THE HUMAN EYE AND THE COLOURFUL WORLD

MODULE-1

INTRODUCTION

The human eye is like a camera.

Its lens system forms an image on a light-sensitive screen called the **retina.**

Light enters the eye through a thin membrane called the **cornea.**

It forms the transparent bulge on the front surface of the eyeball .

STRUCTURE OF EYE

The eye is not shaped like a perfect sphere, rather it is a fused two-piece unit, composed of a anterior (front) segment and the posterior (back) segment.

The anterior segment is made up of the cornea, iris and lens.

The cornea is transparent and more curved, and is linked to the larger posterior segment, composed of the vitreous, retina, choroid and the outer white shell called the sclera.

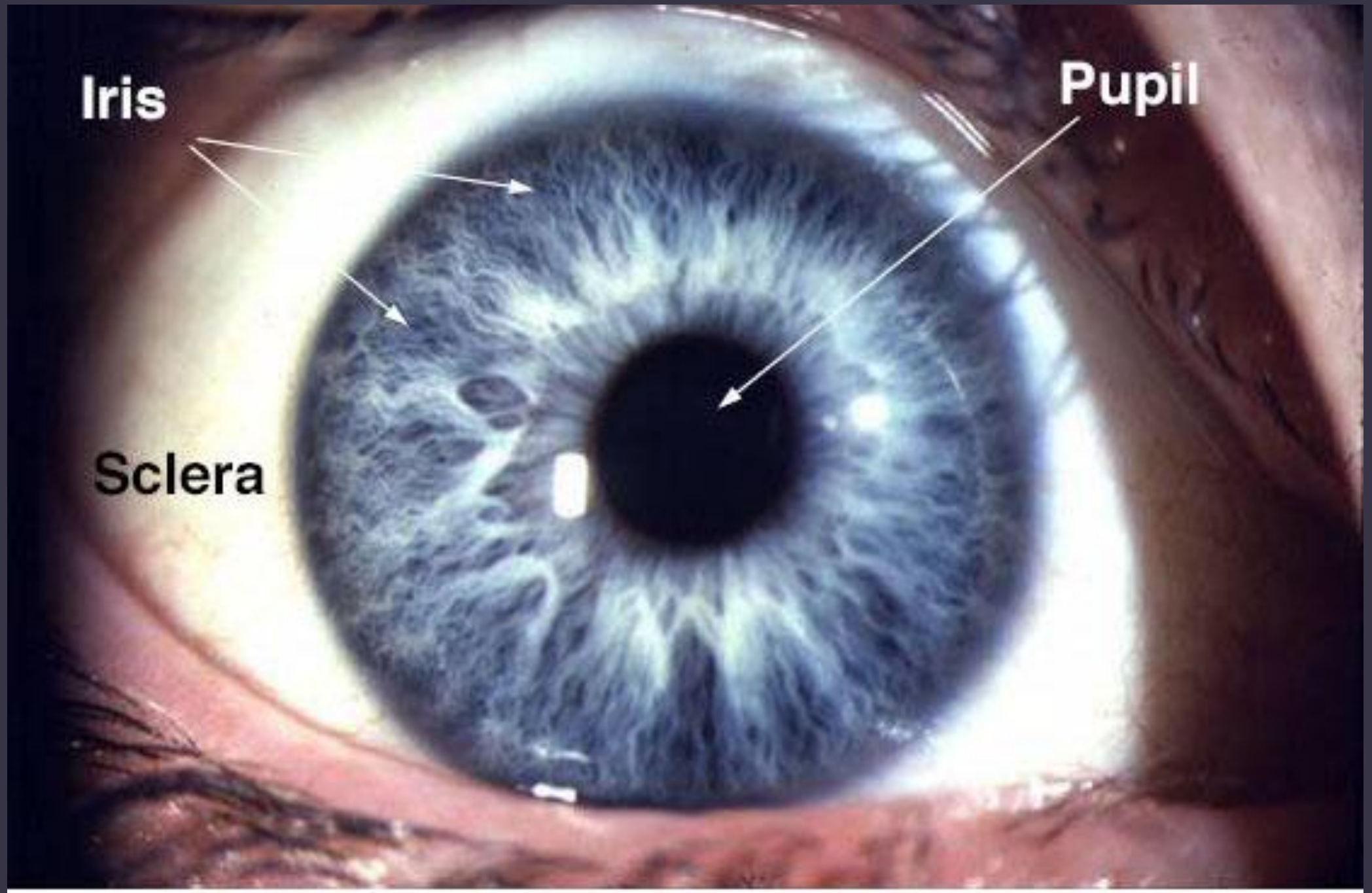
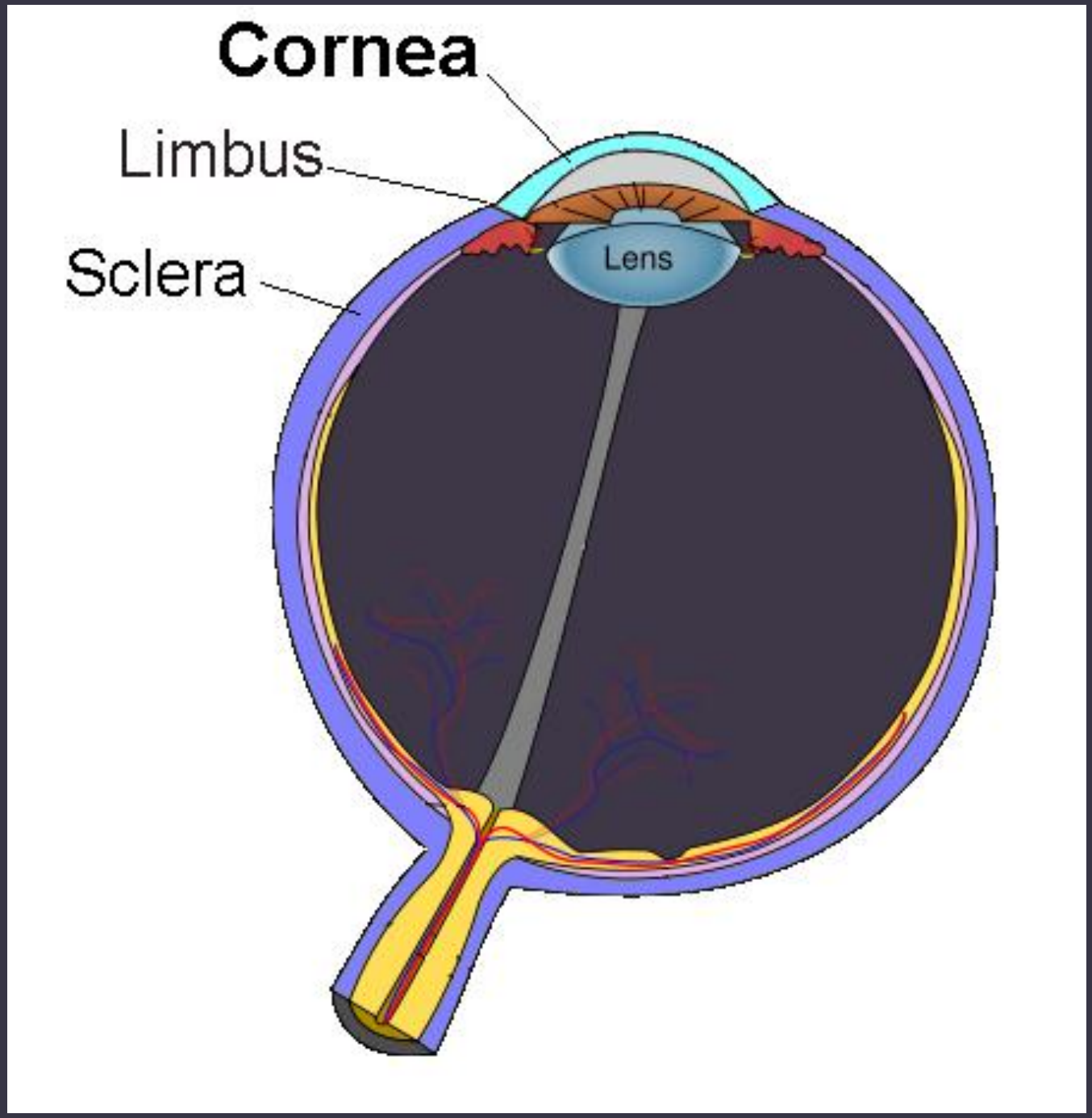


Fig. 1. View of the human eye

CORNEA

The **cornea** is
the transparent front part of
the eye that covers
the iris, pupil, and anterior
chamber.


Cornea
Limbus
Sclera
Lens

SCLERA

The **sclera**, also known as the **white of the eye** or, in older literature, as the **tunica albuginea oculi**, is the opaque, fibrous, protective, outer layer of the human eye containing mainly collagen and some elastic fibre.

IRIS AND PUPIL

The **iris** is the pigmented circular structure concentrically surrounding the centre of the eye, the **pupil**, which appears to be black.

The size of the pupil, which controls the amount of light entering the eye, is adjusted by the iris' dilator and sphincter muscles.

POWER OF ACCOMMODATION

The eye lens is composed of a fibrous, jelly-like material.

Its curvature can be modified to some extent by the ciliary muscles. The change in the curvature of the eye lens can thus change its focal length.

The ability of the eye lens to adjust its focal length is called **accommodation.**

MECHANISM OF ACCOMMODATION

When the muscles are relaxed, the lens becomes thin. **Thus, its focal length increases**. This enables us to see distant objects clearly.

When you are looking at objects closer to the eye, the ciliary muscles contract. This increases the curvature of the eye lens. The eye lens then becomes thicker. Consequently, the **focal length of the eye lens decreases**. This enables us to see nearby objects clearly.

RANGE OF HUMAN VISION

The minimum distance, at which objects can be seen most distinctly without strain, is called the least distance of distinct vision.

It is also called the **near point** of the eye. For a young adult with normal vision, the near point is about **25 cm.**

The farthest point up to which the eye can see objects clearly is called the **far point** of the eye. It is **infinity** for a normal eye

A normal eye can see objects clearly that are between **25 cm and infinity.**

CATARACT

Sometimes, the crystalline lens of people at old age becomes milky and cloudy. This condition is called **cataract.**