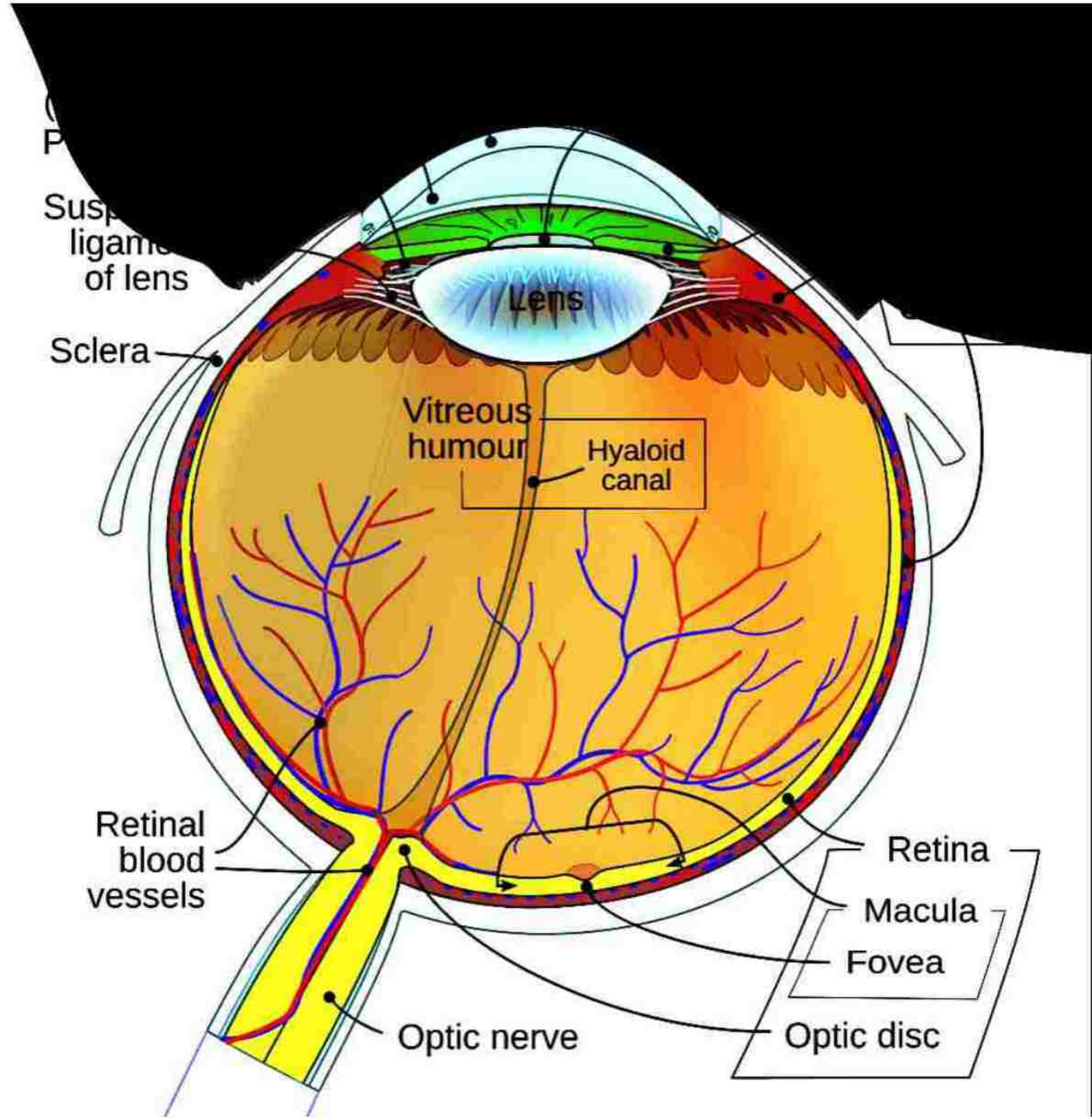

Lens
Sclera
Vitreous humour
Hyaloid canal
Retinal blood vessels
Retina
Macula
Fovea
Optic nerve
Optic disc

* Eye *

मण्डलानि च संधिश च , पटलानि च लोचने ।
यथाक्रमविजानीयात् पञ्चषट् च षड्व च ॥

(Su. U → 1/14)
उत्तर

→ The eye or the organ of sight is situated in the orbital cavity of the skull.

• general features about eye —

1. Palpebral Fissure opening
- it is an almond shaped or. space b/w upper and lower eye lids.
- allowing you to seen out.
- Parts :- Sclera (white part)
  :- cornea (Transparent)
  :- Iris and pupil

2. conjuctiva.
- It is a thin, protective Mucous membrane composed of startified columnar epithelium
- Parts :- Palpebral conjuctiva
  - Inner aspect of eyelid
  - Normally pinkish colour
  (In anaemia → look white)

  :- Bulbar conjuctiva
  - passes from eye lids to the surface of eye Ball
  - Normally white
  (In Jundise → pale yellow)

PAGE NO.:
DATE:

3. Eye lids
- It is thin skin fold.
- upper and lower eyelids are palpebral. Shade to during sleep.

→ They protect the eyes from excessive light dust etc and spread lubricating secretions over the eye Ball.

→ upper eyelid is more movable than lower eyelid. It has levator palpebre superioris Muscle.

→ The space b/w two eyelids is called a palpebral Fissure.

• ~~Movement of eye Balls~~ -

4. Eye lashes

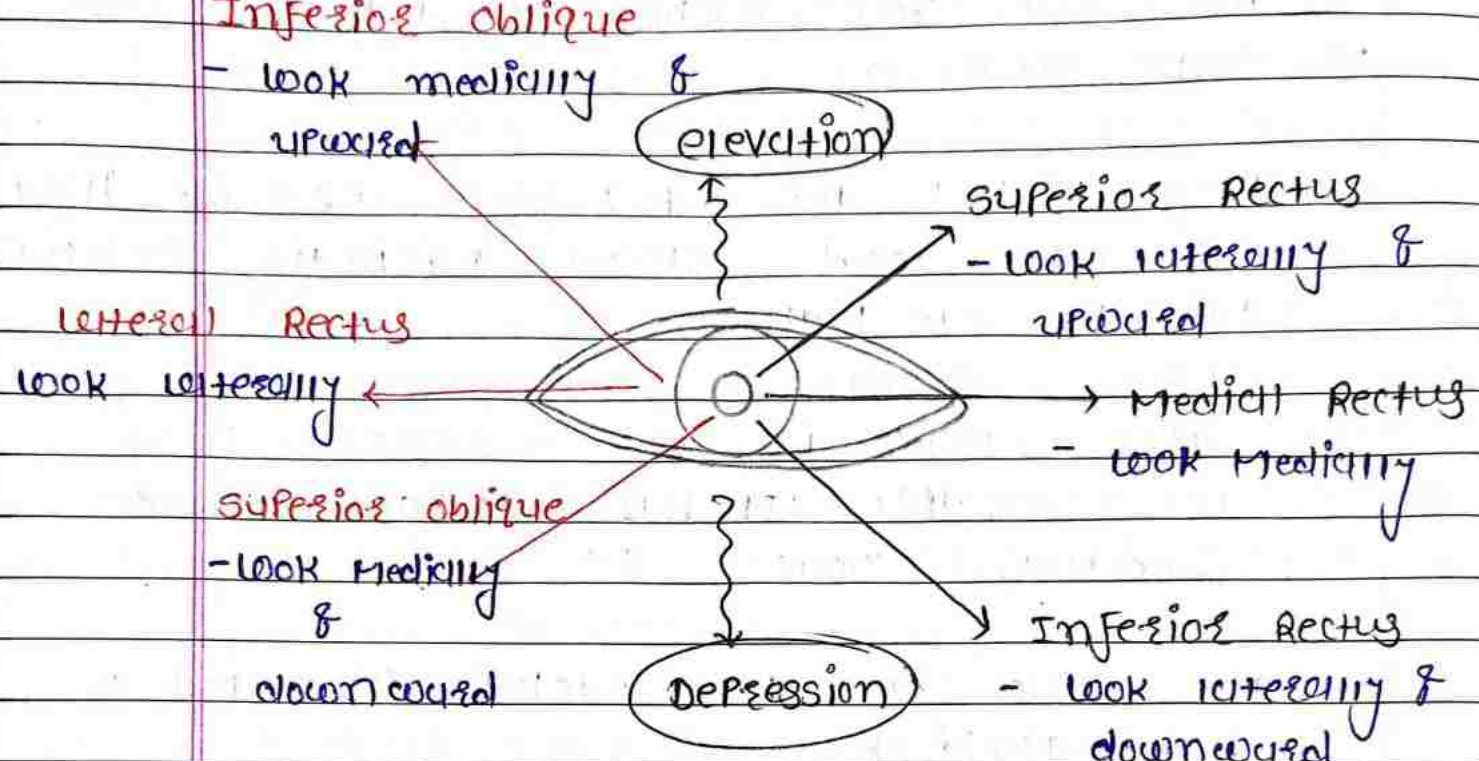
→ It projects from the Border of each eyelid and contains sebaceous cilliary glands.

→ It's Infection called → sty (അഞ്ഞ്ഞി)

5. eye brow
- super-orbital Region of frontal Bone
- constitutes :- Dense, gentle and oblique Hairs above the eye
- use :- stop sweat, water other dropping down into the eye socket
- facial expressions

PAGE NO.:
DATE :

* Movement of eye balls (Muscles)



→ Anatomy of eye Ball

In आयुर्वेद :- नेत्रबुद्बुद

- **Located** :- orbit of the skull
- **Diameter** :- 2.5 cm In (adult) (Antero - Posterior)
- **Volume** :- 8 cm^3

→ It's 1/6th part is exposed inside the orbit

- **Shape** :- Oblate Spheroid (ASpherical)
- **Poles** :- 1) Anterior → It is center of the curvature of the corneal.
  2) Posterior → It is center of the post. curvature of the sclera.

- **2 Imaginary line**

1) Optic axis → Joining two poles
2) Equator → encircling the eye

- **2 Divisions of eye**

1) Anterior Segment → cornea and lens
   - Iris → Ant. and Post. chamber
   - aqueous Humour → Space b/w cornea & lens
2) Posterior Segment → Behind the lens and zonular ligament
   - Vitreous Body → Space b/w lens and Retina

PAGE NO.:
DATE :

* 3 layers of the eyeballs —

1) Fibrous coat (outer most)
2) Vascular coat (Middle)
3) Nervous coat (Inner most)

(1) Fibrous coat & Fibrous Tunic

→ The outer most part / layer of eyeball
→ It consist to — Sclera and cornea.

i) Sclera.
→ it is smooth and white
→ opaque (अपारदर्शी)
→ It forms Posterior 5/6th of eyeball.
→ outer surface of Sclera is covered By Tenon's capsule.

→ It's anterior part is covered By conjuctiva.
→ also Provied to attachment to extraocular Muscle

→ it's composed of Dense Fibrous tissue
↓
- Maintain the Shape of eye Ball
- Resists Intraocular Pressure (दाब)

PAGE NO.:
DATE :

→ The Sclera is continuous anteriorly with the cornea at the limus of. Sclero-corneal Junction

→ Limbus is contains of canal called as → canal of Schlemm

• lamina cribrosa → crucial (mesh like) tissue Back of the eye's optic Nerve Head

→ The Sclera is almost avascular
But, episclera → vascular
→ looses connective tissue
B/w conjunctiva and Sclera.

ii) Cornea
→ It is Transparent and avascular part
→ Anterior 1/6th of eyeball
→ convex anteriorly
• thickness at centre → 0.5 - 0.6 mm
at Periphery → 1 mm

• Diameter → 11.7 mm Horizontally
→ 10.7 mm vertically

→ It is fits to anterior merging of Sclera Inside
→ The angle b/w the iris and cornea is called Irido-corneal angle

PAGE NO.:
DATE :

• Histology of Corneal (layers of epithelium)

i) outer most layer is non keratinized
- lack the protective protein keratin

Squamous epithelium also called → Corneal Epithelium

ii) Bowman's membrane & Descemen' membrane
iii) Substantia propria (thick part) It consists of dense collagen fibres.

(2) Vascular coat & Vascular Tunic

→ Middle coat
→ composed of part — i) choroid ii) ciliary part ii) Iris

i) choroid —
→ choroid consists of Network of Blood Vessels.
→ It is supported By connective tissue with pigmented cells that given dark colour

→ outer surface :- Separated from Sclera By Supra choroidal lamina.
→ Inner surface :- Firmly attached to Retina

PAGE NO.:
DATE :

• Histology of Choroid.

i) Supra - Choroid lamina → Ciliary Nerve & long Posterior arteries.
ii) Vascular lamina → Short Post. arteries
iii) Intermediate capillary lamina → formed By Fibro - elastic tissue
iv) Bruch lamina → collagen & elastic Fibres

ii) ciliary Body.
→ is an anterior continuation of choroid.
→ Ring like Structure, continuous with Periphery of iris. (Anteriorly)

→ It is connected to the lens By Suspensory ligament
→ It is appears Dark Brown BC2 contains melanin Producing melanocytes.

→ It consists of -
i) ciliary Ring
ii) ciliary Process
iii) ciliary Muscles.

i) ciliary Ring.
→ extends from :- Oral - Serrated to ciliary process (external extremities)

ii) ciliary Process :- It is a fold on the Internal surface of ciliary Body.
→ zonular Fibres or Suspensory ligament attached to the lens, extend from ciliary Process.

PAGE NO.:
DATE:

iii) Cilliary Muscle :- It is band of Smooth muscle

→ This Muscle is Responsible for Producing alteration in convexity of the lens (82812) through suspensory ligament

iii) Iris -

→ It is a diaphragm in front of lens.
→ Pigment Present in it gives colour to eye
→ It is Periphery it is continuous with the ciliary Body.

→ In It's centre there is an apperature called Pupil

→ Iris control the amount of the light entering the eye.

→ Iris contains smooth Muscles arranged in 2 Patterns

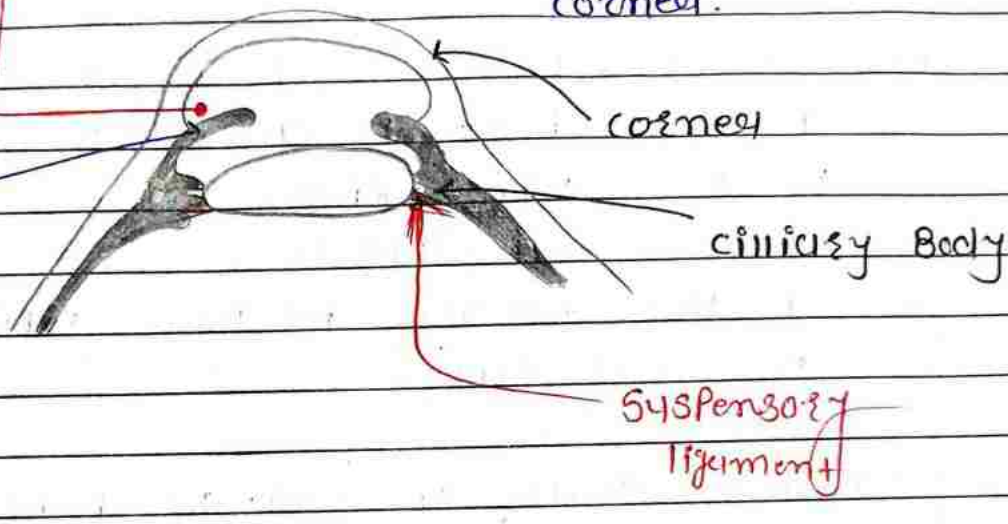
i) circular Pattern (Muscle) :- It forms sphincter Pupillae
- constricts the Pupil.

ii) Radial Patten (Muscle) :- It forms Dilator Pupillae
- Dilates the Pupil.

PAGE NO.:
DATE :

→ Iris placed vertically b/w cornea and lens.
→ It divides anterior part of the eye into an anterior and Posterior Chambers

• Irido-corneal Angle :- The point where iris is separated to corneal.



③ Nervous coat of/. Retina

→ Inner most sensory layer of epithelium
→ outer surface attached to → Choroid
Inner surface attached to → Hyaloid membrane

• optic disc
- It is a circular area situated opposite to the entrance of optic Nerve about 1.5 mm in diameter

PAGE NO.:
DATE:

→ Retina can be divided into 3 parts

i) Optic part :- It is nervous & sensitive to light.

★ ii) Ciliary & Iridial part :- thinner and Non-Nervous part

iii) Macula lutea or. yellow spot.
- It is depressed area 3 mm lateral to the optic disc.
- It is avascular
- It lies exactly in the optical axis of the eye ball.

→ The centre of macula lutea is depressed and called → Fovea centralis.

- thinest part of Retina
- containing cones cells
- clearest vision

• PhotoReceptors of Retina
→ They are specialized cells that start the process by which light rays are ultimately converted to nerv impulses

Rod cell	Cone cell
- about 1000 million	- 7 million
- Best to poor light Respond.	- Bright light Respond
→ called scotopic vision	→ called Photopic vision. → Sharp vision → Differentiation of colours

PAGE NO.:
DATE:

- Basic Structure of Retina

i) Outer Pigmented layer → Melanin Pigment
ii) Layer of Rods and cones
iii) External limiting membrane → Muller & Photo-Receptor cells

iv) Outer Nuclear layer → Nuclei of Rodes & cones cell
v) Outer Plexiform layer → Process Synaptic of Rood & cones cell

vi) Inner Nuclear layer → Nuclei and cell Body of - Bipolar cell
- Muller cell
- Inter Plexiform cell.

vii) Inner Plexiform layer → Process Synaptic of Bipolar, Muller cell

viii) ganglion cell layer
ix) Nerve Fibre layer → axons & ganglion cell
x) Internal limiting MemBrane →

(*) Refracting Media of eye & Interior of The eyeball

→ Refracting of light rays and Focusing of Image on the Retina takes Place due to
- cornea → Max Refraction
- Aqueous Humor
- lens
- Vitreous Body

PAGE NO.:
DATE:

- Aqueous Humour

→ It is colorless fluid present in the anterior and Posterior Chamber

→ It is Nourishes the lens and Cornea

→ Flow of aqueous Humor

Secreated to → by ciliary Process → Posterior Chamber

Anterior Chamber ← Pupil ←

↳ canal of Schlemm

→ Ascorbic acid
Glucose
Amino acid
] present in Aqueous Humor

→ Nourishes the avascular tissue of Cornea & lens.

→ every 90 minutes completely Replaced

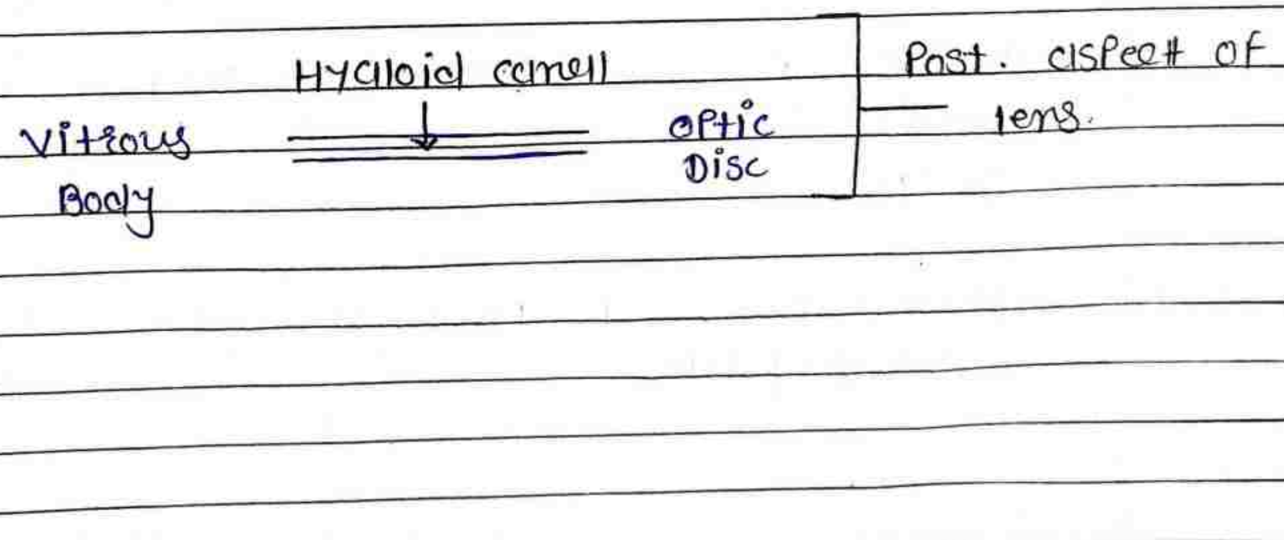
- Lens

→ lies B/W iris and Vitreous.
→ Behind the Pupil and iris.
→ It is transparent Biconcave and avascular
→ Diameter → 9 to 10 mm
→ made up of a Protein → crystallin & lacks of Blood

- Posterior surface is more convex then Anterior surface.
- Lens is enclosed in a capsule of elastic tissue
- Help to focus image on Retina

• Vitrous Chamber

- 2nd largest cavity that lies b/w the lens and Retina.
- Viterous Body (chamber) is Jelly like substance that given clear Image in Retina.
- It is not Replaced constantly
  Phagocytic cell Present to Vitrous Body that Remove cell debris ([illegible])



PAGE NO.:
DATE :

* Lacrimal Apparatus (अश्रुउपकरण)

→ It is a group of structures that Produces, drains lacrimal fluid or tears.

1) Lacrimal gland and its Ducts
2) conjuctival Sac
3) lacrimal Puncta & lacrimal canaliculi (10 mm Length)
4) lacrimal Sac (12 mm)
5) Nasolacrimal duct. (18 mm long) & (3-4 mm wide)

→ Flow of Tears.

• Lacrimal gland → lacrimal duct → lacrimal canaliculi → Surface of eye ball → lacrimal canal → lacrimal Sac → Nasolacrimal Duct → Inferior Meatus of Nose.

→ Inflammations of lacrimal Sac → Dacryocystitis

PAGE NO.:
DATE :

	Structure	Blood Supply	Vein drai-	Nerve	Lymph
1)	Retina	- central Retinal A.	- central Retinal V.	- optic N (III)	-
2)	Choroid	Short & long Post. ciliary A.	Episcleral V.	-	-
3)	Cornea	(Avascular)	long ciliary N.	Vorticoes V.	-
4)	Lacrimal gland	- Lacrimal A.	opthalmic V...	- Lacrimal N. (VI)	Preauri cular
5)	Retina	central Retinal A.	central Retinal V.	optic N.	-

- Clinical Significance

1) conjunctivitis ⟶ Inflammation of conjuctiva.
In anemia ⟶ look white
In Jundies ⟶ Pale yellow

2) central retinal artery occulsion ⟶ loss of vision

3) ~~Cata~~ Cataract ⟶ lens become opaque
- cloudly of lens & vision