

International Council of Ophthalmology
International Ophthalmology Examinations
Basic Sciences Sample Questions

Basic Science subjects related to Ophthalmology

Numbers of questions in each group

i)	Anatomy of the Eye, the Orbit and related structures	15
ii)	Embryology and Development	6
iii)	Neuro-Anatomy	10
iv)	Principles of General Physiology	6
v)	Vision, Ocular Physiology, Biochemistry and Cell Biology	13
vi)	Pharmacology	10
vii)	Epidemiology and Statistics	3
viii)	Genetics	7
ix)	Pathology and Micro-biology	5 + 5
x)	Optics and Refraction	<u>10+10</u>

Do not forget to mark your answers clearly with a HORIZONTAL line:-[-] in the correct box: T for True and F for False.

Oblique [/], even slightly oblique, or faint [-] lines will not be marked.

You do not HAVE to answer all the questions to pass the examination. Obviously, however, it helps!

There are no "trick" questions. If you do not understand the question you may ask the invigilator who may (but cannot guarantee to) be able to help you.

The ICO Examinations are difficult to pass. We try as far as possible to make them fair for candidates in every country and we welcome suggestions from anyone and contributions of questions from Co-ordinators.

No one passes the Examinations without being sufficiently prepared!

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Question Formats

The formats vary, here are some examples. It is VITAL to read the questions very carefully

1.

Concerning β -blockers (Beta Blockers), which of the following statements is True and which are False?

	True	False
a. Betaxolol is a selective β_1 - receptor blocker.	[—]	[]

- b. β -blockers increase awareness of hypoglycaemia. [] [—]
- c. Selective β_1 -antagonists have no effect on the bronchial tree. [] [—]
- d. Overdose is treated with intravenous glucagons. [] [—]
- e. β -blocker eye drops can safely be used for infants. [] [—]

2.

When light passes from one medium to another with a different refractive index, which of the following may occur?

- a. Diffraction. \ False
- b. Reflection. \ True
- c. Refraction. \ True
- d. Interference. \ True
- e. Polarisation. \ True

Questions can occasionally contain all True or all False answers but the overall number of True and False Questions is equal.

For the following questions, you have to make up your own mind

Read carefully,
mark True or False
look up the question on the web or in a book!

3.

Concerning Acetazolamide, which of the following statements are True and which are False?

- a. It should not be taken by individuals with Sickle Cell anaemia.
- b. It may cause peripheral parasthesiae.
- c. It can cause metabolic alkalosis.
- d. It enhances the conversion of bicarbonate (HCO_3^-) to water and carbon dioxide.
- e. To reduce aqueous flow, 99% of ciliary body carbonic anhydrase must be inhibited.

4.

A patient with a corneal scar has 0.30 LogMAR (6/12, 20/40, 0.50) visual acuity after best refractive correction. With a stenopaic aperture ('pinhole') his vision is 0.10 LogMAR (6/7.5, 20/25, 0.80). Which of the following could be an explanation?

- a. Spherical aberration.
- b. Myopic astigmatism.
- c. Irregular astigmatism.
- d. Simulation.
- e. Image degradation.

Note: Visual Acuities are shown as LogMAR, followed, in brackets, by the Snellen Metric, Snellen Imperial and Decimal notations

5.

Regarding the lateral ventricles, which of the following are True and which are False?

- a. They are separated from each other anteriorly by the septum pellucidum.
- b. Posterior horns extend into the temporal and occipital lobes of the hemispheres.
- c. They are limited inferiorly by the corpus callosum.
- d. The optic radiation passes between their central part and inferior horn.
- e. They communicate with the third ventricle via the aqueduct of Sylvius.

5.

Regarding the Meibomian glands of the eyelid, which of the following statements are true and which are false?

- a. They are exocrine.
- b. They number more in the upper than the lower lids.
- c. They are holocrine.
- d. They lie immediately posterior to the tarsal plate.
- e. They deliver meibomian oil to the margin of the lid.

7.

Neural Crest Cells contribute significantly to the development of which of the following?

- a. The lens.
- b. The corneal stroma.
- c. The lens zonules.
- d. The posterior pigment layer of the Iris.
- e. The ciliary body.

8.

Which of the following are branches of the maxillary division of the trigeminal nerve?

- a. The Nasociliary nerve.
- b. The Frontal nerve.
- c. The Infraorbital nerve.
- d. The Lacrimal nerve.
- e. The Zygomatic nerve.

9.

Concerning Oxytocin, which of the following statements are True and which are False?

- a. It is released by depolarisation of nerve terminals from the hypothalamus.
- b. It is produced in the hypothalamus.
- c. It is a steroid hormone.
- d. It stimulates contractions of the pregnant uterus.
- e. It does not cross the blood-brain barrier.

10.

The eye is resistant to infections due to which of the following?

- a. Exposure to low amounts of pathogenic micro-organisms.
- b. The presence of Lactoferrin in tears.
- c. Ciliated conjunctival epithelium which entraps particles.
- d. The presence of low levels of glucose in the tears.
- e. Lysozyme in the tear film.

11.

Which of the following drugs inhibit the actions of cholinesterase?

- a. Edrophonium chloride.
- b. Neostigmine.
- c. Pilocarpine.
- d. Physostigmine.
- e. Echothiophate.

12.

Regarding a prospective cohort study, which of the following statements are true and which are false?

- a. It may have invalid estimates due to loss to follow up.
- b. It has greater ascertainment bias than other study designs.
- c. It is the method of choice for an observational study.
- d. It allows direct measurement of disease in the exposed and unexposed groups.
- e. It can examine multiple effects to a single exposure.

13.

Concerning gene therapy, which of the following statements are true and which are false?

- a. Liposomes can deliver large genes into cells.
- b. It has been shown to modify retinal dystrophy in humans.
- c. It can be delivered by an adenovirus vector.
- d. It is an effective treatment for Cystic Fibrosis.
- e. Germ cell gene therapy is widely accepted ethically.

14.

The following organisms are Gram negative:

- a. Propionobacterium.
- b. Pseudomonas aeruginosa.
- c. Treponema pallidum.
- d. Neisseria gonorrhoeae.
- e. Pneumococcus.

15.

With regard to the spread of malignant tumours, which of the following statements are true and which are false?

- a. Lymph Node enlargement near a tumour usually means dissemination of primary cancer.
- b. Basal cell carcinomas do not usually metastasise.
- c. Malignant uveal melanomas metastasise via lymphatics.
- d. Sarcomas spread more frequently via the blood than the lymphatics.
- e. Carcinomas generally spread to regional lymph nodes.