



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Question 8

What is meant by the entrance and exit pupil?

Question 9

Coherence is an important feature of laser light. Summarise the phenomenon of coherence and describe its application in ophthalmology.

Question 10

Use labelled diagrams to illustrate reflection at a convex mirror. What type of image is formed? How is it relevant to ophthalmology?

Question 11

Describe and appraise visual aids that are available for partially sighted patients?

Question 12

Draw and label a simple diagram of the viewing system of a slit lamp.

Question 13

How are prisms used in ophthalmology?

Question 14

Describe the different lasers used in ophthalmology and explain their interaction with ocular tissue.

Question 15

How does a pin hole work? In what circumstances is it most useful?

Question 16

How can lens design minimise aberrations?

Question 17

What is aniseikonia? How can it be managed?

Question 18

Compare and contrast Galilean and Astronomical telescopes.

END OF PAPER