

# EYE -The Natural Optical Instrument

**Sclera** — The white portion of the eye. It's opaque and acts as a protective layer of the eye.

**Cornea** — The circular part in the centre has a transparent layer. It is the front layer of the eye and bulges outwards. It is transparent, so that light can enter the eyes.

Function: i) To reflect the light rays and to help form an image in the eye. Light from a rarer medium, air is entering to the denser medium cornea in the eye. Bending of light rays happen, when they enter the cornea.  
ii) It acts as a protective layer of the eye.

**Iris** — Coloured portion of the eye. It controls the amount of light entering the eyes.

**Pupil**- There is a hole in the centre of the iris called pupil, through which the light enters the eyes. It appears black, because no light is reflected by it.

**Eye lens**- Transparent, soft and flexible made up of cells. The type of lens is convex, as it is thicker in the centre and thinner at the edges. The nature of the eye lens is to converge the light rays.

The eye lens is flexible. It can change it's thickness and shape. It can adjust it's focal length.

**Aqueous Humour:** The liquid present between the cornea and the eye lens. It helps to maintain the fluid pressure inside the eye. This hydrostatic pressure helps keeps the walls of the eye ball tight and maintain the spherical shape of the eye.

**Ciliary Muscles:** The eye lens is held in it's position by suspensory ligaments. One end of the suspensory ligaments is attached to the eye lens and the other end is attached to the ciliary muscles. Depending on the distance of the object we are looking at, the ciliary muscles change the thickness of the eye lens to focus the light rays on the retina. This adjustment of eye lens is known as power of accommodation.

**Vitreous humour:** The region between the lens and retina is filled with a transparent jelly like substance called vitreous humour.

Function: To support the lens and to maintain the shape of the eye ball. It contains 99% water and acts like a liquid lens. It helps to focus the light rays to the retina.

**Retina:** At the back part of the eye, there is a screen, on which the image is formed. This screen is called retina. It contains large number of light sensitive cells, rods and cones. Rod cells are sensitive to intensity of light. It gives us light and dark information. Cone cells are sensitive to the colour of the object. They give us colour information. The image formed on the retina is real and inverted, diminished.

**Optic nerve:** Attached to the retina, responsible for transmitting the visual information from the retina to the brain. The brain interprets the image as erect and of the correct size.

**Blind spot:** At the point where the optic nerve meets the retina, there are no light sensitive cells. No vision is possible at this point.