

THE EYE

Conjunctiva

Function: *Protective function – protects the eye from dust and infection-causing microorganisms*

(continuation of sclera) **Cornea**

Function: *Responsible for the refraction (bending) of light rays*

Adaptation/s:

- *Convex in shape – allows refraction*
- *Transparent – allows light to pass through*

Iris

Function: *Controls the amount of light entering the eye / Changes the size of the pupil*

Pupil

Function: *Allows light to enter the eye*

Lens

Function: *Changes shape for near and distant vision/Refract light to fall on the retina*

Adaptations:

- *Bi-convex – Refracts light*
- *Transparent membrane-allows light through*

Suspensory ligaments

Function: *Holds the lens in position*

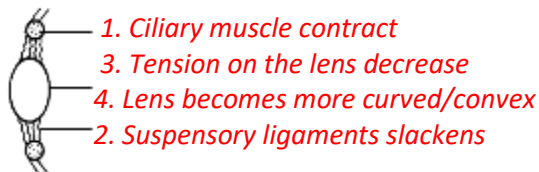
Adaptation *It is elastic*

Ciliary muscle

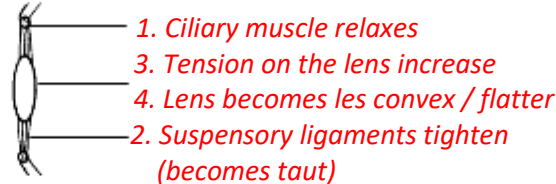
Function: *Contracts and relax to change the shape (curvature) of the lens*

ACCOMODATION: *the adjustment (changing) of the shape of the lens to see near or far objects clearly*

Near vision



Far/distant vision



A Sclera

Functions:

- *Protects the eye against damage*
- *Gives shape to the eyeball*

Adaptation:

- *It's a tough membrane*

Yellow SPOT

- *Area containing lots of cones*
- *Best image formed here*

Vitreous humour

Blind SPOT

- *No image forms here... No rods and cones are found here*
- *Optic nerve leaves the eye at the blind spot*

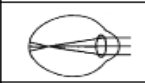
Binocular vision: *The ability to maintain visual focus on an object with both eyes open*

Importance of Binocular vision: *It allows a person to judge distance and depth (enables 3D vision)*

VISUAL DEFECT

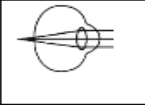
Short-sightedness: *Inability of lens to become more flat/eyeball is longer than normal.* See nearby objects clearly

DIAGRAM



- *Concave lenses*
- *Surgery*

Long-sightedness: *Inability of lens to become more convex/eyeball is shorter than normal* See distant objects clearly



- *Convex lenses*
- *Surgery*

Astigmatism: *The curvature of the lens or cornea is uneven resulting in distorted images*



- *Bi-focal lenses*
- *Surgery*

Cataracts: *Lens becomes cloudy and opaque*



- *Surgery (replace lens with synthetic lens)*

B Choroid

Functions:

- *Supply the eye with nutrients and oxygen*
- *Prevents (reduces) internal reflection of light*

Adaptation:

- *A dark coloured layer, rich in blood vessels*

C Retina

Function:

- *Converts light stimuli into nerve impulses*

Adaptation: *Contains the light-sensitive receptor cells, i.e. the rods (black and white) and cones (colour vision)*

D **Optic nerve** (sensory neuron)

Function:

Transmit impulses from the retina to the cerebrum

Explain the consequences if this neuron is damaged

- *Optic nerve won't be able to transmit impulses to the cerebrum, to be interpreted*
- *Person won't be able to see*

PUPILLARY MECHANISM

Bright light

- *Circular muscles of the iris relax*
- *Radial muscles of the iris contract*
- *Pupil constricts*
- *Less light enters the eye*



Dim light (low light intensity)

- *Radial muscles of the iris contract*
- *Circular muscles of the iris relax*
- *Pupil dilates*
- *More light enters eye*

