

**FEBRUARY 1999**  
**OPHTHALMOLOGY PAPER 1**

**QUESTION 1**

A 45-year-old male presents with unilateral axial proptosis and is found to have a mass in the supero-temporal region of his right orbit. Describe the possible causes, your investigation, and your management.

**QUESTION 2**

Give an account of the ophthalmic manifestations of sexually transmitted diseases. Exclude the acquired immuno-deficiency syndrome (AIDS).

**QUESTION 3**

Give an account of the indications for and the complications of vitreous surgery in diabetic eye disease. Outline the surgical objectives in each instance. Detailed surgical techniques are not required.

**QUESTION 4**

In age-related macular degeneration, what clinical features would prompt you to order a fluorescein angiogram in order to determine whether or not laser treatment would help? What angiographic features would you consider in making a decision for or against laser treatment? Describe your technique of applying laser treatment and any possible complications.

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**OPHTHALMOLOGY – PAPER 2 - PART A**

**QUESTION 1**

Write notes on Brown's syndrome ("superior oblique tendon sheath syndrome").

**QUESTION 2**

Write notes on the clinical findings and management of posterior scleritis in an adult.

**QUESTION 3**

A healthy full-term baby aged one-month is presented to you because one eye has a white pupil. The eye is slightly small. The other eye is completely normal.

Describe your management, most likely diagnosis, and differential diagnosis.

**QUESTION 4**

A thirty year old woman who wants to have refractive surgery comes to ask your advice on whether she should have photo-refractive keratectomy (PRK) or laser in-situ keratomileusis (LASIK). Her refraction is -8 diopters myopia in both eyes and her eyes are otherwise healthy.

Give your recommendation on which method she should have and your reasons. List the possible post-operative complications.

**QUESTION 5**

Figure 1 is a photograph of the right fundus in a 35-year-old woman who had noticed blurred vision in both eyes over the past two weeks. The right fundus appeared similar. Vision was 6/18 in both eyes.

- 1) Describe the features in the colour photograph.
- 2) What is the most likely diagnosis?
- 3) In what particular settings could this condition occur in this particular patient?

### QUESTION 6

The patient whose fundus is photographed in figure 2 complained of distortion from the time of a cataract and intra-ocular lens operation 8 weeks previously. The vision in the eye is 6/9.

- 1) Describe the abnormalities seen on the colour photograph (figure 2).
- 2) Describe the abnormality seen in the fluorescein (figure 2b).
- 3) What is the most likely diagnosis?
- 4) If you had seen the patient one-week after surgery what would have been the appearance in the fundus and on the angiogram of the abnormality which is now present?

### QUESTION 7

This 71-year-old patient with chronic open angle glaucoma had four visual fields done between February 1993 and March 1996. There are three sheets:

- (1) the full print-out of the central 30-2 threshold test in February 1993;
- (2) the glaucoma change probability with follow-up of all four fields;
- (3) a box plot of the four fields together with short-term fluctuation, mean deviation, pattern standard deviation, and corrected pattern standard deviation.

**Answer all four questions.**

- 1) In the full print-out of the February 1993 field, describe what tells you whether the patient is a reliable field subject.
- 2) What are the significant differences between the field of February 1993 and March 1996?
- 3) On sheet 3, what is the significance of the longer box plot tails in the last two fields?
- 4) What additional information does sheet 3 give you in regards to the clinical significance of the field changes between February 1993 and March 1996?

### QUESTION 8

The photographs in this question are of a four-year-old girl who presented with a left esotropia for the preceding four months.

Photograph No. 1 shows her fixating on a distant target. The esotropia was the same for near fixation and her ocular movements were full.

The following three photographs (Photographs Nos. 2 to 4) show her wearing glasses.

- 1) What is the diagnosis?
- 2a) Why is she wearing the bifocals and not single vision glasses?
- 2b) How is this demonstrated in the photographs?
- 3) What two other obligations do you have in the management?

### QUESTION 9

Discuss the clinical features and the mode of inheritance of Leber's hereditary optic neuropathy.

### QUESTION 10

Describe the symptoms and signs of trachoma, and include a grading. Omit epidemiology and treatment.

**PATHOLOGY**

**QUESTION 1**

Posterior capsule opacification (PCO) occurs in up to 50% of patients within 5 years of extracapsular cataract extraction surgery (ECCE).

- a) What is the pathophysiology of this opacification?
- b) With respect to the mechanisms of development of PCO, discuss five factors/ techniques in clinical and experimental studies used to prevent or reduce the occurrence of PCO and discuss how they act to do so.

**QUESTION 2**

Central retinal vein occlusion (CRVO) is uncommon in younger patients (less than 50 years).

- a) List five factors associated with CRVO in this younger age group including a recently described inherited condition.
- b) Describe the histopathology of early stage CRVO - both ischaemic and nonischaemic types and of late stage CRVO including the use of any special stains.

**QUESTION 3**

A 63 year old woman presented with a two day history of foreign body sensation under the left upper lid, L lid swelling and red left eye. On examination, she was afebrile, with swollen left lids, chemosis, ptosis and limited extraocular movements in all gazes. Investigations included ESR of 66mm, CRP 24 (Normal <10) and normal full blood examination. CT scan of the orbit showed increased reticular markings in the orbital fat with extension into the preseptal region. CT of the paranasal sinuses showed no evidence of sinus disease.

- a) What are the major differential diagnoses and give reasons favouring each of these diagnoses? Intravenous antibiotics were given for 48 hours, but the chemosis and proptosis increased. An orbital biopsy was performed on day 6 after presentation. Describe the most likely pathological findings in this patient and discuss the spectrum of histopathological features in this disorder.

**QUESTION 4**

- a) Discuss the application of impression cytology in ophthalmology including brief notes on the cytological findings in three specific disorders.
- b) Discuss the technique including special points of technical importance in obtaining an optimal specimen.

**QUESTION 5**

A 19-year-old non-smoking male presented with a one-month history of painless blurring of vision in the L eye, which progressed to very severe visual loss in the one week prior to presentation. He also complained at that time of very recent onset of blurring in the R eye. His family history included a maternal grandmother who lost vision of the age of 40 years. On examination, visual acuity was count fingers on the left and 6/9 on the right. A left afferent pupillary defect was noted and Ishihara plates were correctly identified in 15/17 on the right. Bilateral disc swelling and telangiectatic vessels were noted at the disc. Intraocular pressures were 12 and 12. ESR was 2mm, CT of brain and orbit was unremarkable.

- a) What is the most likely diagnosis?
- b) What further investigations would you perform to confirm this diagnosis?
- c) Discuss the molecular genetic findings relevant to this disorder and their influence on the occurrence of clinical disease.

Describe the major histopathological changes, which would be seen in the eye at autopsy at age 60years in this man.

### QUESTION 6

Write short notes on proliferative vitreoretinopathy (PVR) with reference to:

- a) risk factors for PVR following repair of retinal detachment.
- b) pathophysiology of development of PVR.
- c) brief description of histopathological findings in posterior segment in a globe removed after failed retinal detachment repair.

### QUESTION 7

- a) Outline the major histopathological findings including use of any special stains in a corneal button with keratoconus removed:
  - i) because contact lens failed to provide sufficient visual rehabilitation
  - ii) in a patient who has had an episode of hydrops.
- b) List three systemic and three ocular disorders associated with keratoconus.
- c) Discuss the role of genetic factors in the etiology of Keratoconus including any proposed candidate genes.

### QUESTION 8

Pseudoexfoliation syndrome is not only an ocular disease but also a generalised disorder.

- a) List the pathological changes and complications in the eye including a discussion of the clinicopathological correlation leading to these complications.

In what other tissues is the PEX material found?

### QUESTION 9

Compare and contrast the pathology of trabeculectomy surgery in a successful procedure compared to one that has failed. Include comment about the variations of trabeculectomy surgery and influence on the pathology.

### QUESTION 10

Discuss the pathology of wound healing after a medial rectus recession of 5mm.

### QUESTION 11

For ocular infection with toxoplasmosis:

- a) Discuss the life cycle of this organism.
- b) Discuss the pathology of acute ocular infection.
- c) Discuss the pathology of chronically quiescent disease.

### QUESTION 12

A patient presents with acute bacterial endophthalmitis ten days after cataract surgery.

- a) List two proven risk factors and briefly discuss their pathophysiological mechanisms.
- b) Discuss the histopathology of this acute case at presentation.
- c) Discuss the possible histopathological findings three months later.