

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (OPHTHALMOLOGY) OPHTHALMIC BASIC SCIENCES
EXAMINATION – JUNE 2026

Date: 25th June 2026

Time: 1.00 p.m. – 2.30 p.m.

STRUCTURED ESSAY PAPER I

Answer all three (03) questions.

Answer each question in a separate book (Question 1,2, 3.1 and 3.2)

1. A ten-year-old child is referred for evaluation of unequal pupils after head injury following blunt-trauma. There is no direct impact on the eye. Patient is having semi-dilated pupil in the right side with intact consensual light reflex. No iris sphincter tears or synechiae formation. Visual acuity and fundus examination are normal.
 - 1.1. Describe how the parasympathetic nerve fibres reach the pupil with relevant anatomy (40%)
 - 1.2. Describe the pathway of distribution of post-ganglionic **sympathetic** fibres to the dilator pupillae (40%)
 - 1.3. List the possible sites where the relevant cranial nerve fibres get affected in the above patient (20%)
2.
 - 2.1. Briefly describe the anatomy(including microscopic anatomy) of the cornea (50%)
 - 2.2. Outline the anatomical basis of corneal transparency (20%)
 - 2.3. Write short notes on the development of cornea (30%)

Contd..../2-

3.1. A 55-year-old woman presents with progressive proptosis and conjunctival congestion. A carotid-cavernous fistula is suspected. Digital Subtraction Angiography (DSA) using iodinated contrast medium is planned. She has diabetes mellitus and mild renal impairment (eGFR 50 mL/min/1.73 m²).

3.1.1. List two (02) other radiological investigations that can be used to evaluate this patient.

(10 %)

3.1.2. Discuss the advantages and limitations of DSA in the diagnosis and management of carotid- cavernous fistula.

(25 %)

3.1.3. List five (05) adverse effects of iodinated contrast media that may occur during DSA.

(15 %)

3.2. A 28-year-old man is diagnosed to have a retinal detachment. He has high myopia since childhood. His father, paternal uncle and brother also have high myopia. The family is suspected of having Stickler syndrome, a genetic disorder associated with ocular and extra ocular features including dysmorphic features, cleft palate, deafness and arthropathy.

3.2.1. Giving reasons for your answer, state the most likely pattern of inheritance Stickler syndrome

(10 %)

3.2.2. Outline the broad approach taken to establishing a diagnosis of Stickler syndrome in this family

(15 %)

3.2.3. List the molecular diagnostic methods available for confirmation of the diagnosis, briefly outlining the reasons for choosing each one

(15 %)

3.2.4. Briefly discuss genetic testing of a child at risk of Stickler syndrome

(10 %)

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Date: 25th June 2026

Time: 3.00 p.m. – 4.30 p.m.

STRUCTURED ESSAY PAPER II

Answer all three (03) questions.

Answer each question in a separate book (Question 1, 2, 3.1 and 3.2)

1. A 12-year-old child with intermittent exotropia is being assessed for binocular visual function.
 - 1.1. Define binocular single vision (BSV) (20%)
 - 1.2. What are the prerequisites for BSV. (30%)
 - 1.3. What are the clinical tests used to assess BSV. (10%)
 - 1.4. What is the physiological basis of stereopsis (depth perception). (30%)
 - 1.5. What are the clinical tests used to assess Stereopsis. (10%)

2. Write short notes on
 - 2.1. saccades (25%)
 - 2.2. smooth pursuit (25%)
 - 2.3. vergence movements (25%)
 - 2.4. vestibulo- ocular reflex (25%)

Contd...../2-

3.1. A study was conducted to assess the impact of an intervention on vision-related quality of life among older persons. For this purpose, two villages were randomly allocated to either receive a community-based eye health promotion programme or usual care. Vision-related quality of life was assessed 4 weeks after the intervention using a self-administered questionnaire.

- 3.1.1. Describe the study design. (10%)
- 3.1.2. State one (01) strength of the sampling method used in this study. (05%)
- 3.1.3. Comment on possible measurement errors in assessing the outcome. (15%)
- 3.1.4. Interpret the following results obtained on quality of life in the two groups at end of 4 weeks. (15%)
- 3.1.5. Name an appropriate data analysis method to control for confounding by age in the results stated in question 3.4. (05%)

Group	Mean score on quality of life*	95% confidence interval
Intervention	70	60-80
Usual care	55	45-65

❖ **Quality of life was assessed using scores ranging from 0-100, with higher scores indicating better quality of life**

3.2. A 45-year-old male manual labourer, employed in a highway road maintenance unit for 10 years, presents with 4-month history of gradually enlarging lesion on the lateral aspect of his right conjunctiva.

On examination a reddish, vascularised, slightly elevated lesion (6 × 4 mm in size) with ill-defined borders is noted on the temporal limbus of the right eye.

- 3.2.1. List five (5) **differential diagnoses** for this lesion. (12.5%)
- 3.2.2. State the specific **laboratory investigations** required to establish a definitive diagnosis. (10%)
- 3.2.3. Outline the standard protocol for **handling and transporting the samples** obtained. (20%)
- 3.2.4. Identify **specialized diagnostic tests** (beyond routine histopathology) that can help to confirm or exclude your differentials, providing clinical rationale for each. (7.5%)