

# STRUCTURE AND FUCTION OF EYE

# EYE

Eye is a spherical, fluid filled structure

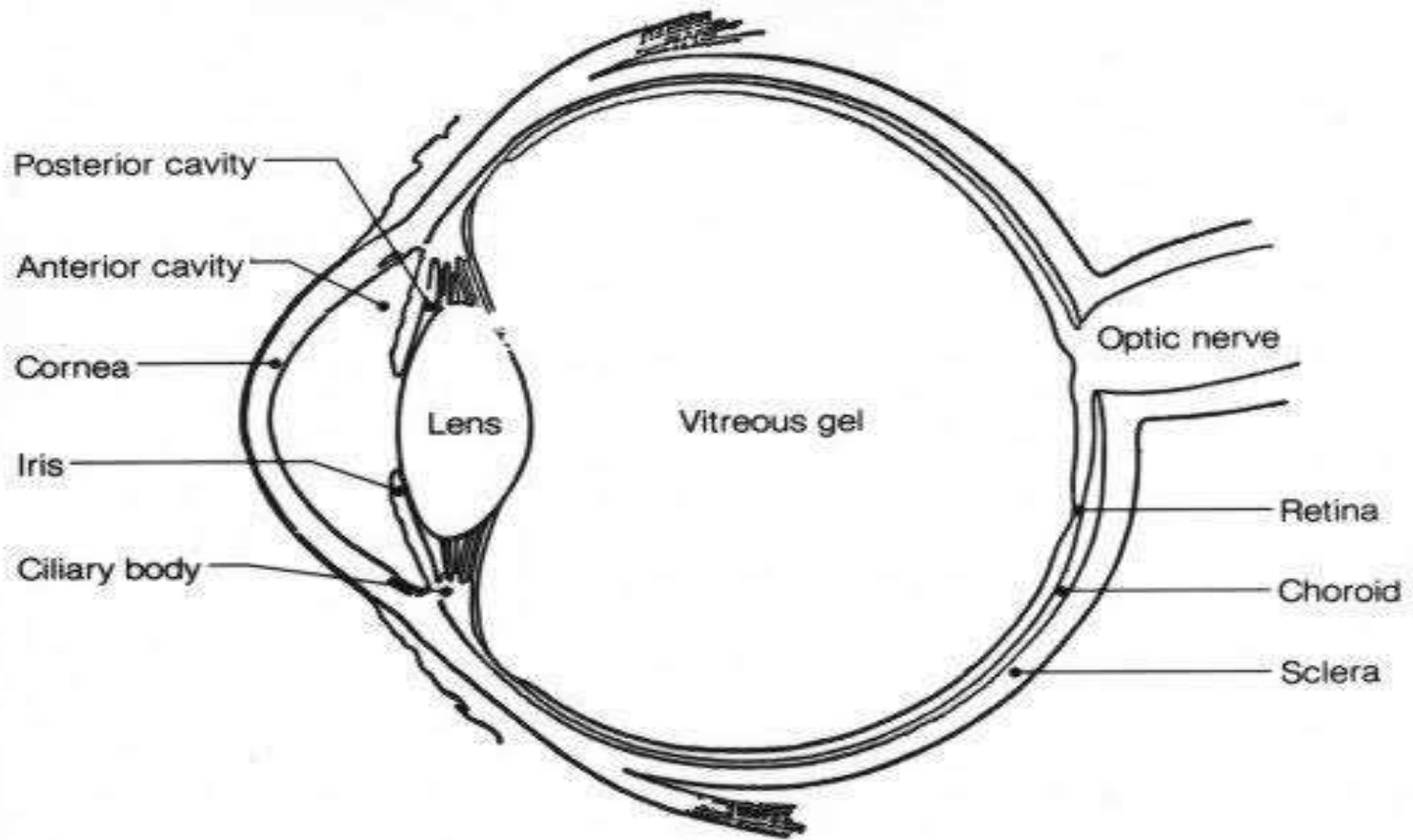
It consists of three layers

Outermost layer-sclera and cornea (protective layers)

Middle layer-choroid ,Ciliary body and iris (vascular or nutritive coat)

Innermost layer- retina

# STRUCTURE OF EYE



## Sclera (white of the eye) and cornea:

- The posterior part of eyeball is called sclera, it is opaque in nature and light cannot pass through sclera .
- The anterior part of eyeball is called cornea which is transparent in nature through which the light rays enter.
- Both sclera and cornea provides shape and protects inner parts.

## Choroid:

- It is the vascular layer that provides oxygen and nutrients to the structure of eye.
- It provides blood supply and absorbs scattered light

- Ciliary body consist of ciliary muscle (ties the lens with ciliary body with the help of suspensory ligaments responsible for accomodation and capillary network (it produces aqueous humor)

### Iris:

- It is the pigmented and colored portion of eye
- Iris contains circular muscle which is responsible for dialation and constriction of pupil

### Retina:

- It is the light sensitive inner layer of the eye
- It consists of photoreceptor cells called rods and cones.these rods and cones act as a transducers which converts electromagnetic energy into electrochemical energy
- Rods allow us to see in dim light and cones is responsible for bright vision

# CHAMBERS OF THE EYE

The human eye is divided into 2 main segments

- Anterior segment contains aqueous humor is a clear protein free liquid that nourishes the cornea and iris
- Posterior segment contains vitreous humor is gelatinous fluid mass which helps in maintaining the spherical shape of eye ball

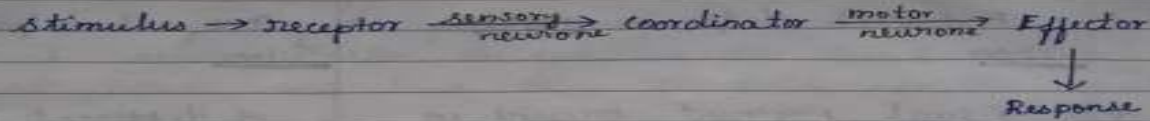
# RODS and CONES

## PERIPHERAL NERVOUS SYSTEM

classmate

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### 1 Reflex Arc:-



### 2 Rods & Cones:-

- \* Rods and cone cells are the two types of photoreceptor cells found in the retina of eye.
- \* These cells are capable of absorbing light and converting light into signals that can trigger a change in the membrane potential, which results in visual phototransduction.

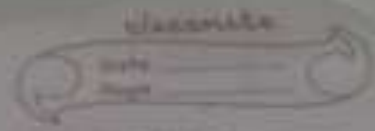
#### Rods cells:-

- \* A type of photoreceptor cells in the eye found concentrated at the outer edges of retina.
- \* Rod cells are responsible for vision in low light conditions.

#### Cone cells:-

- \* They are the type of photoreceptor in the eye concentrated in the fovea of retina.
- \* Cone cells are responsible for vision in bright light & color vision.

	Rods	Cones
1	Rod cells are located at the peripheral portion of the retina.	Cone cells are located at the central part (fovea) of the retina.
2	Average number of rod cells in human is 120 million.	Average number of cone cells in human is 6 million.



2 Rod cells are extremely sensitive to low level of light

Cones are sensitive to bright light

4 Rod cells helps in night vision

cone cell helps in daylight vision

5 Visual pigment present in rod cells → rhodopsin

3 different types of visual pigment is present in cone cells → (iodopsin) which respond to different color such as blue green & red

6 Rod cells are absent in fovea

cone cells are concentrated in fovea

7 Loss of rod cells causes night blindness

Loss of cone cells causes legal blindness



# PHYSIOLOGY OF HEARING

## PHYSIOLOGY OF VISION:

Light rays enters the cornea → lens → reaches the retina (consist of rods and cones) → in the retina the electromagnetic energy is converted to electochemical energy impulse pass through optic nerve → optic chiasma → optic tract → optic geniculate body → optic radiation → visual cortex → processing and analysis of visual impulse in the visual cortex → visual perception → rods are used more in dim light (scotopic vision) and cones in bright light (photopic vision).

## Refraction abnormalities

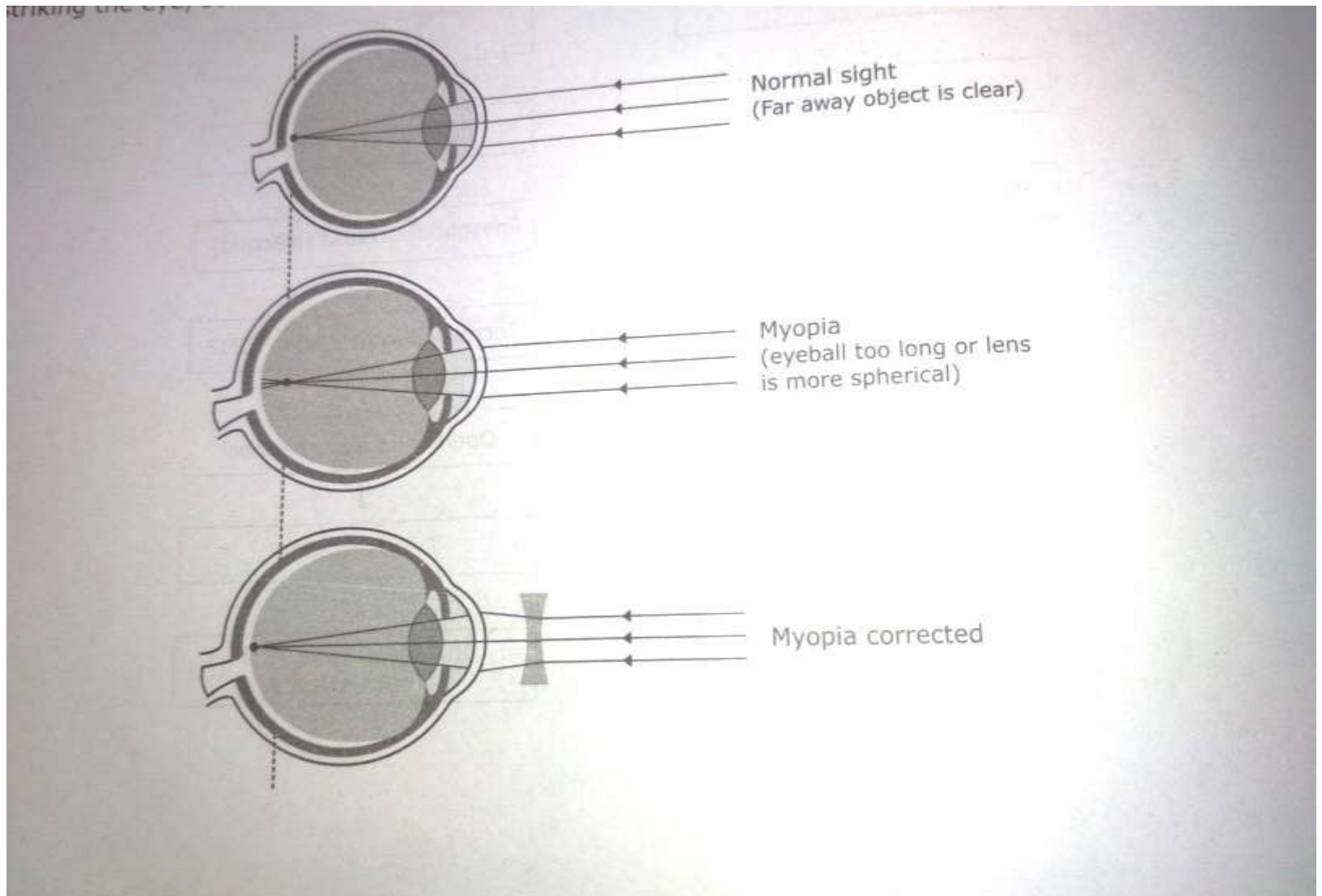
### 1. Myopia (nearsightedness):

- It occurs when too long relative to focussing power of cornea and lens or when the lens is thicker than normal, so an image converges in front of the retina.
- myopic individuals can see close objects clearly but not distance object.
- placing a biconcave lens in front of the eye causes the light rays to diverge slightly before striking the eye, so that they are brought to focus on the retina

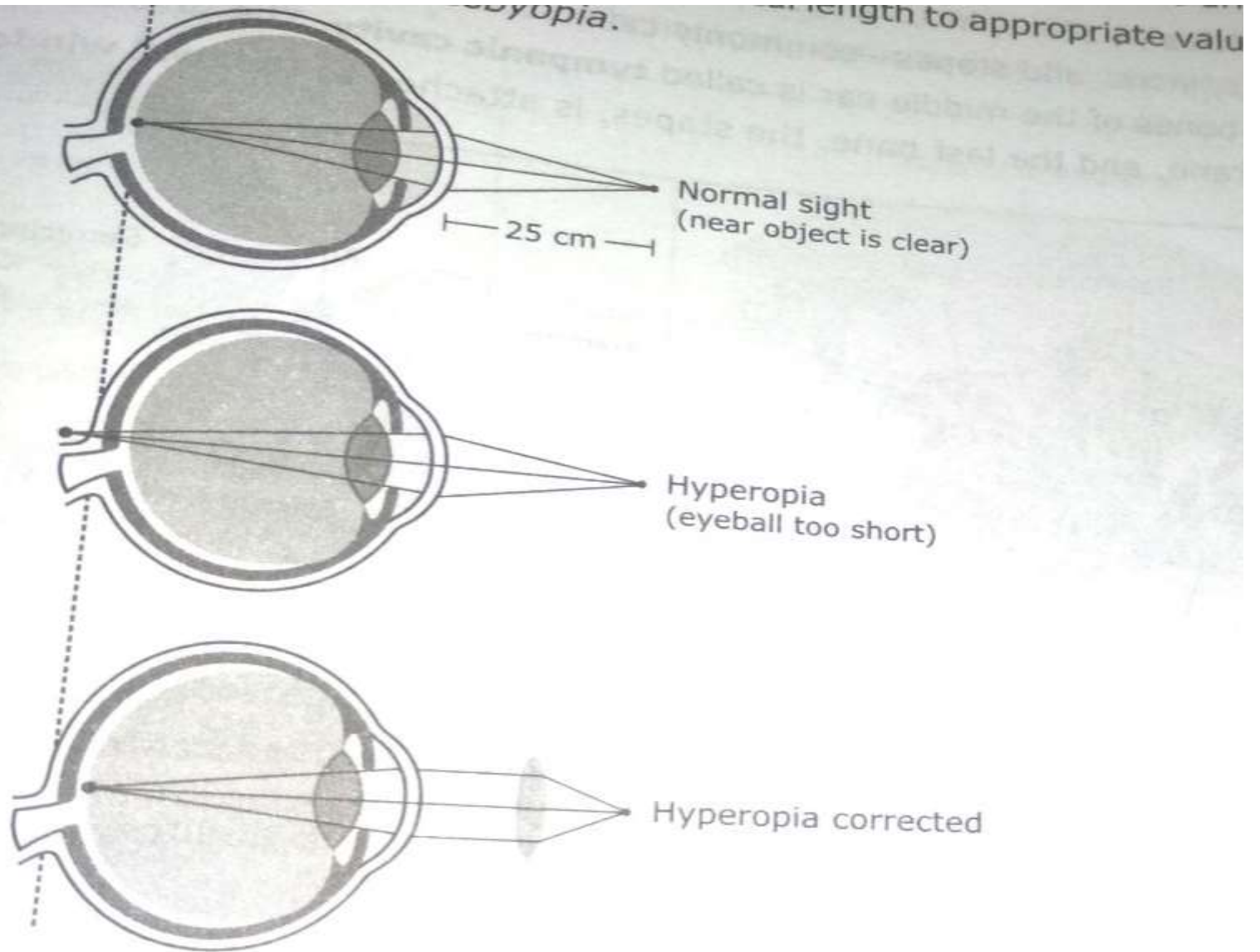
## 2. Hypermetropia:

- It occurs when too short relative to focussing power of cornea and lens or when the lens is thicker than normal,so an image converges behind the retina.
- hypermetropic individuals can see distant objects clearly but not close object.
- A biconvex lens corrects by adding to the refractive power of the lens of the eye

# MYOPIA



# HYPEROPIA



### 3.Astigmatism:

- In this cornea or lens have irregular curvature results in blurred vision or distorted(out of shape).such person cannot see in all direction well.

### 4.Glaucoma:

It is caused due to increased interocular pressure results in damage of optic nerve and cause loss of vision

Types:open angle glaucoma

Closed angle glaucoma

### 5.conjunctiva:

inflammation of conjunctiva caused by irritants such as smoke,dust,wind and microbes etc