

Answer the following questions

- 1- Duochrome test
- 2- Irregular astigmatism
- 3- Bifocal lenses

Choose the best answer from the following

1- Diffraction

- a- Is a property of particles
- b- Increase when a wave front is projected through a large opening
- c- Refers to the interference of secondary waves formed at the edge of the aperture with the main wavefront
- d- Does not occur through a small lens
- e- Can not limit the visual acuity obtained by a pinhole

2- Near visual acuity is tested using

- a- Reduced Snellen's
- b- Cambridge chart
- c- Worth's four-dot test
- d- Jaeger's test type
- e- Frisby test

3- Regarding IOL calculation

- a- SRK(T) formula is not suitable for eyes having an axial length of 25 mm or more
- b- SRK formula is used to calculate the IOL power
- c- SRK formula has A, B, and C constants which are usually 118.5, 0.9, and 2.5 respectively
- d- The D constant which is always 1.25 may be used to calculate refractive states other than emmetropia
- e- The SRK formula is accurate for a very small range of axial lengths

4- Problems associated with aphakia correction with glasses include

- a- Chromatic aberration
- b- Misjudging of the distances due to anisokonia
- c- Reduced performance in visual acuity testing
- d- Central scotoma
- e- Can't be corrected with contact lens

5- When prescribing spectacles

- a- It is not necessary to note the back-vertex distance unless the prescription is above 8D
- b- The optical centers of spectacle lenses should always be at the patient interpupillary distance
- c- A maximum of 2 D of anisometropia can be tolerated
- d- Plastic lenses are the choice for children
- e- Glass lenses are always heavier than plastic lenses of the same power

6- Regarding refraction of the children

- a- Performing refraction in dark room don't eliminate the need for cycloplegia
- b- In high myopia a full correction is well tolerated by children
- c- It is always necessary to deduct 1 D to compensate for cycloplegia
- d- Myopia should be always corrected in the presence of large exophoria or exotropia
- e- Uncorrected anisometropic hypermetropia results in amblyopia in the less hypermetropic eye.

7- When using indirect ophthalmoscope

- a- The field of illumination is largest in the hypermetropic eyes
- b- The pupil size of the subject has no effect on the field of illumination in emmetropic eyes
- c- Light from a point at the pupillary plane of the subject is focused by the condensing lens on the pupillary plane of the examiner
- d- The image seen is laterally but not vertically inverted
- e- The field of view is larger up to 2 times only that of direct ophthalmoscope

8- The following instruments uses the catoptric images except

- a- Placido disc
- b- Javal shiotz keratometry
- c- Corneal topography
- d- Specular microscopy
- e- Pachymetry

9- Spherical aberration of the eye

- a- Is increased by the pinhole aperture
- b- Contributes to night myopia
- c- It affects the central more than the peripheral field
- d- Pupil dilatation decreases it significantly
- e- Aspheric surface of the cornea usually increases it in elderly patient

10- Colour vision may be tested using the following test

- a- Kay charts
- b- TNO test
- c- Frisby test
- d- The fransworth 100 hue test
- e- The Spiza bar

11- With the rule astigmatism

- a- Is correctable by a plus sphere at 90 degree
- b- Is correctable by minus cylinder with the axis at 90 degree

- c- Is more common in children and young adults
- d- Is a form of oblique astigmatism
- e- Is usually seen in keratoconus patients

12- The total amount of accommodation needed to focus on a subject at 25 cm is

- a- In -1 D myopic subject it is 2.5 D
- b- In an emmetropic subject it is 25 D
- c- In +4 D hypermetropic subject it is 0 D
- d- In -4 D myopic subject it is 0 D
- e- In +1 D hypermetropic subject it is 3 D

13- Regarding the cross cylinder

- a- Can be used to refine the spherical power
- b- Can be used even if the approximate refractive error is not known
- c- Is not suitable for refining the cylinder power between 45 and 130 degrees
- d- Is not suitable for refining the cylindrical power between 0 and 45 degrees and between 135 and 180 degrees
- e- Is equivalent to a combination of positive and negative cylinders of opposite powers

14- Regarding the retinoscopy reflex

- a- The reflex is brightest when the refractive error large
- b- The reflex is largest when the refractive error is large
- c- The speed of reflex is fastest when the refractive error is large
- d- The break phenomenon occurs when the cylindrical lens of wrong power
- e- The break phenomenon occurs when the cylindrical lens of wrong position to the axis of the error

15- In prescribing prisms for paralytic squint

- a- It has no role in eliminating the diplopia
- b- Vertical prisms are better tolerated than horizontal
- c- Base-up prism should be used for hypertropic eye

- d- Even if paralysis is present in one eye, prescription is better to be divided between two eyes
- e- Prescribed prisms for two eyes should be always of the same power



Examination for August Semester
Diploma Degree
Physiology of The Eye

Time allowed: 3 hours
Total marks: 30 marks
All questions to be attempted

A) What is the Physiological basis of the following:

(3 points, 5 marks for each point)

1. Drug permeability across the cornea.
2. Outflow mechanism of Aqueous humor.
3. Grades and advantages of binocular vision.

B) MCQ: Choose only one answer:

(15 points, 1 mark for each point)

- 1) The following is present in higher concentration in the tear than in the serum:
 - a) Sodium
 - b) Potassium
 - c) IgG
 - d) Glucose
- 2) The following fact is true about human tears:
 - a) The pH of tears is 6.0
 - b) The pH of tears is 7.4
 - c) Tears do not contain ammonia
 - d) Tears do not contain albumin

- 3) **Glucose metabolism in the lens principally occurs by:**
- Anaerobic glycolysis
 - Aerobic metabolism
 - Hexose monophosphate shunt
 - Sorbitol pathway
- 4) **When produced, aqueous humor passes out through the membranes of:**
- Trabecular meshwork
 - Corneal endothelial cells
 - Non-pigmented cells of the ciliary body
 - Pigmented cells of the ciliary body
- 5) **The principle of IOP measurement is defined by:**
- Schwalbe's equation
 - Poiseuille's law
 - Imbert-Fick principle
 - Holladay's equation
- 6) **The corneal stroma is mainly composed of:**
- Keratan sulphate
 - Chondroitin sulphate
 - It is acellular
 - Chondroitin phosphate
- 7) **Arrangement of stromal lamellae contributes to corneal transparency can be explained by:**
- Maurice theory
 - Schwalbe's equation
 - Imbert-Fick principle
 - Holladay's equation
- 8) **Which of the following is NOT a function of RPE?**
- Secretion of mucopolysaccharide
 - It plays a role in the embryological development of photoreceptors
 - Absorption of stray light
 - Adherence to other RPE cells via zona adherens to form the blood retinal barrier
- 9) **In phototransduction, activation of rhodopsin occurs via:**
- Isomerization of retinol
 - Glycosylation of transducing
 - Opening of GLUT-1 receptors
 - Unfolding of opsin

- 10) **A number of corresponding points on the retina that projects to a definite single point in space:**
- a) The Auberg phenomenon
 - b) A horopter
 - c) Panum's area
 - d) The Pulfrich phenomenon
- 11) **Which is the minimum threshold of Vernier hyperacuity?**
- a) 1 second of arc
 - b) 10 seconds of arc
 - c) 20 seconds of arc
 - d) 1 minute of arc
- 12) **All of the following are true about amino acids content of the lens except:**
- a) Lens contains all types of amino acids
 - b) Concentration of amino acids are higher than vitreous
 - c) Not affected by aging, fasting or feeding protein-free diet
 - d) Actively transported inside the lens by lens epithelium
- 13) **Which of the following methods can be used to isolate a cone response from the electroretinogram?**
- a) Dim background lightening conditions.
 - b) 50-Hz flicker
 - c) 10- Hz flicker
 - d) Single flash ERG
- 14) **In cortical cataract, there is:**
- a) Increased protein content & increase in water insoluble fraction
 - b) Increased protein content & decrease in water insoluble fraction
 - c) Decreased protein content & increase in water insoluble fraction
 - d) Decreased protein content & decrease in water insoluble fraction
- 15) **Regarding VEP, which of the following statements is NOT accurate?**
- a) VEPs are a measure of the response of the occipital cortex to visual stimulation
 - b) VEPs can be used to assess crossover of visual pathway fibers at the optic chiasm
 - c) An amblyopic eye will usually have an abnormal pattern and flash VEP
 - d) VEPs can be used to approximate the visual acuity

-- Good Luck --



Tanta University
Faculty of Medicine
Ophthalmology Department

Diploma Anatomy Exam
August 2021
Allowed Time: 3 hours

Essay Qs: Please discuss the following: (5 marks each)

- 1-Discuss the gross anatomy of the floor of the orbit
- 2-Discuss the anatomy and embryology of the crystalline lens
- 3-Discuss the anatomy of the cavernous sinus and its applied anatomy

MCQs: Please choose the single best answer: (15 Marks)

- 1- The medial wall of the orbit includes:
 - A. The ethmoid bone, the anterior ethmoidal foramen, the infraorbital foramen
 - B. The lacrimal bone, the superior orbital fissure, the zygomaticotemporal foramen
 - C. Frontoethmoidal suture line, posterior ethmoidal foramen, posterior lacrimal crest
 - D. The lacrimal bone, the anterior lacrimal crest, the supraorbital foramen
- 2- The orbital floor is all **EXCEPT**:
 - A. The longest of all the orbital walls, extending to the orbital apex
 - B. Composed primarily of the maxillary bone
 - C. Composed partially by the zygomatic and palatine bones
 - D. Separated from the lateral wall by the inferior orbital fissure
- 3- The abducent nerve:
 - A. is the most slender cranial nerve
 - B. has its nucleus in the floor of the third ventricle
 - C. contain parasympathetic nerve fibers
 - D. enters the orbit within the tendinous ring
- 4- The parasympathetic nerve fibers to the lacrimal gland travel through the following **EXCEPT**:
 - A. Deep petrosal nerve
 - B. Greater petrosal nerve
 - C. Zygomatic branch of the maxillary nerve
 - D. Zygomaticotemporal nerve
- 5- Which type of epithelium lines the nasolacrimal sac, duct, and canaliculi?
 - A. Stratified squamous epithelium
 - B. Pseudostratified columnar epithelium
 - C. Cuboidal epithelium
 - D. Stratified columnar epithelium with goblet cell overlay
- 6- The Ophthalmic artery is all **EXCEPT**:
 - A. Terminates as the supratrochlear artery
 - B. Crossed over the optic nerve in 85% of individuals
 - C. Gives off the supraorbital artery as its first orbital branch
 - D. Gives off the central retinal artery which crosses under the optic nerve

- Draining the optic nerve:
- A. Optic nerve axons become myelinated at the posterior end of the nerve head.
 - B. Optic nerve axons are myelinated by astrocytes.
 - C. The intracanalicular optic nerve is fixed tightly to the dura.
 - D. The intracranial optic nerve lies in close proximity to the cavernous sinus.
- 8- The order of insertion of the rectus muscles from closest to furthest from the limbus is:
- A. Inferior rectus, superior rectus, medial rectus, lateral rectus
 - B. Medial rectus, lateral rectus, superior rectus, inferior rectus
 - C. Lateral rectus, superior rectus, medial rectus, inferior rectus
 - D. Medial rectus, inferior rectus, lateral rectus, superior rectus
- 9- Regarding the innervation of the iris sphincter pupillae muscle:
- A. Parasympathetic supply is via the short ciliary nerves
 - B. Sympathetic supply is via the short ciliary nerves
 - C. Parasympathetic supply is via the long ciliary nerves
 - D. Sympathetic supply is via the long ciliary nerves
- 10- Which of the following about Muller's muscle of the lid is **NOT TRUE**
- A. It consists of smooth muscle fibers.
 - B. It receives parasympathetic innervation.
 - C. It originates from the levator muscle.
 - D. It attaches to the tarsus.
- 11- The uvea is attached to the sclera at all of the following sites, **EXCEPT**:
- A. Ora serrata
 - B. Vortex veins
 - C. Scleral spur
 - D. Long posterior ciliary vessels
- 12- Which of the following does **NOT** lie in the lateral wall of the cavernous sinus?
- A. Oculomotor nerve
 - B. Trochlear nerve
 - C. Maxillary division of the trigeminal nerve
 - D. Optic nerve
- 13- The following are true about the visual pathway **EXCEPT**:
- A. Most of the visual cortex is on the medial aspect of the occipital lobe
 - B. The posterior cerebral artery supplies the optic radiation and the visual cortex
 - C. The visual fiber synapse in the medial geniculate body
 - D. The superior colliculus transmits fibers responsible for the light reflex
- 14- Regarding the visual pathway, which of the following statements are **TRUE?**
- A. Lesions of the left nasal retina cause homonymous field defects
 - B. Lesions of the optic nerve cause homonymous field defects
 - C. Lesions of the optic chiasm cause homonymous field defects
 - D. Lesions of Meyer's loop in the temporal lobe cause homonymous field defects
- 15- Regarding the layers of the neurosensory retina:
- A. The outer plexiform layer consists of synaptic connections between bipolar, amacrine and ganglion cells
 - B. The inner nuclear layer consists of nuclei of rod and cone cells
 - C. The nerve fiber layer consists of axons of bipolar cells
 - D. The ILM consists of terminations of Muller cells and covering basement membrane

***** Best of wishes *****