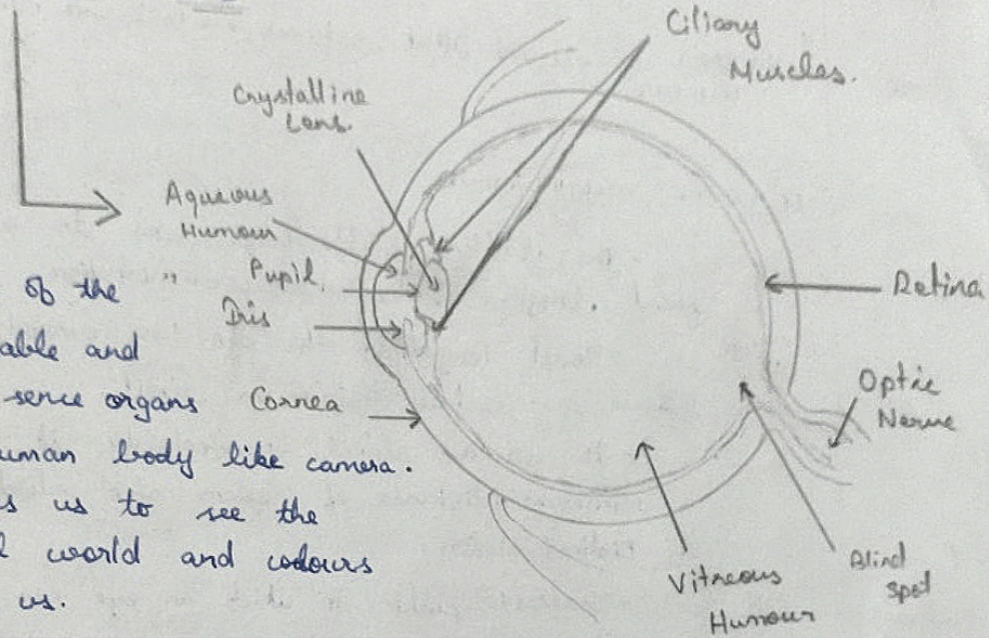
Friday

THE HUNAN EYE AND THE COLOURFUL WORLD — DHAIAYA MAHESHWARI

THE HUNAN EYE:

It is one of the most valuable and sensitive sense organs in the human body like camera. It enables us to see the wonderful world and colours around us.



HUNAN EYE PARTS:

- Eye ball :- It is spherical in shape.
  - Diameter is about 2.3cm.
- Cornea :- Transparent outermost layer.
  - Light enters from here.
- Crystalline Lens :-
  - Acts as a convex lens.
  - Located behind Iris.
  - Provides adjustments of focal length.
- Iris :-
  - Dark muscular diaphragm
  - Controls size of pupil.
- Pupil :-
  - Small hole between the iris through which light enters.
  - Dim light - expands
  - Bright light - contracts.
- Ciliary Muscles :-
  - Hold lens in position
  - Modify the curvature of eye lens.
- Retina :- Screen where image is formed.
- Optic Nerve :- Transmits visual information to the brain.

- Blind Spot: - Spot where the optic nerve and retina connect.
- Aqueous Humour: - Transparent liquid filled in the space between cornea and eye lens.
- Vitreous Humour: - Liquid filled between eye lens and retina.

POWER OF ACCOMODATION:

- The ability of the eye lens to adjust its focal length is called accommodation.
- Focal length of the eye lens cannot be decreased below a certain minimum limit.
- To see an object comfortably it should be at a minimum distance of 25cm also called 'Least Distance of Distinct Vision'.
- Farthest point to which an eye can see is called the 'Far Point of the Eye', it is infinity for a normal eye.

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

- Causes partial or complete vision loss.
- It is possible to restore vision through a cataract surgery.

DEFECTS OF VISION AND THEIR CORRECTION:

Sometimes, the eye may gradually lose its power of accomodation, due to this, people cannot see objects distinctly and comfortably, their vision becomes blurred.

There are three common refractive defects of vision:

- Myopia (Near - Sightedness)
- Hypermetropia (Far - Sightedness)
- Presbyopia

- Myopia :

→ Known as near sightedness
→ Can see nearby objects but cant see distinct objects distinctly.
→ Person with this defect has the far point nearer than infinity.
→ Image is formed in the front of the retina.
→ Can rise due to:
  (i) excessive curvature of eye lens
  (ii) elongation of eyeball.
→ Can be corrected using concave lens of suitable power. (for diagram, refer text book : pg - 163).

- Hypermetropia:

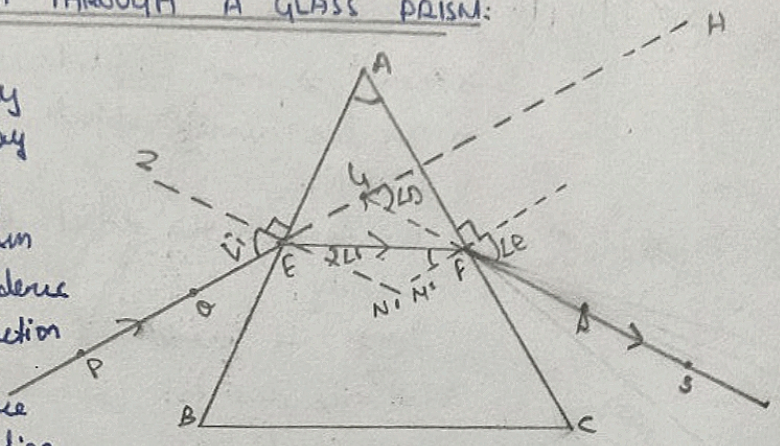
→ Known as far-sightedness
→ Can see distinct objects clearly, but near by objects distinctly.
→ Near point is formed farther away from the normal near point. (25 cm).
→ Image formed behind the retina.
→ Can rise due to:
  (i) focal length of eye lens is too long
  (ii) Eyeball has become too small.
→ Can be corrected using convex lens of suitable power. (for diagram, refer text book : pg. 163).

- Presbyopia:

→ Power of accomodation of eye usually decreases with ageing.
→ Most people, near point gradually recedes away. The find it difficult to see nearby objects comfortably and distinctly.
→ Arises due to gradual weakening of ciliary muscles and diminishing flexibility of the eye lens.
→ Person suffers from both myopia and hypermetropia.
→ such people wear bi-focal lens (concists of both concave and convex lenses).

REFRACTION OF LIGHT THROUGH A GLASS PRISM:

PE - Incident Ray
EF - Refracted Ray
FS - Emergent Ray
∠A - Angle of Prism
∠i - Angle of Incidence
∠r - Angle of Refraction
∠e - Angle of Emergence
∠D - Angle of Deviation.



REFRACTION OF LIGHT THROUGH A TRIANGULAR GLASS PRISM.