1. **A patient with clinically significant diabetic macular edema with non progressive diabetic retinopathy was treated with Macular grid photocoagulation. The patient still has vitreo macular traction. What is the preferred treatment?**

a) >Intravitreal btvacizumab

b) >Pars plana vitrectomy

c) >Repeat macular grid photocoagulation

d) >Augmented macula photocoagulation

Correct Answer - B
Pars plana vitrectomy *[Ref: http://wtvw.hopkinsguides.com/hopkins/ub/citation/1594222Nitrectomy_associatedwith_posterior_hyaloidal_tractionj*
Vitrectomy is the treatment of choice for vitreo macular traction which if left would lead to retinal detachment. It involves removing the cloudy vitreous and replacing it with a silicone oil.
Bevacizumab is *anti-VEGF antibody.* Blocking Vascular endothelial growth factor (VEGF) prevents angiogenesis, but has no role in treating macular traction.
Laser photocoagulation uses the heat from the laser to seal or destroy abnormal, leaking blood vessels in the retina. It is not effective to treat macular traction.

2. Baby born prematurely at 29 wks on examination at 42wks with ROP both eyes shows *stage 2 zone 1 'plus' disease,* how will u manage the patient?

a) Examine the patient after 1 week

b) Laser photocoagulation of both eyes

c) Laser photocoagulation of worse eye, follow up of other eye

d) Vitreoretinal surgery

Correct Answer - B

Laser photocoagulation of both eyes *[Ref: Yanoff & Ducker Ophthalmology 3/e p606-611; Article-Diagnosis of Plus Disease in Retinopathy of Prematurity Using Retinal Image multi.S·cale Analysis at the website-http://www.ncbi.nlm.nih.gov/ptnclarticles/PMC1418825/]*

The hallmark of retinopathy of prematurity (ROP) is abnormal retinal vasculature. Ophthalmologists diagnose and make decisions about the initial treatment of ROP based on the appearance of the retinal blood vessels. Dilatation and tortuosity of the retinal vessels at the posterior pole is termed *'plus'* disease. It is a sign of *rapidly progressive ROP* and is an indication for early laser ablation of the peripheral avascular retina.

Retinopathy of prematurity (ROP)

- ROP is a ***bilateral*** proliferative retinopathy that develops in premature infants due to incomplete vasculogenesis of retina at the time of birth.

- During normal retinal development, vessels migrate from the optic disc to the ora serrata beginning at 16weeks of gestation. Capillary network is formed differentiating into mature vessels which extend *to* nasal ora by 36 wks and tangential ora by 39-41 wks.
- The pathogenesis of ROP begins with premature birth. Exposure of extrauterine environment causes phases of *hyperoxia-vasocessation (obliteration of retinal vessels)* and *hypoxia-vasoproliferation* ***(neovascularisation).*** VEGF is thought to be the most important molecule involved in the neovascularisation.
- Neovascularisation leads ***to*** retinal and vitreous changes which ultimately lead to retinal detachment.
  Classification of ROP:
  ROP is described using a number of parameters. These are location of the disease into zones (I, 2, and 3), the circumferential extent of the disease based on the clock hours (1-12), the severity of the disease (stage 1-5) and the presence or absence of "Plus Disease".
  Classification on the basis of severity, ROP is divided into 5 stages:-
- *Stage I- the first sign of ROP (stage 1) is the appearance of a thin, .flat, white structure (termed a demarcation line) at the junction of vascularized retina posteriorly and avascular retina anteriorly.*
- *Stage II- the demarcation line develops into a pink or white elevation (ridge) of thickened tissue*
- *Stage III- proliferation of vessels over the ridge and into vitreous (extravitreal fibrovascular proliferation)*
- *Stage **IV-** partial retinal detachment*
  IVa- partial detachment with macular sparing IVb- partial detachment with macula involved
- ***Stage V-** total retinal detachment*
  Classification on basis of anatomical location:?
  Since *there **is** a direct correlation between severity of disease and amount of avascular retina, the **location of the border** between vascularized and avascular retina is an important prognostic sign.*
  3 zones are divided to describe the location of ROP. Location of the border in zone 1 is the most severe disease and in zone 3 least.
- *Zone **1** is defined as a circle, the center of which is the disc, and the radius of which is twice the distance of the disc to the fovea.*
- *Zone 2 is a doughnut-shaped region that extends from the anterior*

border of Zone 1 to within one disc-diameter of the ora serrata nasally and to the anatomic equator temporally.

- *Zone 3 encompasses the residual temporal retina.*

Plus disease:- As ROP progresses, more and more shunting occurs in the neovascular tissue at the retinal vascularavascular junction. This increased retinal vascular blood flow results in *dilation and tortuosity of the major retinal arteries and veins in the posterior pole - described as "plus disease".* Plus disease is the hallmark of rapidly progressive ROP and is notated by adding a plus sign after the number of the ROP stage.

Management:

Most of the cases (approx. 80%) of ROP resolve spontaneously, hence intervention is chosen according to the below given protocol.

ROP is divided into Threshold and Prethreshold disease.

Threshold disease: It is defined as stage 3+ ROP in Zones 1 or 2 occupying at least five contiguous clock-hours or eight noncontiguous clock-hours of retina.

Treatment of Threshold disease is - *Laser photocoagulation.*

Prethreshold disease is divided into 2 types:

High risk or Type I - treatment is *Laser photocoagulation*

Low risk or Type II - treatment is *Weekly or Twice weekly observation*

Type 1 Prethreshold	Type 2 Prethreshold
Zone I ROP (any stage) + Zone I, Stage 3 Zone II, Stage 2/3 +	Zone I, Stage 1/2 Zone II, Stage 3
Laser Photocoagulation	Weekly or Twice weekly observation

ROP diseases less severe than Prethreshold are followed up.

In this question, the child with zone 1, stage II 'plus' ROP falls into Prethreshold disease- Type 1 or high risk type, hence Laser Photocoagulation would be the management of choice.

[Note that - If this same question had been framed as Zone 1, stage II and no 'plus' disease; the patient would fall into Type 2

Prethreshold category, and then the management would be - weekly or twice weekly observation]

3. **A man with Pancoast tumor developed Horner’s syndrome. All of the following are the features of Horner's syndrome, EXCEPT:**

a) Ptosis and Miosis in ipsilateral eye

b) Anhidrosis of ipsilateral face

c) Heterochromia irides

d) Apparent exophthalmos

Correct Answer - D

Horner's syndrome consists of unilateral enophthalmos, ptosis, miosis, and loss of sweating over the ipsilateral half of the face or forehead (anhidrosis). It is caused by ipsilateral involvement of the sympathetic pathways in the carotid plexus, the cervical sympathetic chain, the upper thoracic cord, or the brain stem.

Melanocyte maturation in the iris depends on sympathetic innervation; thus, a less pigmented (bluer) iris occurs in congenital or longstanding acquired Horner's syndrome.

Ref: Riordan-Eva P., Hoyt W.F. (2011). Chapter 14. Neuro-Ophthalmology. In P. Riordan-Eva, E.T. Cunningham, Jr. (Eds), Vaughan & Asbury's General Ophthalmology, 18e.

4. The location of the cell bodies of the only neurons in the retina whose axons exhibit a self-propagated action potential is in which of the following layer?

a) Ganglion cell layer

b) Inner plexiform layer

c) Inner nuclear layer

d) Outer plexiform layer

Correct Answer - A

The only cell type in the retina that has long axons which exhibit a self-propagated action potential is the ganglion cell.

5. **A 30 days old neonate presented with excessive lacrimation and photophobia. He has a large and hazy cornea. Both lacrimal duct systems are normal. The diagnosis is:**

a) Megalocornea

b) Keratoconus

c) Congenital glaucoma

d) Hunter's syndrome

Correct Answer - C

In this scenario signs and symptoms occur as a result of **congenital glaucoma.**

Primary congenital glaucoma(PCG) :

- Characterized by **elevated intraocular pressure (IOP),** enlargement of the globe **(buphthalmos)**, **edema**, and **opacification of the cornea** with rupture of Descemet's membrane **(Haab's striae)**, thinning of the anterior sclera and iris atrophy, a**nomalously deep anterior chamber,** and **structurally normal posterior segment** except for progressive glaucomatous optic atrophy.

It can be classified as follows:

- **True congenital glaucoma** (40%) in which intraocular pressure (IOP) is elevated during intrauterine life.
- **Infantile glaucoma** (55%), which manifests prior to age 3.
- **Juvenile glaucoma**, the least common, in which IOP rises between 3 and 16 years of age.
- Several **genes have been implicated**, prominently **CYP1B1.**

Treatment

- Management is essentially surgical.
- Goniotomy
- Trabeculotomy

- Other procedures when angle surgery fails include trabeculectomy, tube shunt implantation, and ciliary body ablative procedures.

6. **What is the area of retina visualised under direct ophthalmoscope?**

a) 1DD

b) 2DD

c) 3DD

d) 4DD

Correct Answer - B

Area of retina visualised under direct ophthalmoscope is 2DD. Image formed is virtual, erect and magnified 15 times.

Area of retina visualised under indirect ophthalmoscope is 8DD. Image formed is real, inverted and magnified 4-5 times.

7. **A 30-year-old male is diagnosed to have neurosyphilis. On examination of his eye:**

Assertion: Pupils are small in size bilaterally, the light reflex is absent but accommodation is present.

Reason: Lesion near the end of the optic tract and pretectal area is responsible for the loss of light reflex with preserved accommodation.

a) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion

b) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion

c) Assertion is true, but Reason is false

d) Assertion is false, but Reason is true

Correct Answer - A

In neurosyphilis, there is damage to the pretectal area resulting in Argyll Robertson pupil. In this case, pupils are small bilaterally, the light reflex is absent but accommodation is present. Other features of Argyll Robertson pupil are: vision is good, patches of iris atrophy are present, orbicularis reflex is retained, it is always associated with a positive serological test for syphilis.

Argyll Robertson pupils (AR pupils or, colloquially, "prostitute's pupils") are bilateral small pupils that reduce in size on a near object (i.e., they accommodate) but do not constrict when exposed to bright light (i.e., they do not react to light). They are a highly specific sign of neurosyphilis

The pathophysiologic mechanism which produces an Argyll Robertson pupil is unclear but is believed to be the result of bilateral damage to the pretectal nuclei in the midbrain.

8. All are true about presbyopia except:

a) Common in young age group

b) Common in eye sight of old age

c) Spectacles having unifocal or bifocal lens should be used

d) Correction of refractive error should be done

Correct Answer - A
A i.e. Common in young age group
Presbyopia (eye sight of old age) is *physiological insufficiency of accommodation (not refraction) seen in advanced (not young) ageQ and resulting in blurred near visionQ.* To manage it always find out and *correct refractive error for distance firstQ.* And then find out and add presbyopic correction to it. In general the *weakest convex (plus) lensesQ* for near work *either in a bifocal,* multifocal progressive or variable focus lenses (in patients with refractive errors for distance) *or unifocal (reading glasses)Q* which will allow adequate vision should be used.

9. All of the following occur in herpes zoster ophthalmicus except

a) Anterior stromal keratitis

b) Pseudodendritic keratitis

c) Sclerokeratitis

d) Endothelitis

Correct Answer - C
C i.e. Sclerokeratitis
Herpes Zoster ophthalmicus commonly causes acute epithelial keratitis [i.e. punctuate epithelial keratitis (in 50%) & pseudo dendritic keratitis (50%)], nummular (anterior stromal) keratitis (40%) disciform (deep stromal) keratitis or endothelitis (34%) and serpiginous ulceration (7%). However, *sclera-keratitis (limbal vascular keratitis) is least common (1%)Q.*
Herpes Zoster Ophthalmicus (HZO) Corneal Disease (Keratitis)
It can result in significant vision loss and manifests in 5 basic clinical forms
1. Epithelial Keratitis
It may be acute (develop in >50% cases) or chronic (-8% patients). Punctate epithelial keratitis is earliest finding and presents with multiple, fine, swollen, raised intraepithelial lesions located paracentrally or at the limbus which stain intensely with rose bengal but only mildly with fluorescein. These contain live virus and may resolve into elevated dendriform epithelial lesion referred to as pseudo dendrites. (Pseudodendritic keratitis)
Pseudodendrites are typically smaller than dendrites, and lack terminal end bulb formations. They are transient and usually resolve within 2 weeks after the cutaneous eruption, and steroids have little

to no effect.
Chronic epithelial keratitis is characterized by coarse pleomorphic epithelial mucous plaques appearing 1 weeks to 1 year (usually 3-4 months) after the skin lesions. They are a/w diffuse anterior stromal haze and debridement of plaque is not a/w any damage to underlying epithelium.
2. Nummular (Anterior Stromal) Keratitis
Is earliest finding of corneal stromal involvement & present during, 2^d week of disease in 25-40% of patients.
- It is characterized by multiple, fine, granular, (usually) transitory infiltrates in anterior stroma in areas previously affected by either punctuate or pseudodendrites.
3. Dissiform (Deep stromal) Keratitis or Endothelitis
Develop 3-4 months after initial acute phase & is usually preceeded by acute epithelial or anterior stromal keratitis.
Central, well defined, disc shaped area of diffuse deep stromal edema without vascularization, corneal edema & anterior chamber inflammation may be prominent features
4. Limbal Vascular Keratitis (Sclero-Keratitis)
5. Neurotrophic Keratitis

10. Band shaped keratopathy is caused by:

a) Amyloid

b) Calcium

c) Monopolysaccharide

d) Lipid

Correct Answer - B
B i.e. Calcium
Band Shaped Keratopathy
It occurs due to deposition of *hyaline infiltration* of superficial parts of stroma follwed by *deposition of calcareous saltsQ.*
A whitish band appears in the inter palpebral area, commencing at the inner & outer sides, progressing until it forms a continuous band across the cornea, interspersed with round 'holes' or cleaves within the band itself. It occurs in
Chronic uveitis especially in blind shrunken eyes, & Still's disease
Aphakic eyesfollowing vitrectomy with silicone oil
Hyperparathyroidism Vitamin D toxicity Sarcoidosis

11. Percentage of endothelial cell loss during Descent's membrane stripping in automated penetrating keratoplasty

a) 0-5%

b) 10-15%

c) 30-40%

d) 50-60%

Correct Answer - C
C i.e. 30-40%
The incidence of endothelial cell loss in donor tissue of Descemet stripping endothelial keratolplasty is nearly 36%, mainly in the central area of graft. Compared with penetrating keratoplasty, EK involves more donor-tissue manipulation including lamellar dissection and folding, which could potentially damage donor endothelium. On the other hand EK grafts are usually larger (8-9 mm diameter compared with typical PK diameter of 7 - 8mm) and *provide a larger reservoir of healthy donor endothelium.* However, several recent reports suggest that endothelial cell loss in first few years after EK is similar to that experienced after PK.

12. Endophthalmitis involves inflammation of all of the following, Except

a) Sclera

b) Uvea

c) Retina

d) Vitreous

Correct Answer - A
A i.e. Sclera
Sclera is not involved in endophthalmitis. Involvement of sclera suggests a more severe inflammation or panophthalmitis.
Endopthalmitis

- It is inflammation of one or more coats of the eye and adjacent cavities. Inflammation characteristically involves the inner structures of eye ball i.e. uveal tissue (i.e. iris, ciliary body and choroid) and retina associated with pourine of exudates in the vitreous cavity (vitritis)/ posterior or anterior chamberQ
- Sclera is sparedQ
- Most clinicians require a vitritis before calling an ocular inflammation (eg corneal ulcer with hypopyon or iritis with aqueous cells) an endopthalmitis.
- Topical antibiotics: Commonly used topical antibiotics are fortified cefazolin (5%) or vancomycin (5%) with gentamicin or amikacin (1.3%) 1 hourly, alternating every half hour. Cycloplegia is achieved initially with topical atropine 1 % twice a day substituted by short-acting agents after 3-4 days.-
- "Intravitreal antibiotics are the treatment of choice and are injected after taking a 0.2-0.3 ml vitreous aspirate for preparing smears and obtaining cultures. A combination of amikacin (0.4 mg in 0.1 ml) or

gentamicin (0.4 mg in 0.1 ml) and ceftriaxone (2 mg in 0.1 ml) or vancomycin (1.0 mg in 0.1m1) is generally recommended

- Vitrectomy: Recovery from bacterial and fungal endophthalmitis is hastened by the removal of infected vitreous (vitrectomy) and the introduction of intravitreal antibiotics."

Panopthalmitis

- It is inflammation of all three coats of eyeQ (& adjacent cavities i.e. anterior (aqueous) &/or posterior (vitreous) segments). Panopthalmitis often starts as an endopthalmitis that then involves the sclera, tenon's capsuleQ and may also spread to orbital tissue.

13. Which of the following agents is not used in the treatment of Diabetic Macular Edema/Retinopathy:

a) Ruboxistaurim

b) Pyridazinones

c) Benfotiamine

d) Tamoxifen

Correct Answer - D
D i.e. Tamoxifen
Tamoxifen may *cause macular edema/ retinopathyQ* as an adverse effect, so it is not used for the treatment of diabetic macular edema/retinopathy.
Protein Kinase C inhibitor ruboxistaurin; aldose reductase inhibitor pyridazinones and ; lipid soluble derivative of vitamin B1/ thiamin - benfotiamine; anti VEGF agents bevacizumab, ranibizumab & pegaptanib and intra vitreal long acting steroids are emerging drugs for medical intervention of diabetic retinopathy.
Tamoxifen (a non steroidal anti-oestrogen) is used in treatment of breast cancer. Retinotoxicity / retinopathy associated with high dose is characterized by *symptomatic decrease in vision and crystalline maculopathys (crystal deposition & macular edema).* The characteristic fundus findings were bilateral, superficial, fine (small), white / yellow refractile, crystalline deposits in inner layers of retina particularly in perimacular area and punctate grey lesions in outer retina & RPE. Fluorescein angiography shows macular edema in most cases. Retinopathy a/w low dose may include macular crystals, RPE irrigularity, and macular edema. FA shows window defects & /

or cystoid macular edema. Optical coherence tomography (OCT) demonstrate a *foveolar cystoid space, loss of photoreceptors and lack of macular thickening.*

14. MIZUO phenomenon is seen in

a) Choroideremia

b) Oguchi's disease

c) Fundus flavimaculatus

d) Fundus albipathicus

Correct Answer - B
B i.e. Oguchi's disease
Mizuo phenomenon *is seen in Oguchi's diseaseQ.* In oguchis disease the characteristic golden yellowish metallic sheen (color) of posterior pole (fundus) in light adapted state reverts to normal after prolonged dark adaptation, a phenomenon described by and named after Japanese ophthalmologist Mizuo. Re exposure to light results in the return of golden yellow metallic sheen.
Female carriers of X-linked (XL) retinitis pigmentosa may have normal fundi or show a golden metallic (tapetal) reflex at macula and /or small peripheral patches of bone spicule pigmentation. The inverse Mizuo phenomenon seen in XL-RP is characterized by appearance of golden sheen in dark (but no golden sheen in light).

15. The most common cause of bilateral proptosis in children is:

a) Cavernous hemangioma

b) Fibrous Histocytoma

c) Chloroma (Leukemia)

d) Rhabdomyosarcoma

Correct Answer - C
C i.e. Chloroma (Leukemia)
- Most common cause of bilateral proptosis in children are *thyroid ophthalmopathy and secondary or metastatic malignancy (from neuroblastoma > myeloid sarcoma/leukemia/ chloroma)Q.*
- Orbital lesions in childhood & adolescence (0 - 20 years) a/t frequency (%): Capillary hemangioma (mc. 100%) > Rhabdomyosarcoma (98) > Cystic lesions or dermoid cyst *(77)* > Infection eg orbital cellulitis (35) > Fibrous histiocytoma (25) > Adenoid cystic carcinoma of lacrimal gland (18) > Inflammatory lesions (12) > Cavernous hemangioma (10) > Trauma (7) > Lymphangioma > (6) > optic nerve glioma (5) > Optic nerve meningioma (4) > = Thyroid orbitopathy (4) > Secondaries & metastasis (1) = Lympho proliferative diseases (1).
So most common cause of unilateral proptosis in childhood is capillary hemangioma >
Rhabdomyosarcoma > Dermoid cyst > Orbital cellulitis > Fibrious histiocytoma.
Thyroid ophthalmopathy is always bilateral whereas only 4% of orbital metastates are bilateral. In children, metastases are more likely to be embryonal tumors of neural origin and sarcomas. Neuroblastoma is 2nd most common orbital tumor in children, after

rhabdomyosarcoma. 40% of the orbital lesions in neuroblastoma are bilateral. Myeloid (granulocytic) sarcoma or chloroma (from myeloid leukemia) is 2nd most common metastatic lesion in children.
Orbital lesions in middle age (21-60 years) : Pleomorphic adenoma of lacrimal gland (89) > Optic nerve meningioma (88) > Cavernous hemangioma (75) > Adenoidcystic carcinoma of lacrimal gland (73) > Thyroid orbitopathy (60) > Fibrous histiocytoma (50)
Orbital lesion in later adult life (61 + years) : *Thyroid orbitopathyQ* (40) > Fibrous histiocytoma (25) > Cavernous hemangioma (15) > Lymphoproliferative disorder (12) > Pleomorphic adenoma of lacrimal gland (11) > Secondary (9) = Inflammatory (9)
However, many books consider thyroid ophthalmopathy as the most common cause of unilateral as well as bilateral proptosis in adults.

16. Dilator pupillae is supplied by

a) Postganglionic parasympathetic fibers from Edinger Westphal nucleus

b) Post ganglionic sympathetic fibers from cervical sympathetic chain

c) Turd CN

d) Sympathetic fibers from V_i nerve

Correct Answer - B

B i.e. Post ganglionic sympathetic fibers from cervical sympathetic chain

Dilator iridis (pupillae) is supplied by *postganglionic (nonmyelinated) fibres from superior cervical sympathetic gangliaQ.*

	Parasympathetic (cholinergic pathway to sphincter pupillae)	Sympathetic (adrenergic) pathway to **dilator iridis** (pupillae)
Nucleus	Fibers start from Edinger-Westphal nucleus near the 3rd nerve nucleus in floor of aqueduct of sylvius	1st order neuron from hypothalamus till ciliospinal (Budge) center in interomediolateral columns of Cs-T1
Preganglionic neuron	Through occulomotor (3rd) nerve	2nd order preganglionic neuron from Budge ciliospinal center tosuperior cervical ganglion in neck (cervical sympathetic neu)
Ganglia	*Ciliary ganglionQ*	*Superior cervical ganglionQ*

Post ganglionic neuron	**Short** ciliary nerve	3rd order post ganglionic fibers arising from superior cervical ganglion, ascends **carotid plexus** (along internal carotid artery) to enter skull, where they join nasociliary branch of trigeminal nerve.

17. Epiphora is :

a) Cerebrospinal fluid running from the nose after fracture of anterior cranial fossa

b) An epiphenomenors of a cerebral tumor

c) An abnormal overflow of tears due to obstruction of lacrimal duct

d) Eversion of lower eyelid following injury

Correct Answer - C
C i.e. Abnormal overflow of tears due to obstruction of lacrimal duct

18. Founder members of vision 2020 are A/E

a) WHO

b) UNICEF

c) ORBIS

d) International Agency for prevention of blindness

Correct Answer - B
B i.e. UNICEF

19. Which of the following drug is used curvently for the prophylaxis of non infectious uveitis in LUMINATE programme

a) Cyclosporine

b) Voclosporine

c) Methotrexate

d) Infli xi mib

Correct Answer - B

B i.e. Voclosporine

- LUMINATE (i.e. Lux Uveitis Multicentre Investigations of a New Approch Treatment) programme is a scientific drug trial (started in 2007 and completed in 2009) for uveitis. In this programme a pivotal study LUVENIQ (LX-211) assessed the safety and efficacy of oral form of next generation calcineurin inhibitor, Voclosporin for treatment of sight threatening non infectious uveitis (as a steroid sparing therapy).
- LX - 212 Programme : In this a bioerodible polymer implant containing voclosporin is implanted, using minimally invasive approach; which release active ingradient slowly & steadily to the surface of eye.
- LX - 214 Programme : In this topical formulation (eye drop) of nanomicelles of voclosporin (which in not normally soluble in aqueous media) is used for dry eye, atopic kerato conjunctivitis & blepharitis.

LUMITECT Programme and LUCIDA/ LX-201 (i.e. Lux Corneal Transplant Implant Development & Advancement of Therapy) Study

: In this silicon matrix ocular (episcleral)implant that steadily releases therapeutic dose of cyclosporine A is used for prevention of rejection of corneal transplant.

20. Snellen's test types are based on the fact that two distant points can be visible as separate only when they subtend at the nodal point of the eye an angle of:

a) 1 minute

b) 3 minute

c) 5 minute

d) 2 minute

Correct Answer - A
Ans. A. 1 minute

- A **Snellen chart** is an eye chart that can be used to measure visual acuity. Snellen charts are named after the Dutch ophthalmologist Herman Snellen, who developed the chart in 1862.[1] Many ophthalmologists and vision scientists now use an improved chart known as the LogMAR chart.
- Angle subtended by the biggest letter of Snellen's chart at 60 meters is 5 minutes of arc therefore at 6 meters = 5 x 10 = 50 meters.

21. Hutchinson's triad of congenital syphilis includes all of the following except

a) Eighth nerve deafness

b) Interstitial keratitis

c) Hutchinson's teeth

d) Saddle nose

Correct Answer - D
Ans. D. Saddle nose

22. Capillary microaneurysms is an earliest sign of:
March 2013

a) Vitreous hemorrhage

b) Non-proliferative diabetic retinopathy

c) Trauma

d) Hypertensive retinopathy

Correct Answer - B
Ans. B i.e. Non-proliferative diabetic retinopathy
Diabetic retinopathy

- Fundus examination in DM:
  - NIDDM: As early as possible
  - IDDM: 5 years after diagnosis of DM
- Incidence of diabetic retinopathy increases with disease duration

23. Nuclear ophthalmoplegia is due to ?

a) Damage to medial longitudinal fasciculus

b) Damage to temporal lobe

c) Damage to oculomotor nuclei

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Damage to oculomotor nuclei
Ophthalmoplegia
* Ophthalmoplegia is paralysis of the eye muscles. Three common types are :-
  - External ophthalmoplegia :- If only extraocular muscles are paralysed.
  - Internal ophthalmoplegia :- If only intrinsic muscles (ciliar muscles and iris) are paralysed.
  - Total ophthalmoplegia :- All extrinsic and intrinsic muscles are affected.
* Certain other types of ophthalmoplegia are :-
  - Nuclear ophthalmoplegia :- It is paralysis of extraocular muscles due to lesion of the third cranial nerve nuclei. They are more often bilateral.
  - Ophthalmoplegic migraine or Episodic ophthalmoplegia :- It is characterized by recurrent attacks of headaches associated with paralysis of third, fourth and sixth cranial nerves. The incidence of involvement of the third cranial nerve is the most common and it persists for days or weeks after the attack. It is often unilateral and tends to become permanent.
  - Chronic progressive external ophthalmoplegia (CPEO) CPEO is the most common feature of mitochondrial myopathy. It occurs in >

50% cases of all mitochondrial myopathies.Typical presentation is B/L ptosis without diplopia in early adulthood. Ophthalmoplegia is usually symmetrical & slowly progressive so diplopia is not often a complaint because all eye movements are reduced equally. The progressive ophtha lmoplegia is unnoticed till decreased ocular motility limits peripheral vision. Ciliary muscles & iris muscles are often unaffected by CPEO. Other variable symptoms are:

* Exercise intolerance
* Hearing loss
* Ataxia
* Hypogonadism
* Cataract
* Sensory axonal neuropathy
* Clinical depression
* Parkinsonism

24. Which of the following is not given as eye drops in corneal ulcer

a) Chloroamphenicol

b) Methylcellulose

c) Flurometholone

d) Olaptadine

Correct Answer - C

Ans. c. Flurometholone

Flurometholone:

- Flurometholone is a steroid.
- Topical corticosteroids and anesthetics[Q] are contraindicated in bacterial ulcers
- Latest trial about the use of topical steroids in corneal ulcer- "Adjunctive topical corticosteroid use does not improve 3-month vision in patients with bacterial corneal ulcers."- http://www.ncbi.nlm.nih.gov/pubmed/21987582

Olapatadine:

- Used in treatment of allergic conjunctivitis.
- Can be used in treatment of refractory vernal ulcers

Chloroamphenicol:

- Topical chloramphenicol is recommended for treatment of bacterial corneal ulcer.\

Methylcellulose:

- Used as a lubricant to prevent corneal ulcers in dry eye

Topical corticosteroids and anesthetics° are contraindicated in corneal ulcer. These should not be used on any type of corneal ulcer because:

- They prevent healing°

- May lead to superinfection with fungi and other bacteria°
- Often make the condition much worse

Treatment of Corneal Ulcers

- Proper diagnosis is essential for optimal treatment

Bacterial corneal ulcers	Intensive fortified antibiotic therapy to treat the infection[Q]
Fungal corneal ulcers	Intensive application of topical anti-fungal agents[Q]
Viral corneal ulcers	For herpes virus, antivirals like topical acyclovir ointment instilled at least five times a day[Q]

Treatment of Corneal Ulcers

- Supportive therapy: Pain medications are given, including topical cycloplegics like atropine or homatropine° to dilate the pupil and thereby stop spasms of the ciliary muscle°. Superficial ulcers may heal in less than a week.
- Deep ulcers and descemetoceles may require conjunctival grafts orconjunctival flaps, soft contact lenses, or corneal transplant[Q].
- Proper nutrition, including protein intake and Vitamin C are usually advised.
- In cases of Keratomalacia, where the corneal ulceration is due to a deficiency of Vitamin A, supplementation of the Vitamin A by oral or intramuscular route is given

Drugs contraindicated in Corneal Ulcer

- Topical corticosteroids and anesthetics[Q]
- These should not be used on any type of corneal ulcer because:
- They prevent healing[Q]
- May lead to superinfection with fungi and other bacteria[Q]
- Often make the condition much worse[Q]

25. A 20 years old male patient presented with photophobia and subnormal electrophysiological response: He is suffering from

a) Stargardt's disease

b) Batten disease

c) Cone dystrophy

d) Chloroquine toxicity

Correct Answer - C
Ans. c. Cone dystrophy

- Cone-Rod dystrophy is associated with depressed scotopic electroretinogram results (ERG), depressed or extinguished photopic ERG and depressed Electrooculographic (EOG) findings

Disease	Scotopic ERG	Photopic ERG	EOG
Best's Vitelliform dystrophy	Normal	Normal	Depresse
Stargardt's disease	Normal (maybe depressed)	Normal (maybe depressed)	Normal (m depresse
Retinitis Pigmentosa	Depressed/extinguished	Depressed/extinguished	Depresse
Cone-Rod dystrophy	Depressed[Q]	Depressed/extinguished	Depresse

26. Which of the following protozoa can affect eye

a) E. histolytica

b) Toxoplasmosis

c) G. lamblia

d) E. coli

Correct Answer - B

Ans. b. Toxoplasmosis

- In Toxoplasmosis, granulomatous lesions and chorioretinitis can be observed in posterior chamber after acute necrotizing retinitis. Other ocular complications include iridocyclitis, cataract, glaucoma.
- E. histolytica G. lamblia and E. coli does not affect eye.

Toxoplasmosis: Ocular Manifestations

- In eye, infiltrates of monocytes, lymphocytes and plasma cells may produce uni- or multifocal lesions
- Granulomatous lesions and chorioretinitis can be observed in posterior chamber after acute necrotizing retinitis
- Other ocular complications include iridocyclitis, cataract, glaucoma

27. Patient with fixed dilated pupil, with iris atrophy and secondary glaucoma after penetrating keratoplasty is suggestive of.

a) Benedict's syndrome

b) Posner-Shlossman syndrome

c) Kaufmann's syndrome

d) Urrets Zavalia syndrome

Correct Answer - D

Ans. d. Urrets Zavalia syndrome

- A fixed dilated pupil following penetrating keratoplasty is a well recognized if rare postoperative complication.
- The mydriasis following penetrating keratoplasty was first described by Castroviejo but it was Urrets-Zavalia who first published his observations on a series of six cases and suggested an association of fixed dilated pupil, iris atrophy. and secondary glaucoma.
- The pupil can become abnormally dilated following penetrating keratoplasty for keratoconus, particularly if dilating drops are used.
- In addition to the pupil and iris abnormalities, Urrets-Zavalia also described other features__ iris ectropion, pigment dispersion, anterior subcapsular cataract and posterior synechiae.

Urrets Zavalia Syndrome

- Urrets Zavalia Syndrome is characterized by triad of: Secondary glaucoma + Iris atrophy + Fixed dilated pupil')
- Urrets-Zavalia syndrome (UZS) consists of a fixed dilated pupil associated with iris atrophy.
- It is a poorly understood complication following penetrating keratoplasty for keratoconus.

Posner Shlossman syndrome

- It is also called as glaucomatocyclitic crisis.
- Episodic unilateral mild anterior uveitis, photophobia, reduced vision and colored rings around lights (from secondary corneal edema

Benedict's Syndrome

- If red nucleus is involved, tremors and jerky movements occur in contralateral side of the body.
- This condition combined with ipsilateral 3rd nerve paralysis is called as Benedict's syndrome.

McKusick-Kaufmann Syndrome

- McKusick-Kaufman syndrome: A rare genetic disorder characterized by hydrometrocolpos (fluid buildup in vagina and uterus), extra fingers and congenital heart defects

28. Tonometer used for irregular surface of the cornea:

a) Mackey Marg tonometer

b) Rebound tonometer

c) Dreger's tonometer

d) Maklakov tonometer

Correct Answer - A
Ans. a. Mackey Marg tonometer

Mackey Marg Tonometer

- Concept is force required to keep the flat plate of a plunger flush with a surrounding sleeve against the pressure of corneal deformation.
- It is accurate in eyes with scarred, edematous and irregular cornea

Perkin's Tonometer

- Perkin's Tonometer uses prism as Goldmann but is counterbalanced, so that tonometry is performed in any position.
- Prism illuminated by battery powered bulbs.
- Force is adjusted manually.
- It is portable

Dreger's Tonometer

- Similar to Perkin's but uses different set of prisms and operated with a motor adjusting the force on these prisms

Maklakov Tonometer

- It is constant force tonometer
- Io^p is estimated by measuring the area of cornea flattened by a known weight.
- It consist of dumbbell-shaped metal cylinder with flat end-plates of polished glass on either ends of diameter 10 mm.

- Tonometers weighing 5, 7.5, 10 and 15 gms are used to measure IOP.

29. Tonometer with variation in application surface

a) Mackey Marg tonometer

b) Rebound tonometer

c) Dreger's tonometer

d) Maklakov tonometer

Correct Answer - D
Ans. d. Maklakov tonometer
Indentation tonometry

- Indentation tonometry was devised by Schiotz[Q].
- Because of its simplicity, reliability, low price and relative accuracy, it is the most widely used tonometer in the world.
- For repeated use in multiple patients it can be sterilized by dipping the footplate in ether, absolute alcohol, acetone or by heating the footplate in the flame of spirit.
- The greatest accuracy is attained if the deflection of lever is between 3-4.
- Its main disadvantage is that it gives a false reading when used in eyes with abnormal scleral rigidity')
- False low level of 10P are obtained in eyes with low scleral rigidity[Q] seen in high myopes and following ocular surgery

Applanation tonometry

- The concept of Applanation tonometry was introduced by Goldmann[Q] is 1954.
- It *is* best on lmbert-Fick law[Q].
- Currently, it is the most popular and accurate tonometer[Q]

30. Bilateral proptosis in children is the most common presentation of:

a) Neurofibromatosis

b) PNET

c) Retinoblastoma

d) Neuroblastoma

Correct Answer - D
Ans. d. Neuroblastoma

- Leukemic infiltration into the orbit (chloroma) is the most common cause of bilateral proptosis in children amongst the option provided.
- The most common cause of bilateral proptosis in children is not definitively established, but metastatic neuroblastoma and/or leukemia (chloroma) should be considered 'The Massachussets Eye and ear Infirmary review manual for Ophthalmology' 3/e p159, 186

Causes of Bilateral Proptosis

- Lymphomas[Q]
- Leukemia[Q]
- Secondaries from:
- Neuroblastoma[Q]
- Nephroblastoma[Q]
- Ewing's sarcoma[Q]

MC cause of unilateral proptosis in children	Orbital cellulitis
MC cause of (non-inflammatory) unilateralproptosis in children	Dermoid cyst°

children

MC cause of bilateral proptosis in children	Not definitively established . Metastatic neuroblastoma° and/or leukemia° (chloroma)
MC cause of unilateral proptosis in adults	Thyroid ophthalmopathy°
MC cause of bilateral proptosis in adults	Thyroid ophthalmopathy

- Bailey and Johnson Head and Neck Surgery 4/1513

MC benign orbital tumor in adults	Cavernous Hemangioma
MC malignant orbital tumor in adults	Lymphoma°
MC benign orbital tumor in children	Dermoid cyst°
MC malignant orbital tumor in children	Rhabdomyosarcomaa

31. Most common complication after lens extraction persistent hyperplastic primary vitreous is:

a) Orbital cellulitis

b) Retinal detachment

c) Vitreous hemorrhage

d) Keratitis

Correct Answer - C
Ans. c. Vitreous hemorrhage

- *I*n Kanski, Yanoffs, Parsons and Khurana, both vitreous hemorrhage and retinal detachment are mentioned as complications of surgery in persistent hyperplastic primary vitreous. Incidence of these two complcations is not mentioned clearly
- Persistent Hyperplastic Primary Vitreous (PHPV)
- Persistent hyperplastic primary vitreous (PHPV) also known as persistent fetal vasculature (PFV).
- PHPV is a pathologic entity resulting from abnormal persistence of the fetal fibrovascular primitive stroma
- (hyaloid system) of the eye which should disappear by the time of birth.
- The primary vitreous forms around the seventh week of life and begins involuting by 20 weeks.
- Persistence and hypertrophy of these vessels can result in PHPV in the anterior and/or posterior chambers
- The typical imaging findings of posterior PHPV include the demonstration of Cloquet's canal and a small eye.

32. Corneal dystrophies are degenerations that are usually

a) Primary and unilateral

b) Primary and bilateral

c) Primary, bilateral with systemic involvement

d) Primary, unilateral without systemic involvement

Correct Answer - B
Ans. b. Primary and bilateral
Corneal dystrophies are degenerations that are usually primary and bilateral.
Corneal dystrophies are usually hereditary, bilateral and symmetrical, located centrally, without vascularization, early in onset and unrelated to any systemic or local disease or condition.-
Corneal Dystrophies

- Corneal dystrophies are a group of genetic, often progressive, eye disorders in which abnormal material often accumulates in the clear (transparent) outer layer of the eye (cornea).
- Conical dystrophies may not cause symptoms in some individuals; in others they may cause significant vision impairment.
- Corneal dystrophies are usually hereditary, bilateral and symmetrical, located centrally, without
- vascularization, early in onset and unrelated to any systemic or local disease or condition
- All are autosomal dominant except macular dystrophy, which is autosomal recessive and associated with mucopolysaccharidosis.

Corneal Dystrophies	**Corneal degenerations**
No inheritance	

Usually hereditary[Q]	No inheritance pattern[Q]
Bilateral[Q]	Unilateral[Q]
Symmetrical[Q]	Asymmetrical[Q]
Located centrally[Q]	Located peripherally[Q]
Without vascularization[Q]	Associated with vascularization[Q]
Early in onset[Q]	Onset in middle life[Q]
Unrelated to any systemic or local disease or condition[Q]	Secondary to some compromising factors like ageing, inflammation, chemicals, trauma or systemic diseases[Q]

33. Weakness of both Adduction and abduction is seen in

a) Duane's retraction syndrome type 1

b) Duane's retraction syndrome type 2

c) Duane's retraction syndrome type 3

d) Double elevator palsy

Correct Answer - C

Ans. c. Duane's retraction syndrome type 3

Weakness of both adduction and abduction is seen in Duane c retraction syndrome type 3.

Duane's Retraction Syndrome

- Congenital strabismus that is usually caused by failure of normal development of the abducens nerve.
- Absence of the abducens nerve and fascicle with anomalous innervation of the lateral rectus muscle by the oculomotor nerve
- Patients may have esotropia or exotropia
- Mostly unilateral, commonly affecting the left eye more than right

Characteristic feature of Duane's Retraction Syndrome

- Retraction of the globe and narrowing of the palpebral fissure during attempted adduction[Q].
- *This feature is caused by the simultaneous contraction of the medial and lateral rectus muscle that occurs during attempted adduction*[Q]

Duane's Retraction Syndrome

Type I (Esotropic Duane's Syndrome)

- Most common type[Q]
- Absence or limitation of abduction and *normal adduction*[Q]

Type II (Exotropic Duane's Syndrome)

- Least common type[Q]
- Limited adduction with normal abduction[Q]

Type III

- Limitation of both *adduction and abduction*[Q]

<u>Double Elevator Palsy</u>

- All horizontal gaze movements are normal.
- Double elevator palsy (mono ocular elevator palsy) is caused by tight oblique contracted inferior rectus muscle or hypoplastic/ineffective superior rectus muscle

34. Gyrate atrophy is a retinal degenerative disease involving deficiency of ornithine transcarbamoylase enzyme. Such patients are benefited by

a) Ornithine free diet

b) Arginine free diet

c) Pyridoxine and folic acid

d) Vitamin B1, B6 and B12

Correct Answer - B
Ans. b. Arginine free diet
(Ref Yanoff and Duker 3/e p574; Harper 28/e p2.50)
Gyrate atrophy is a retinal degenerative disease involving deficiency of ornithine transcarbamoylase enzyme. Such patients are benefited by arginine free diet.
iT IS A recessive disorder by deficiency ornithine aminotransferase (OAT) enzyme
Ornithine, a non-essential amino acid, is an intermediate compound in the formation of urea. It is formed from arginine.
Arginine is converted to ornithine then to glutamate-y-semialdehyde by OAT.
Deficiency of OAT leads to increased level of ornithine (hyperornithenemia) causing gyrate atrophy.

35. In patients with anterior uveitis, decrease in vision due to posterior segment involvement can occur because of:

a) Vitreous floaters

b) Inflammatory disc edema

c) Exudative retinal detachment

d) Cystoid macular edema

Correct Answer - D
Ans. d. Cystoid macular edema
(Ref Kanski 7/e p635, 722, 406; Khurana 4/141, 146)
In patients with anterior uveitis, decrease in vision due to posterior segment involvement can occur because of cystoid macular edema. Corneal dystrophies are usually hereditary, bilateral and symmetrical, located centrally, without vascularization, early in onset and unrelated to any systemic or local disease or condition."

36. A 20-year old male presents with history of tennis ball injury to the right *eye.* On examination, a red spot is seen at the macula. The most likely diagnosis is

a) Macular hole

b) Berlin's edema

c) Macular tear

d) Macular bleed

Correct Answer - B
Ans. b. Berlin's edema
Commotio retinae (Berlin's Edema) is of common occurrence following a blow on the eye. It manifests as milky white cloudiness involving a considerable area of posterior pole with a 'cherry-red spot' in the foveal region. It may appear after some days or may be followed by pigmentary changes."- Khurana 5/e p434
"Commotio retinae most frequently affect the temporal fundus. If the macula is involved, a `cherry-red spot' may be seen at the fovea."-
Berlin's Edema (Commotio Retinae)

- Most commonly involves temporal fundus occasionally involves macula with a "cherry-red spot"[Q]
- Subsequen macular change will include progressive pigmentary degeneration and macular-hole formation[Q]
- Commotio retinae are a contrecoup injury to the retina[Q]
- It can occur centrally or peripherally, and when it involves the macula, it is called Berlin's edema[Q]
- The retina appears normal on examination although the patient may

complain of decreased vision[Q]

- The affected area becomes white and opaque usually hours after the trauma.[Q]
- Berlin's "edema" is not a true edema[Q]
- Swelling and disorganization of the outer retinal layers causes the opaqueness and there is no intercellular fluid[Q]

Clinical Features:

- This occurs in blunt trauma to eye (e.g. Tennis ball injury to eye).
- The visual acuity in commotion retinae varies from 20/20 to 20/400 and does not always correlate with the degree of retinal opacification

Course and Prognosis

- Berlin's edema is usually self-limited and resolves without sequelae
- There is no known intervention that alters its course and prognosis.

37. A 23-year old male presents with progressive proptosis of his right eye. The proptosis increases on bending forward and is compressible. No thrill or bruit was present. Orbital ultrasound revealed an echogenic mass with foci of echo shadows. The most likely diagnosis is

a) Orbital AV fistula

b) Orbital encephalocoecle

c) Orbital varix

d) Neurofibromatosi

Correct Answer - C
Ans. c. Orbital varix
(Ref Kanski 7/e p94; Parson 20/e p455, 462)
Progressive proptosis which increases on bending forward and compressible without thrill or bruit, on orbital ultrasound revealing an echogenic mass is highly suggestive of orbital varix.

38. A 40-year old male with diabetes presents with vitreous hemorrhage. What is the cause?

a) Posterior retinal detachment

b) Neovascularization at disc

c) Central retinal vein occlusion

d) Trauma to central retinal artery

Correct Answer - B
Ans. b. Neovascularization at disc

39. A 32-year old male presents with unilateral diminished vision in the right eye. On examination, there is mild iritis, vitretis and a focal necrotic lesion is seen at the macula. The most likely diagnosis is:

a) Multiple Evanescent White Dot syndrome

b) Ocular toxoplasmosis

c) Multifocal chorioditis

d) Ocular sarcoidosis

Correct Answer - B
Ans. b. Ocular toxoplasmosis
A 32-year-old male presents with unilateral diminished vision in the right eye. On examination, there is mild iritis, vitretis and a focal necrotic lesion is seen at the macula. The most likely diagnosis is ocular toxoplasmosis.
"Ocular toxoplasmosis presents with localized necrotizing chorioretinitis involving macula, satellite lesions, spill over granular anterior uveitis, vitritis (leading to head light in fog appearance) with floaters (due to vitritis), diminished vision, pain, redness and photophobia in young adults/infants."
Ocular Toxoplasmosis

- Toxoplasmosis is one of the most frequently identifiable causes of uveitis worldwide.Q
- MC cause of infectious posterior uveitis in non-immunocompromised individualsQ

- 2nd MC cause of infectious posterior uveitis in patients with HIV/AIDS (MC cause: CMV retinitis)[Q]
- It usually presents in infants or adults of 10-35 years[Q].

Clinical Features

- Depends on patient age, location, size and severity of retinochoroiditis
- Ocular manifestations include floaters and blurred vision
- Decreased visual visual acuity may occur as a result of macular involvement or severe vitreous inflammation

Ocular toxoplasmosis presents with

- Necrotizing chorioretinitis (destroyinti choroid and retina producing punched out heavily pigmented macular scar)[Q]
- Satellite lesion (solitary inflammatory focus near old pigmented[Q]
- Spill over anterior uveitis (may be granular resembling Fuchs syndrome[Q]
- Severe vitritis (so dense as to prohibit an adequate view of posterior[Q]
- segment i.e. head light in fog appearance)[Q]
- Bilateral macular involvement is common (in immunocompromised)[Q.]
- Triad of congenital toxoplasmosis: Convulsion + Chorioretinitis + Intracranial calcification[Q]

Diagnosis:

- Diagnosis of ocular toxoplasmosis is often made by clinical features
- Diagnostic tests include demonstration of parasite, Sabin-Feldman dye test (serological test require organism with a titer >1:16), complement fixation test, indirect hemagglutination test and ELISA for IgG and IgM.

Treatment:

- MC treatment for ocular toxoplasmosis ("classic therapy"): Pyrimethamine and sulfadiazine plus corticosteroids°.
- Alternative treatment: Quadruple drug therapy (classic regimen plus clindamycin), as well as single use of clindamycin, trimethoprim/sulfamethoxazole, spiramycin, minocycline, azithromycin, atovaquone and clarithromycin.

40. A female presented with breathlessness, arthralgia and blurring of vision with granulomatous anterior uveitis. What is the most probable etiology

a) Tubercular uveitis

b) HLA-B27 related uveitis

c) Intra-ocular lymphoma

d) Ocular sarcoidosis

Correct Answer - D
Ans. d. Ocular sarcoidosis
Characteristic Features
Clinical findings suggestive of Sarcoidosis:

- Nodular Trabeculitis: Single most suggestive finding'
- Nodular iridocyclitis, Koeppe nodules°, and arge mutton fat keraticprecipitates
- Chorioretinal granulomas
- Vitreous string of pearls and snow ball opacities°, Retinal perivasculitis, * Candle wax drippings° and yellow waxy spots.

41. Acquired nasolacrimal duct obstruction is a side effect of therapy of which of the following medication

a) Timolol

b) Brimonidine

c) Dorzolamide

d) Pilocarpine

Correct Answer - A
Ans. a. Timolol
Acquired nasolacrimal duct obstruction is a side effect of chronic use of timolol-containing topical glaucoma therapy.
"Chronic use of timolol-containing topical glaucoma therapy preparations in glaucoma patients is associated with an increased risk for the development of nasolacrimal duct obstruction (NLD0)."- Seider N, Miller B. Beiran I. Topical glaucoma therapy as a risk factor for nasolacrimal duct obstruction.

42. Initial screening test for the auditory function in neonates

a) Auditory Brainstem Response (ABR)

b) Otoacoustic Emissions (OAE)

c) Free Field Audiometry

d) Visual reinforcement audiometry

Correct Answer - B
Ans. b. Otoacoustic Emissions
The screening investigation of high-risk neonates in ICU for suspected hearing loss is otoacoustic emissions.

Uses of OAE

- Screening test of hearing in neonates[Q]
- Help to differentiate between cochlear and retrocochlear lesions[Q]
- Used to diagnose retrocochlear pathologies especially auditory neuropathy[Q]

43. Vestibular Evoked Myogenic Potential (VEMP) has been used in assessment of

a) Cochlear nerve unction

b) Superior vestibular nerve function

c) Inferior vestibular nerve function

d) Inflammatory myopathy

Correct Answer - C
Ans. c. Inferior vestibular nerve function
VEMPs are believed to be a good indicator of saccular and inferior vestibular nerve function in clinical evaluations." - Julie A. Honaker and Ravi N. Samy, Current Opinion in Otolaryngology and Head and Neck Surger

Vestibular Evoked Myogenic Potential (VEMP)

- Assesses inferior vestibular nerve function.
- VEMP testing is a relatively noninvasive method to assess patients with vestibular disorders.
- The VEMPs are short latency electromyograms (EMGs) evoked by high-acoustic stimuli at the ipsilateral ear and recorded via surface electrodes over a tonically contracted sternocleidomastoid muscle.
- VEMP is a vestibule-collie reflex whose afferent limb arises from acoustically insensitive cells in the saccule, with signals conducted via the inferior vestibular nerve.

44. A 6 year old child presented with history of recurrent upper respiratory tract infections, mouth breathing, nasal obstruction hearing impairment. with high arched palate. The management will be:

a) Tonsillectomy

b) Adenoidectomy with grommet insertion

c) Myringotomy with grommet insertion

d) Myringotomy

Correct Answer - B
Ans. b. Adenoidectomy with grommet insertion

45. Which of the following is not an absolute contraindication for corneal transplantation?

a) TB meningitis

b) Rabies

c) Death due to unknown cause

d) SSPE

Correct Answer - A
Ans. a. TB meningitis
TB meningitis is not an absolute contraindicationfor corneal transplantation.

46. In hypoxic injury, cornea becomes edematous because of accumulation of:

a) Carbon dioxide

b) Lactate

c) Pyruvate

d) Glycogen

Correct Answer - B
Ans. b. Lactate
In hypoxic injury, cornea becomes edematous because of accumulation of lactate.
'Contact lenses are generally very well tolerated, but they induce numerous changes in corneal physiology and the tear film. Decreased oxygen tension occurs with contact lens wear, especially when conventional lenses are worn overnight. Hypoxic stromal edema results from the osmotic changes produced by lactate accumulation.'-

Cornea

- **C**ornea (the anterior surface) is the most important refractive surface of the eye, and have power of 45(3/4th of total power of eye).
- The critical angle is 46'' at cornea tear interface
- The healthy cornea is avascular and devoid of lymphatic channels^{Q}
- Corneal cell derives nourishment by diffusion from the aqueous, the capillaries at the limbus and
- oxygen dissolved in the tear filmQ
- The metabolism of cornea is preferentially aerobic^{Q} and it can function only up to 6-7 hours anaerobically normal conditions
- Hypoxic corneal stromal edema results from the osmotic changes

produced by lactate accu mutation Q

- The metabolic active cells are endothelium, epithelium and stromal keratocytes Q.
- Oxygen is mostly derived from tear film Q with a small contribution from limbal capillaries.
- Glucose supply from cornea metabolism is mainly (90%) derived from aqueous Q and supplemented (10%) by capillaries.
- Cornea is richly supplied by nervesQ (without myelin sheaths and Schwann cell sheath) which originate from small ophthalmic division of trigeminal nerve, mainly by long ciliary nerve Q. Due to its dense nerve supply, the cornea is extremely sensitive structure

47. Patient complains of distorted vision after wearing spectacles, which worsens in both meridians progressively. Which of the following is not true about this condition?

a) It is called as pin cushion effect

b) Seen on wearing a convex lens

c) It is a type of aniseikonia

d) Cylindrical lens increases the distortion

Correct Answer - D
Ans. d. Cylindrical lens increases the distortion
Distortion occurs when the transverse magnification is not constant but changes as distance from the axis increases within a transverse plane. In pincushion distortion, magnification increases as distance from the axis increases (in the same transverse plane), whereas in barrel distortion, magnification decreases as distance from the axis increases. Distortion is field dependent, pupil independent, and stigmatic.
Pincushion distortion occurs in practically all spectacle corrected aphakes and is occasionally seen in high myopes after clear lens extraction.'
Aniseikonia

- Aniseikonia is an ocular condition where there is a significant difference in the perceived size of images.
- It can occur as an overall difference between the two eyes, or as a difference in a particular meridian

Causes:

- Aniseikonia can occur naturally or be induced by the correction of a refractive error, usually anisometropia
- (having significantly different refractive errors between each eye) or antimetropia (being myopic in one eye and
- hyperopic *in* the other)
- Meridional aniseikonia occurs when these refractive differences only occur in one meridian.
- Refractive surgery can cause aniseikonia in much the same way that it is caused by glasses and contacts.
- One cause of significant anisometropia and subsequent aniseikonia has been aphakia

Symptoms:

- When this *magnification* difference becomes excessive the effect can cause diplopia, suppression, disorientation,
- eyestrain, headache, and dizziness and balance disorders.

Treatment:

- Treatment is done by changing the optical magnification properties of the auxiliary optics (corrective lenses).
- The optical magnification properties of spectacle lenses can be adjusted by changing parameters like the base curve, vertex distance, and center thickness.
- Contact lenses may also provide a better optical magnification to reduce the difference in image size.
- The difference in magnification can also be eliminated by a combination of contact lenses and glasses (creating a weak telescope system).
- The optimum design solution will depend on different parameters like cost, cosmetic implications, and if the patient can tolerate wearing a contact lens.
- When the image disparity is astigmatic (cylindrical) and not uniform, images can appear wider, taller, or diagonally different. When the disparity appears to vary across the visual field (field-dependent aniseikonia), as may be the case with an epiretinal membrane or retinal detachment, the aniseikonia cannot fully be corrected with traditional optical techniques like standard corrective lenses.
- However, partial correction often improves the patient's vision

comfort significantly. Little is known yet about the possibilities of using surgical intervention to correct aniseikonia.

48. There is a retained iron foreign body. What is the best investigation for monitoring vision?

a) ERG

b) Dark adaptometry

c) Serial Evoked Potentials

d) Arden index

Correct Answer - A
Ans. a. ERG
Best investigation for monitoring vision in patients of retained iron foreign body ERG.

Retained Intraocular Foreign Body

- A retained foreign body may be associated with several types of glaucoma.
- Loss of integrity of the globe as a result of penetration may produce a shallow or flat anterior chamber. This, in association with attendant inflammation, can result in secondary angle-closure glaucoma with extensive peripheral anterior synechiae.
- Frank disruption of the lens capsule may produce lens particle glaucoma.
- Cataract formation may produce phacomorphic glaucoma or phacolytic glaucoma if the cataract becomes hypermature.
- Siderotic glaucoma may occur as a late manifestation of a retained iron-containing foreign body.

Diagnosis:

- Dilated fundus exam may allow easy visualization of the retained foreign body.

- Occasionally, a foreign body is located in the anterior chamber and is found on gonioscopy.
- If the media are not clear enough to allow fundoscopic examination, additional studies including plain *films,* computed tomography, and ultrasonography are helpful in confirming the diagnosis.
- Reduced retinal function may also be evident with a reduction electroretinogram activity.

49. Laser trabeculoplasty is indicated in which of the following?

a) Neovascular glaucoma

b) Pseudoexfoliative glaucoma

c) Chronic angle closure glaucoma

d) Uveitic glaucoma

Correct Answer - B
Ans. b. Pseudoexfoliative glaucoma
Pseudoexfoliative glaucoma.
Argon or selective laser trabeculoplasty can be performed in pseudoexfoliative glaucoma patients if the angle is open enough to allow laser application. Laser trabeculoplasty is reported to have a higher success rate in pseudoexfoliative glaucoma patients than in POAG and therefore is often used earlier in the management of pseudoexfoliative cases.

50. Which of the following antibiotics can be used in the treatment of fungal keratomycosis?

a) Silver sulfadiazine

b) Linezolid

c) Vancomycin

d) Doxycycline

Correct Answer - A
Ans*. a. Silver sulfadiazine*
sulfadiazine can be used in the treatment of fungal keratomycosis. There are three main groups of ocular antifungal agents- polyene antibacterials , pyrimidines and imidazoles. Other drugs used to treat fungal infections include iodine and silver sulfadiazine.'- Clinical Pharmacology by Jill E. Maddison, Stephen W. Page, David Church/ p567

51. Which of the following is not a feature of fungal corneal ulcer?

a) Fixed hypopyon

b) Ulcer with sloughing margins

c) Symptoms are more pronounced than signs

d) Fungal hyphae are seen on KOH mount

Correct Answer - C
Ans. c. Symptoms are more pronounced than signs

52. A 25-year-old young adult presented with painless red eye with 10P of 60 mmHg. What is the most likely diagnosis?

a) Chronic papilledema

b) Acute angle closure glaucoma

c) Glaucomatocyclitic crisis

d) Acute anterior uveitis

Correct Answer - C

Ans. c. Glaucomatocyclitic crisis

*T*he most likely diagnosis in a 25-year-old young adult with painless red eye with 10P of 60 mmHg is glaucomatocyclitic crisis.

`Unilateral attacks of mild non-granulomatous anterior uveitis with elevations in 10P are the hallmark of Posner Schlossman syndrome (PSS). Acute attacks of glaucomatocyclitic crisis last from a few hours to several weeks and may be recurrent. Between episodes, lOP and aqueous outflow facility return to normal.'

Posner Schlossman syndrome

- Unilateral attacks of mild non-granulomatous anterior uveitis with elevations in lOP are the hallmark of Posner Schlossman syndrome (PSS).
- It is also called as glaucomatocyclitic crisis.
- Acute attacks of glaucomatocyclitic crisis last from a few hours to several weeks and may be recurrent
- Between episodes, lo[p] and aqueous outflow facility return to normal.

Clinical Features:

- Episodic unilateral mild anterior uveitis, photophobia, reduced vision and colored rings around lights (from secondary corneal edema)[Q].

- Symptoms of an acute attack of PSS *may* include unilateral blurred vision and pain.
- Clinical exam reveals mild anterior chamber reaction and small to medium sized non- granulomatous keratic precipitates[Q]
- There may also be associated corneal edema, which resolves with lowering of the **10P.**
- Intraocular pressure elevation is usually as high as 40-60 mmHg, which is due to blockage of the trabecular meshwork with mononuclear cells[Q]

Treatment:

- The aim of treatment is to address the anterior segment *inflammation* and lower 10P[Q].
- Topical steroids and ocular hypotensive medications are sufficient to control these attacks but not to prevent
- Without intervention, these attacks usually resolve.

53. Subretinal demarcation lines (The water marks) indicate:

a) Fresh rhegmatogenous retinal detachment

b) Old rhegmatogenous retinal detachment

c) Retinopathy of prematurity

d) Retinitis pigmentosa

Correct Answer - B
Ans. b. Old rhegmatogenous retinal detachment

54. Which of the following is used as self-tonometer?

a) Diaton palpebral tonometer

b) Rebound tonometer

c) Perkins tonometer

d) Dynamic contour tonometer

Correct Answer - B
Ans. b. Rebound tonometer
new handheld tonometer, the Icare tonometer is able to measure IOP without the use of topical anesthetic.
IOP is determined by measuring the force produced by a small plastic probe as it rebounds from the cornea.
The rebounded tonometer has been shown to have similar accuracy to the Tono-Pen, and it is comparable with Goldman
for IOPs over a reasonable ranee in adults

55. Which of the following diagnostic procedure is not done in dilated pupil?

a) Gonioscopy

b) Fundus examination

c) Laser inferometry

d) Electroretinography

Correct Answer - A
Ans. a. Gonioscopy
Gonioscopy is not done in a diluted pupil. (AI1MS May 2014 repeat)
Gonioscopy is done in dark room with minimum slit lamp light. Pupil contraction will falsely open up the angle. Likewise pupillary dilatation will cause crowding of the iris at angle and angle appears as closed.
'By gonioscopy angle structures are assessed, especially relationship of root of iris and trabecular meshwork in normal physiological state. To avoid pupillary contraction, it is done in dark room with minimum slit lamp light. '- Basics and Clinical Science Course, American Academy of Ophthalmology, 2012-13; Sec 10, p46

56. Which of the follow ing is output indicator for NPCB?

a) Number of cataract surgeries leading to sight restoration

b) Decrease in prevalence of blindness

c) Number of school children provided glasses for refraction correction

d) Number of eye surgeons trained

Correct Answer - A
Ans. a. Number of cataract surgeries leading to sight restoration
Number of cataract surgeries leading to sight restoration is output indicator for NPCB.
'From around 1.2 million iataract surgeries per year in the 1980s the cataract surgical output increased to 3.9 million
peryear by 2003. NPCB output is indicated by number of cataract surgeries.

57. Which of the following is not true about rhegmatogenous retinal detachment?

a) It is caused due to fibrous bands in the vitreous

b) Presents as floaters

c) Surgery is the primary treatmen

d) Can extend up to ora serrata

Correct Answer - A
Ans. a. It is caused due to fibrous bands in the vitreous
bands in the vitreous lead to tractional retinal detachment, not the rhegmatogenous retinal detachment.
A rhegmatogenous retinal detachment (RRD) occurs when a tear in the retina leads to fluid accumulation with a separation of the neurosensory retina from the underlying retinal pigment epithelium.'- Yanoff and Duker 4/e p649

58. Normal value of Arden index:

a) 1

b) 1.5

c) Less than 185%

d) More than 185%

Correct Answer - D
Ans. d. More than 185%
'As there is much variation in EOG amplitude in normal subjects, the result is calculated by dividing the maximal height of the potential in the light (light peak) by the minimal height of the potential in the dark (dark trough). This is expressed as a ratio (Arden ratio) or as a percentage. The normal value is over 1.85 or 185%.'- Kanski 7/e p649

Electro-oculography

Principle

- The electro-oculogram (EOG) measures the standing potential between the electrically positive cornea and the electrically negative back of the eye.
- It reflects the activity of the RPE and the photoreceptors.
- This means that an eye blinded by lesions proximal to the photoreceptors will have a normal EOG
- In general diffuse or widespread disease of the RPE is needed to significantly affect the response.

Interpretation

- As there is much variation in EOG amplitude in normal subjects, the result is calculated by dividing the maximal height of the potential in the light (lightpeak) by the minimal height of the potential in the dark (dark trough).

- This is expressed as a ratio (Arden ratio) or as a percentage.
- The normal value is over 1.85 or 185%

59. The critical angel of cornea-air interface is

a) 36°

b) 46°

c) 56°

d) 66°

Correct Answer - B
Ans. b. 46°
The anterior chamber angle comprises scleral spur, and ciliary body band.
2. The critical angle is 46 degree at cornea tear
the following anatomical landmarks: Schewalbe's line, trabecular meshwork, interface. (I = angle ofincidence)

60. Which diagnostic procedure is not done in a dilated pupil?

a) Gonioscopy

b) Laser inferometry

c) Fundus examination

d) Electroretinography

Correct Answer - A
Ans. a. Gonioscopy
Gonioscopy is done in dark room with minimum slit lamp light. Pupil contraction will falsely open up the angle. Likewise pupillary dilatation will cause crowding of the iris at angle and angle appears as closed
"By gonioscopy angle structures are assessed, especially relationship of root of iris and trabecular meshwork in normal physiological state. To avoid pupillary contraction, it is done in dark room with minimum slit lamp light. Basics and Clinical Science Course, American Academy of Opthalmology,

61. A 59-year maie p[g] cNvitts with dimness of near vision. On examination, the media was clear in both the eves. What would he the next step?

a) Refraction with near add

b) Refraction under atropine

c) Radial keratotomy

d) Cataract surgery

Correct Answer - A
Ans. a. Refraction with near add
A 59-year-old male presents with dimness of near vision. On examination, the media was clear in both the eyes. For diminuation of vision this age, one should think for cataract; but in this case, media (cornea/aqueothens/vitreous) is clear, so cataract is ruled out
As there is dimness of near only, the next most likely cause would be presbyopia. The treatment for presbyopia is refraction and near addition

Presbyopia

- The term presebyopia means "oldie" and is a vision condition involving the loss of the eye's ability to focus on close objects°.
- Presbyopia is a condition that occurs as a part of normal ageing and is not considered to be an eye disease°.
- Symptoms are usually noticeable by age 40-45 and continue to develop until the process stabilizes some 10-20 years later.

Causes:

- As individuals age, the lens becomes less flexible and elastic, and

the muscles become less powerful

- Because these changes result in inadequate adjustment of the lens of the eye for various distances, objects that are close will appear blurry
- Major cause: Loss of elasticity of the lens of the eye
- Loss of ciliary muscle power, however, is also believed to contribute to the problem[Q].

Symptoms:

- Individuals typically have difficulty in reading small print, and may need to hold reading materials at arm's length[Q].
- Symptoms include headache and eyestrain when doing close work, blurry vision, and eye fatigue[Q].
- Symptoms may be worse early in the morning or when individuals are fatigued
- Dim lighting may also aggravate the problem[Q].

Diagnosis:

- Diagnosed during an eye examination conducted by eye specialists, such as optometrists or ophthalmologists.
- Part of the examination will assess vision while reading by using various strength lenses.

Treatment:

- Presbyopia cannot be cured, but individuals can compensate for it by wearing reading, bifocal, or trifocal eye glasses[Q]
- A convex lens[Q]is used to make up for the lost automatic focusing power of the eye.
- Half-glasses can be worn, which leave the top open and uncorrected for distance vision
- In addition to glasses, contact lenses have also been found to be useful in the treatment of presbyopia

62. Which organismal infection is highly virulent and may cause corneal ulcer perforation within 48 hours?

a) Herpes simplex

b) Pseudomonas

c) Staphylococci

d) Aspergillus

Correct Answer - B
Ans. b. Pseudomonas
Pseudomonas Keratitis

- Pseudomonas aeruginosa is the MC gram-negative organism isolated from corneal ulcers and is a frequent cause of contact lens-associated keratitis.

Source of Infection:

- These aerobic bacilli are found in moist environments.
- Frequently contaminate inadequately chlorinated swimming pools and hot tubs, ventilators, nebulizer and vaporizer solutions, and ophthalmic solution bottles.

Pathophysiology:

- The organism readily adheres to the damaged epithelium, and stromal invasion is rapid.
- Pseudomonas keratitis tends to progress rapidly if inadequately treated.
- Most commonly, the organism produces destructive enzymes such as protease, lipase, elastase, and exotoxin, which results in necrotic, lipase, elastase, and exotoxin, which results in necrotic, soupy ulceration.

- The ulcer often extends peripherally and deeply within hours and can rapidly involve the entire cornea.
- Ring ulcers can develop, and the corneal epithelium peripheral to the primary ulcer typically develops a diffuse gray, ground-glass appearance.
- The corneal stroma appears to dissolve into a greenish-yellow mucous discharge that fluoresces under ultraviolet (but not under cobalt blue) light.
- The suppurative ulcer frequently thins to a discemetocele that perforates
- The ulcer is often associated with a marked anterior chamber reaction and hypopyon formation.
- Extensive keratitis can extend to the limbus and produce an infectious scleritis.

63. Circumcorneal vascularization is observed in deficiency of

a) Vitamin D

b) Thiamine

c) Riboflavin

d) Biotin

Correct Answer - C
Ans. c. Riboflavin
ye changes in Riboflavin Deficiency
Riboflavin deficiency leads to superficial interstitial keratitis and corneal vascularization
In the earlier changes, the superficial layers of the cornea are invaded by the capillaries.
Interstitial inflammatory infiltration and exudation follow, producing opacities and sometimes, ulcerations of
corneal surface.
Other Changes of Riboflavin Deficiency

- Cheilosis is usually the first and most characteristic sign of riboflavin deficiency.
- It begins as areas of pallor at the angles of the mouth.
- Later, cracks or fissures may appear, radiating from the corners of the mouth, which tend to become secondarily
- infected.
- With glossitis, the tongue becomes atrophic, taking on a magenta hue strongly resembling the red-blue colour
- of cyanosis.
- A greasy, scaling dermatitis over the nasolabial folds may extend into a butterfly distribution to involve the

- cheeks and skin about the ears.
- Scrotal and vulvar lesions are common.

64.

A patient gives a history of chuna falling into his eyes. All of the following would be a part of his immediate management except:

a) Irritation of both eyes with copious amounts of normal saline

b) Frequent sodium citrate drops

c) Thorough slit-lamp examination on presentation

d) Removal of chuna particles by double eversion of upper eyelids

Correct Answer - C
Ans. c. Thorough slit-lamp examination on presentation
Immediate Mananement of Chemical (Chuna-Powder) Injury:

- Irrigation of both eyes with copious amounts of normal saline
  Removal of chuna particles by double eversion of upper eyelids
- Lids and fornices should be examined with double eversion of the lids and lime particles should be removed with forceps; a cotton tipped applicator soaked in EDTA 1%°.
- "Chuna (strong alkali material) is used with tobacco. Bursting of chuna packet is one of the most common modes of ocular injury. Thorough slit lamp examination is not possible at presentation because of severe pain and blepharospasm. Thorough irrigation with saline and removal of chemical is most important. Irrigation of the cornea/conjunctiva/fornix with the lids held open with a speculum should be done until pH of tears shows neutrality. Lids and fornices should be examined with double eversion of the lids and lime particles should be removed with forceps; a cotton tipped applicator soaked in EDTA 1%."- Yanoff and Ducker 's Ophthalmology; 3rd/e p349

Chemical (Chuna-Powder) Injury

- Chuna (strong alkali material) is used with tobacco.
- Bursting of chuna packet is one of the most common modes of ocular injuryQ.
- Alkalis are more injurious to eye in comparison to acids as acids cause protein coagulation, which prevent further penetration of the chemical.
- Thorough slit lamp examination is not possible at presentation because of severe pain and blepharospasmQ.
- Thorough irrigation with saline and removal of chemical is most important°.
- Emergency Management of Chemical injury:
- Since duration of contact with chuna/chemical determines the extent of subsequent injury and prognosis, immediate copious irrigation is of the most importanceQ.
- Irrigation of the cornea/conjunctiva/fornix with the lids held open with a speculum should be done until pH of tears shows neutralityQ.
- Lids and fornices should be examined with double eversion of the lids and lime particles should be removed with forceps; a cotton tipped applicator soaked in EDTA 1%Q.
- If an acid burn is suspected, a base should not be used for irrigation in an effort to neutralize the acid.
- After copious irrigation, necrotic corneal epithelium should be debrided to promote re-epithelializationQ

65. Which of the following drugs acts on trabecular meshwork and affects the aqueous outflow?

a) Timolol

b) Pilocarpine

c) Brimonidine

d) Brinzolamide

Correct Answer - B
Ans. b. Pilocarpine

- Pilocarpine increases trabecular outflow.
- Pilocarpine is used only in the eye as 0.5–4% drops.
- It is a third-line drug in open-angle glaucoma.
- An initial stinging sensation in the eye and painful spasm of accommodation are frequent side effects.

66. Ex-Press glaucoma implant is made up of?

a) Silicone

b) Titanium

c) Gold

d) Stainless steel

Correct Answer - D
Ans. d. Stainless steel

- It is made of made of surgical-grade stainless steel, nonvalved filtration device designed to shunt aqueous humor from the anterior chamber to a subconjunctival filtration bleb.
- The EX-PRESS Glaucoma Filtration Device is intended to reduce IOP in glaucoma patients when medication and conventional surgical treatments have failed.
- The device channels aqueous humor through a secure lumen (of either 50 µm or 200 µm) to a half-thickness scleral flap, creating a subconjunctival filtration bleb.
- It is a minimally invasive glaucoma surgery (MIGS) to increase aqueous drainage.
- It has lower complications of ocular hypotony.
- The commonly used devices are as follows:

Shunts using episcleral explants:
* Ahmed glaucoma valve: Silicone
* Molteno implant: Polypropelene plate and silicone plate
* Baerveldt implant: Silicone

Mini-shunts:
* Ex-Press™ Mini-Shunt: Stainless steel
* iStent®: Titanium

67. Ascorbate and u-tocopherol are maintained in a reduced state in the lens by:

a) Glucose

b) Glycoprotein

c) Glutathione

d) Fatty acid

Correct Answer - C

Ans. c. Glutathione

Ascorbate and a-tocopherol are maintained in a reduced state in the lens by glutathione.

"Ocular concentrations of glutathione are very high when compared with most other tissues and decreased levels of glutathione are associated with both age related macular degeneration and cataract and in diabetic patients with similar conditions. Glutathione is critical in maintaining the reduced state of sulfrhydryl-containing proteins in the lens. Glutathione normally functions to maintain Ascorbate, alpha-tocopherol, and other cellular components in reduced state."- Parson 2P/256

"The reducing compound glutathione (GSH) exists in an unusually high concentration in the lens where it junctions as an essential antioxidant vital for maintenance of the tissue's transparency. In conjunction with an active glutathione, redox cycle located in the lens epithelium and superficial cortex, GSH detoxifies potentially damaging oxidants such as 11_20_2 and dehydroascorbic acid."

Antioxidants present in the lens

Glutathione[Q]	Catalase[Q]
Vitamin C[Q]	Superoxide
Vitamin A[Q]	dismutase[Q]

68. A 7-year old male child presents with normal vision 6/6 in the right eye and hand movement perception close to the face in the left eye. On fundoscopy, his right eye was normal and left eye showed retinal detachment, subretinal yellowish exudates and telangiectatic vessels. The most likely diagnosis is:

a) Coats' disease

b) Sympathetic ophthalmitis

c) Familial exudative vitreoretinopathy

d) Retinopathy of prematurity

Correct Answer - A
Ans. a. Coats' disease

Goats'Disease
. Idiopathic condition
. Characterized by retinal vascular changes and exudations, was first described by Coats . More common in men
. Usually unilaterale, bilateral in l0-15% ofcases
. Average age at diagnosis: 8-16 years
Etiology:
. Deficienqy of norrin
Pathology:
. Marked thickening of the basement membrane of the telangiectatic vesselsc . Irregular dilatation of the retinal vessels is seen, often

associated with massive exudation of PAS-positive material into the outer neural retinal layerso.
. Lipid-laden macrophages are present beneath and in the outer layers ofthe neural retina. Formation of macular and subretinal nodules.
. Marked retinal endothelial proliferation and hemorrhagic infarction may occur
Clinical Features:
. Characterized by discrete zones of alteration in the retinal vascular structure with aneurysmal dilation, capillary
dropout, and leakage.
. Vision may decrease as a result of leakage from the abnormal vascular channels that are formed, with consequent
edema, lipid deposition, and exudative retinal detachmentq.
. Typical ophthalmoscopic picture: Retinal vascular abnormalities associated with localized tipid deposition and varying degrees ofsubneural retinal exudate.
. Aberrant arteriovenous communicating channels
. [n children: Typically diagnosed as a result of the recognition of poor vision, strabismus, or leukocoria.
. In patients with leukocoria, a white pupillary reflex on photographs may be the initially noted abnormality.
. In adults: MC presenting complaint is poor vision
. Diagnosis is confirmed opthalmoscopically: lypical vascular abnormalities with lipid deposition and subretinal exudates
Treatment:
. Major goal of treatment: Preserve or improve visual acuity or, when this is impossible, to preserve the anatomical
integrity ofthe eye.
. Closure of the abnormal, leaking retinal vessels to allow resorption of exudate.
. Laser photocoagulation is the treatment of choice in mild to moderate cases of exudation from Coats'disease.
. Cryotherapy is of use in the ablation of abnormal retinal vessels

69. A young male presents with central scotoma in left eye. His right vision showed 6/6 vision. On examination, in the left eye, there was focal foveal detachment. What would be the next step?

a) Examine retrolental cells

b) Inquire about the use of steroids

c) Ask for history of trauma in the other eye

d) Examination under slit-lamp

Correct Answer - B
Ans. b. Inquire about the use of steroids
"There is extensive evidence to the effect that corticosteroids (e.g. cortisone). commonly used to treat infammations, allergies, skin conditions and even certain eye conditions, can trigger central serous retinopathy, aggrarate it and caase relapses.

70. A 28-week baby suffered from respiratory distress syndrome at birth. On day 14 of life, he developed sepsis. No other co-morbidity was seen. He should be evaluated for retinopathy of prematurity at what postnatal age?

a) 2 weeks

b) 4 weeks

c) 6 weeks

d) 8 weeks

Correct Answer - B
Ans. b. 4 weeks
evaluatedfor retinopathy of prematurity at 4 weeks dage.
Bilateral proliferative retinopathy occurring in premature infants (32 weeks or <1.5 kg) exposed to high concentration of O2 first 10 days oflife

71. A person is diagnosed to be a diabetic on his 45th birthday. You will recommend a dilated fundoscopic examination:

a) Immediately

b) Before his 50^{th} birthday

c) When he turns 50 years of age

d) When he complains dimness of vision

Correct Answer - A
Ans. a. Immediately

72. Microaneurysms are the earliest manifestation of diabetic retinopathy. Which of the following layer is involved in diabetic etinopathy?

a) Outer plexiform layer

b) Inner nuclear layer

c) Layer of rods and cones

d) Retinal pigment epithelium

Correct Answer - B
Ans. b. Inner nuclear layer
Mlcroaneurysms are the earliest clinical sign of diabetic retinopathy and occur secondary to
capillary wall outpouching due to pericyte loss.
. Thev appear as small red dots' Microaneurys
Structural changes in the retinal microcirculation have been associated with a physiologic breakdown in the bloodretinal barrier. ihus, the retinal microcirculation in diabetics may be exceptionally leaky, giving rise to macular
edema, a common cause of visual loss in these patients.
The vascular changes may also produce exudates that accumulate in the outer plexiform layerq

73. Pneumoretinopexy is an outpatient procedure in which retinal detachmentis sealed with air insufflation. Which of the follov gas is used in pneu-etitiopexy?

a) Sulfur hexafluoride

b) Carbon dioxide

c) Nitrous oxide

d) Oxygen

Correct Answer - A
Ans. a. Sulfur hexafluoride
Pneumatic
. Choices of the agent for intraocular tamponade include air, sulfur hexafluoridec, perfluoro- ethane, and perfluoropropane.
. Perfluoroethane has the characteristics that match these criteria the best, but it has not been approved by the FDA for clinical use.
. In contrast, both sulfur hexafluoride and perfluoropropane have been approved by the FDA for clinical use.
. The long duration of perfluoropropane is advantageous for selected cases that require prolonged gas tamponade.
Because ofits greater expansion, only a small volume ofperfluoropropane is required.
. However, many surgeons consider the long duration ofperfluoropropane to be excessive, causing unnecessary delay in the resumption of normal activities and traveling for the patient.
. By default, sulfur hexafluoride has become the gas of choice used

most frequently by most surgeons for pneumatic retinopexy

74. Lipogranuomatous inflammation is seen in.

a) Fungal infection

b) Tuberculosis

c) Chalazion

d) Viral infection

Correct Answer - C
Ans. c. Chalazion

75. A patient with conjunctival infection, which led to corneal perforation, was positive for Gram-negative coccoid appearance on Gram stain. Further investigation showed small translucent colonies, which is oxidase positive. What could be the most probable causative organism?

a) Moraxella catarrhalis

b) Neisseria gonorrhoea

c) Pseudomonas aeruginosa

d) Acinetobacter actinatus

Correct Answer - B
Ans. b. Neisseria gonorrhea
Gram negative coccoi with small translucent colonies, which is oxidase positive is Neisseria gonorrhea.
Hyperacute Conjunctivitis of Adults or Gonococcal Conjunctivitis

- Disease affects adults, predominantly males
- Infection directly spreads from genitals to eye
- Markedly decreased incidence of gonococcal conjunctivitis

Characteristic Features of Gonococci:

- Oxidase positive
- Small transluscent colonies

Clinical Features:

- Moderate to severe pain with copious purulent discharge and marked swelling of eyelids
- Conjunctiva shows marked chemosis, congestion and papillae giving bright red velvety appearance
- Frequently, a pseudomembrane is seen on the conjunctival surface
- Preauricular lymph nodes are usually enlarged and tender

Hyperacute Conjunctivitis of Adults or Gonococcal Conjunctivitis

Associations:

- Gonococcal conjunctivitis is usually associated with urethritis and arthritis

Complications:

- Corneal involvement is frequent as the gonococcus can invade the normal cornea through an intact epithelium. It may occur in the form of diffuse haze and edema, central necrosis, corneal ulceration or even perforation.
- Iridocyclitis
- Systemic complications (rare): Arthritis, endocarditis and septicemia

76. Premature baby weighing 1000 gms or less is most likely to suffer from:

a) Cataract

b) Glaucoma

c) ROP

d) Retinal detachment

Correct Answer - C
Ans. c. ROP
Yanoff and Ducker Ophthalmology 3rd/606-611; Khurana 4th/264; Parson's 20th/299-300) Premature baby needs to be screened for Retinopathy of prematurity.

77. An elderly female presented with recurrent swelling of the upper eyelid. Histopathological evaluation revealed it to be a chalazion. What would he the histopathological finding?

a) Lipogranuloma

b) Suppurative granuloma

c) Foreign body granuloma

d) Xanthogranuloma

Correct Answer - A
Ans. a. Lipogranuloma
In chalazion, pent-up secretions (fatty in nature) act like an irritant and excite non-infective lipogranulomatous inflammation of the blocked meibomian glands.

78. The risk of rhegmatogenous retinal detachment is increased in all of the following except:

a) Pseudophakia

b) Trauma

c) Hyperopia

d) Lattice degeneration

Correct Answer - C
Ans. c. Hyperopia

Rhegmatogenous Retinal Detachment

- A rhegmatogenous retinal detachment (RRD) occurs when a tear in the retina leads to fluid accumulation with a separation of the neurosensory retina from the underlying RPE
- MC type of retinal detachment

Pathophysiology:

- Vitreoretinal traction is responsible for the occurrence of most RRD.
- As the vitreous becomes more syneretic (liquefied) with age, a posterior vitreous detachment (PVD) occurs.
- In most eyes, the vitreous gel separates from the retina without any sequelae. However, in certain eyes, strong vitreoretinal adhesions are present and the occurrence of a PVD can lead to a retinal tear formation; then, fluid from the liquefied vitreous can seep under the tear, leading to a retinal detachment

Rhegmatogenous Retinal Detachment

Predisposing Factors:

- Myopia
- Aphakia or pseudophakia

- Vitroretinal degeneration
- Lattice degeneration
- Snail track degeneration
- Diffuse chorioretinal atrophy
- Macular holes
- Posterior vitreous degeneration
- Trauma
- Vitreous loss during cataract surgery

79. Most common clinical presentation of retinoblastoma:

a) Leukocoria + heterochromia iridis

b) Leucokoria + pseudohypopyon

c) Leukocoria + hyphema

d) Leukocoria + strabismus

Correct Answer - D
Ans. d. Leukocoria + strabismus
Most common clinical presentation of retinoblastoma is Leukocoria and strabismus.

80. Ocriplasmin is a recombinant protease and it is used to treat:

a) Retinal break

b) Diabetic macular edema

c) Uveovitreal membrane (Vitreoretinal) adhesion

d) Submacular bleeding

Correct Answer - C
Ans. c. Uveovitreal membrane (Vitreoretinal) adhesion
Ocriplasmin is a recombinant protease with activity against fibronection and lamimin, components of the vitroretinal interface. It is used for treatment of symptomatic vitreomacular adhesions

Ocriplasmin

- Ocriplasmin is a recombinant protease with activity against fibronection and lamimin, components of the vitroretinal interface.
- It is used for treatment of symptomatic vitreomacular adhesions.
- It works by dissolving the proteins that link the vitreous to the macula, resulting in posterior detachment of the vitreous from the retina.

81. Which of the following is not true of acute conjunctivitis?

a) Vision is not affected

b) Corneal infiltration

c) Topical antibiotics are the mainstay of treatment

d) Pupil remains unaffected

Correct Answer - C
Ans. c. Topical antibiotics are the mainstay of treatment

82. Which of the following does not show calcification?

a) Persistent hyperplastic primary vitreous (PHPV)

b) Optic nerve Drusen

c) Choroid osteoma

d) Retinoblastoma

Correct Answer - B
Ans. b. Myopic degeneration can lead to retinal detachment

83. Most rapid and accurate method to diagnose CMV retinitis:

a) Virus isolation from the intra-ocular fluid

b) Viral nucleic acid detection from the intraocular fluid

c) Viral antigen detection in vitreous

d) Viral antibody detection in blood by ELISA

Correct Answer - B

Ans. b. Viral nucleic acid detection in intraocular fluid

Isolation of CMV or detection of its antigens or DNA in appropriate clinical specimens is the preferred approach.'-Harrison

CMV Retinitis

- CMV retinitis is an important cause of blindness in immunocompromised patients, particularly patients with advanced AIDS.
- Early lesions consist of small, opaque, white areas of granular retinal necrosis that spread in a centrifugal manner and are later accompanied by hemorrhages, vessel sheathing, and retinal edema.

Diagnosis

- The diagnosis of CMV infection usually cannot be made reliably on clinical grounds alone.
- Isolation of CMV or detection of its antigens or DNA in appropriate clinical specimens is thepreferred approach.
- Isolation of virus from urine or saliva does not, by itself, constitute proof of acute infection, since excretion from these sites may continue for months or years after illness.
- Detection of viremia is a better predictor of acute infection.
- The most sensitive way to detect CMV in blood or other fluids may be by amplifying CMV DNA by polymerase chain reaction (PCR).

84. Most common cause of anterior staphyloma

a) High myopia

b) Scleritis

c) Corneal ulcer

d) Trauma

Correct Answer - C
Ans. is 'c' i.e., Corneal ulcer
Staphyloma

- Staphyloma is an abnormal protrusion of uveal tissue through a weak and thin portion of cornea or sclera.
- So, a staphyloma is lined internally by uveal tissue and externally by weak cornea or sclera.
- Staphyloma is divided anatomically into : ?

1. Anterior staphyloma : - Protrusion and adhesion of iris to ectatic cornea. The most common cause is a sloughing corneal ulcer which perforates and heals with the formation of pseudocornea by the organization of exudates and laying down of fibrous tissue. It is lined internally by iris.
2. Intercalary staphyloma : - It occurs at the limbus. It is lined internally by the root of iris and the anterior
most portion of the ciliary body. The causes are perforating injuries to limbus, marginal corneal ulcer,
anterior scleritis, Scleromalacia perforans, Complicated cataract surgery, secondary angle closure
glaucoma.
3. Ciliary staphyloma : - This affects the ciliary zone that includes the region upto 8 mm behind the limbus. The ciliary body is

incarcerated in the region of scleral ectasia. Causes are Developmental glaucoma, Primary or secondary glaucoma end stage, scleritis, trauma to ciliary region.

4. Equatorial staphyloma : - This occurs at the equatorial region of the eye with incarceration of the choroid. Causes are scleritis, degenerative myopia and chronic uncontrolled glaucoma.

5. Posterior staphyloma : - Occurs at posterior pole and is lined internally by choroid. Degenerative high axial myopia is the most common cause

85. Which of the following is true about degenerative myopia?

a) More common in males as compared to females

b) Myopic degeneration can lead to retinal detachment

c) It is seen in less than 6 dioptres of myopia.

d) The condition has no racial prediliction.

Correct Answer - B

Ans. b. Myopic degeneration can lead to retinal detachment

Degenerative myopia:

? It is seen in more than 6 dioptres of myopia.

? More common in females as compared to males.

? The condition has a racial predilection; it is more common in Jews and Japenese people, and most cases are of genetic origin.

- Patients with degenerative myopia typically complain of decreased vision, headaches, and sensitivity to light.
- If retinal degeneration or detachment is present, patients may also report light flashes and floaters, which are associated with retina changes.
- Those with degenerative myopia have an increased incidence of cataract formation (nuclear cataracts are most typical).
- Some of the most typical features of degenerative myopia are:
  - Vitreous liquefaction and posterior vitreous detachment
  - Peripapillary atrophy appearing as temporal choroidal or scleral crescents or rings around the optic disc
  - Lattice degeneration in the peripheral retina
  - Tilting or malinsertion of the optic disc, usually associated with myopic conus
  - Thinning of the retinal pigment epithelium with resulting atrophic

appearance of the fundus

- Ectasia of the sclera posteriorly (posterior staphyloma)
- Breaks in Bruch’s membrane and choriocapillaris, resulting in lines across the fundus called “lacquer cracks”
- Fuchs spot in the macular area.

86. Diffuse mottling of retina with focal areas of increased and decreased pigmentation between posterior pole and equator (Salt and pepper retinopathy) is observed in all of the following except:

a) Resolving retinal detachment

b) Phenothiazine toxicity

c) Congenital rubella

d) Fundus flavimaculatus

Correct Answer - A

Ans. a. Resolving retinal detachment (Ref: Kanki 7th/657- 666, Yanoffs 3rd/560-567)

- Salt and Pepper Fundus is a nonspecific term to describe areas of hypopigmentation due to atrophic retinal changes (salt) with pigmentary alterations from pigment migration (pepper) in large portions of retina.

Causes of Salt and Pepper Fundus:

- Rubella (Congenital)
- Syphillis (Congenital)
- Leber amaurosis (Congenital)
- Mayous Batten disease (Maculo-cerebral facial degeneration)
- Phenothiazine toxicity
- Retinal dystrophies
- Fundus flavimaculatus (Stargardt's Disease)
- Albinism
- Retinitis Pigmentosa

- Cystinosis

87. The most common mode of spread of retinoblastoma:

a) Optic nerve invasion

b) Lymphatics

c) Vascular

d) Direct invasion

Correct Answer - A

Ans: A. Optic nerve invasion

(Ref Kanski 7/e p510-517; Yanoff and Duker 4/e p793)

Most common mode of retinoblastoma spread-

- By optic nerve invasion.
- Direct extension by continuity to optic nerve & brain seen.

Retinoblastoma:

- Primary malignant intraocular neoplasm.
- Arising from immature retinoblasts within developing retina.
- Most common primary intraocular malignancy of childhood in all-racial groups.
- Strong tendencies invading brain via optic nerve & metastasize widely.

88. Cherry red spot after trauma is seen in children due to:

a) CRAO

b) CRVO

c) Berlin's edema

d) Niemann-Pick's disease

Correct Answer - C

Ans: C. Berlin's edema

(Ref Kanski 7/e p882: Parson's 22/e p392, 21/e p382, 20/e p367; Yanoff and Duker 4/e p671)

- Cherry red spot after trauma in children due to Berlin's edema.

Commotio retinae (Berlin's Edema):

- Common occurrence following a eye blow.
- Manifests as milky white cloudiness involving posterior pole with a 'cherry-red spot' in foveal region.
- Appear after some days or may be followed by pigmentary changes.
- Most frequently affect temporal fundus.

89. A person presents with painful unilateral dimness of vision. He gives a history of persistence of after images. What is the likely diagnosis?

a) Papilledema

b) Ocular ischemic syndrome

c) Retrobulbar neuritis

d) CRVO

Correct Answer - C

<u>Ans: C. Retrobulbar neuritis</u>

(Ref Yanoff and Duker 4/e p879)

- Most likely diagnosis = Retrobulbar neuritis.

Loss of vision:

In acute demyelinating optic neuritis:

- Usually abrupt, occurring over several hours to days.
- Monocular visual loss (simultaneously affects both eyes mainly children).
- Mild pain in or around eye.
- Pain precedes visual loss exacerbated by eye movement - Helpful (not definitive) clinical feature.
- Differentiates acute demyelinating optic neuritis from nonarteritic anterior ischemic optic neuropathy (AION).
- Impaired color vision & contrast sensitivity.

90. High molecular weight proteins in cataractous lens seen only in humans:

a) HM 1 and 2

b) HM 2 and 3

c) HM 2 and 4

d) HM 3 and 4

Correct Answer - D

Ans: D. HM 3 and 4

(Ref The Eve 3/e p305-307: Biochemistry of Eve by David R/p28)

- High molecular weight proteins in cataractous lens only in humans = HM 3 & 4.

HM3 & HM4:

- Insoluble high molecular weight proteins.
- Found in cataractous lens.

91. Cherry red spot and Hollenhorst plaque are seen in:

a) CRAO

b) CRVO

c) Branch RAO

d) Branch RVO

Correct Answer - A

Ans: A. CRAO

(licr Parson's 22/e p320-32l, 21 /e p313,314: Kanski 7/e p559-562: Yanoff and Duker 4/e p522)

Cherry red spot & Hollenhorst plaque:

- Seen in both Central Retinal Artery Occlusion (CRAO) & BRAG.
- CRAO incidence is more common than BRAG.

92. Universal marker of limbal epithelial stem cells:

a) Elastin

b) Keratin

c) Collagen

d) ABCG2

Correct Answer - D
Ans: D. ABCG2
(Ref Indian J Med Res. 2008 Aug:128(2):149-56. PM1D:19001678; http://wwwstembook.org/node/588).
ABCG2:

- Universal marker of limbal epithelial stem cells.
- Limbal Stem Cell Marker.

Keratin (K3-K13) = Corneal Stem Cell Marker

93. Which of the following stain is used for diagnosis of Granular dystrophy of cornea?

a) Colloidal iron

b) Congo red

c) PAS

d) Masson trichrome

Correct Answer - D

Ans: D. Masson trichrome

(Ref: Kanski 7/e p212-224; Parson :s 22/e p212-214, 21/e p207-209; Yanoff and Duker 4/e p261).

- Masson trichrome stain - Used for granular corneal dystrophy diagnosis.

Granular dystrophy:

- AD inheritance with gene locus on 5q31
- **Onset:** First decade with recurrent erosions

Signs (in chronological order):

- Small, white, sharply demarcated deposits resembling crumbs or snowflakes in central anterior stroma.
- Increasing number of lesions with deeper & outward spread but not reaching limbus.
- Gradual confluence causing visual acuity impairment.

Histology:

- **Shows amorphous hyaline deposits staining bright red with Masson trichrome.**

94. Right trochlear nerve palsy can lead to all except:

a) Diplopia on upward gaze and adduction

b) Right head tilt

c) Exotropia

d) Hyperopia

Correct Answer - B

Ans: B. Right head tilt

(Ref. Yanoff and Duker 4/e p1228)

- Right trochlear nerve palsy:
- Accompanied by compensatory contralateral head tilt (left head tilt), not right head tilt.

Signs:

- Classical sign of unilateral fourth nerve palsy is contralateral head tilt (an 'ocular' torticollis).
- Exhibited by most patients & usually sole presenting sign in children.
- Non-ophthalmological causes also considered.
- Presents with vertical diplopia.
- Torsional diplopia - Due to ocular cyclotorsion accompanies vertical diplopia in acquired fourth nerve palsy.

Trochlear nerve palsy

Congenital right trochlear nerve palsy with compensatory left head tilt.

95. Which of the following is not an indication for evisceration?

a) Malignancy

b) Panophthalmitis

c) Severe globe trauma

d) Expulsive hemorrhage

Correct Answer - A

Ans: A. Malignancy

(Ref Yanoff and Duker 4/e p1339)

- Evisceration of eye is not done in malignancy.

Evisceration:

- Surgical technique removing entire intraocular eye contents.
- Simpler procedure than enucleation surgery.

Advantages:

- Leaves scleral shell & extraocular muscle attachments intact.
- Offers better orbital anatomy preservation & natural motility of ophthalmic socket tissues.

Contraindications:

- Documented or suspected intraocular malignant tumors.

96. Multifocal ERG is useful to assess the function of:

a) Rods

b) Macular cones

c) Ganglion cells

d) Retinal pigment epithelium

Correct Answer - A

Ans: A. Rods

(Ref Yanoff and Duker 4/e p460).

Multifocal ERG:

- Useful to assess macular cones function.
- Clinically most useful in unexplained or central vision loss patients with normal full-field ERG.
- Aid in macular diseases diagnosis including Stargardt's dystrophy, cone dystrophy, occult macular dystrophy & hydroxychloroquine toxicity.
- Ring ratio analysis of mfERGs provides quantitative measure helpful in early detection of pericentral macula dysfunction (hydroxychloroquine toxicity).

97. As compared to blood, vitreous humor has high concentration of:

a) Sodium

b) Potassium

c) Glucose

d) Ascorbate

Correct Answer - D
Ans: D. Ascorbate
(Ref Yanoff and Duker 4/e p353)

- As compared to blood, vitreous humor has high concentration of ascorbate.

98. True statements regarding Direct Ophthalmoscopy are all except:

a) Image is virtual and erect

b) 2 disk diameter field of vision

c) Magnification is 5 times

d) Self-illuminated device

Correct Answer - C

<u>Ans: C. Magnification is 5 times</u>

(Ref Parson's 22/e p137-139. 20/c p126-133).

- In **direct ophthalmoscopy magnification = 15 times.**
- **In indirect ophthalmoscopy, magnification = 4-5 times.**

Features	**Direct ophthalmoscopy**	**Indirect Ophthalmoscopy**
Condensing lens	**Not required**	**Required (Convex**
Examination distance	As close to patient's eye as possible	At an arm's length
Image	**Virtual, erect°**	**Real, inverted**
Magnification	**About 15 times°**	**4-5 times°**
Illumination	Not so bright, so not useful in hazy	**Bright,** so useful for **hazy**
Area of field in focus	**About 2 disc diopters°**	**About 8 disc diopters°**
Stereopsis	Absent	**Present**
Accessible fundus view	Slightly beyond equator	**Up to Ora serrata i.e. Peripheral retina°**
Examination	Not possible	**Possible°**

through hazy	Not possible	
Patient position	**Sitting**	**Supine**
Ease	**Easy procedure for visualization of posterior pole of retina**	**Difficult,** require training

99. %lost radio-resistant cells in retina

a) Retinal pigment epithelium

b) Ganglion cell layer

c) Rods and cones

d) Bipolar cells

Correct Answer - B
Ans. b. Ganglion cell layer (Ref Radiation Retinopatliv. ,(1991) 5. 239-251)
Ganglion cells are an example of highly specialized cells that have undergone extensive maturation, are the most radioresistant cells in the retina.

100. A 25-year-old lady presents with sudden severe bilateral loss of vision, more so on the right side, with no perception of light. Rest of the examination including pupillary reflexes, fundus and optokinetic nystagmus are normal. She was able to touch the tips of her fingers with her right eye closed but not with her left *eye* closed. The most like1 tgnosis is:

a) Optic neuritis

b) Anterior ischemic optic neuropathy

c) CMV retinitis

d) Functional vision loss

Correct Answer - D
Ans. d. Functional vision loss (Ref Kanski 6/e p 477, 790, 792-793)
The most likely diagnosis in this young lady who presents with sudden severe bilateral loss of vision, more so on the right side, with no perception of light and normal examination findings including pupillary reflexes, fundus and optokinetic nystagmus, who is able to touch tips of her finger with right eye closed but not with left eye closed, is functional vision loss.

101. A young adult presents 2 days after trauma to the eye with proptosis and pain in the right eye. On examination, hi is found to have a bruise on the right eye and forehead. The most likely diagnosis is:

a) Fracture sphenoid bone

b) Cavernous sinus thrombosis

c) Internal carotid artery aneurysm

d) Carotico-cavernous fistula

Correct Answer - D
Ans. d. Carotico-cavernous fistula (Ref KANSKI7/E PG94; PARSON 20/E P455,462)
The most likely diagnosis in a young adult with history of trauma to the eye with proptosis and pain in the right eye and bruise on the right eye and forehead is Carotico-cavernous fistula

102. Topical administration of I% Pilocarpine failed to produce pupillary constriction in a patient who had a large, dilated pupil What should be the most probable reason?

a) Adie's tonic pupil

b) Diabetic III nerve palsy

c) Pharmacological blockade

d) Uncal herniation

Correct Answer - C
Ans. c. Pharmacological blockade (Ref-YANNOFF 3/E PG,1052-1055)
Pilocarpine I% is a sufficient miotic dose for any eye, but a sphincter with all its cholinergic receptor blockade by atropine or tropicamide (i.e. eye with pharmacological blockade) does not constrict with pilocarpine 1%.

103. Keyhole-shaped visual field defect is seen in lesion involving which of the following regions?

a) Optic disk

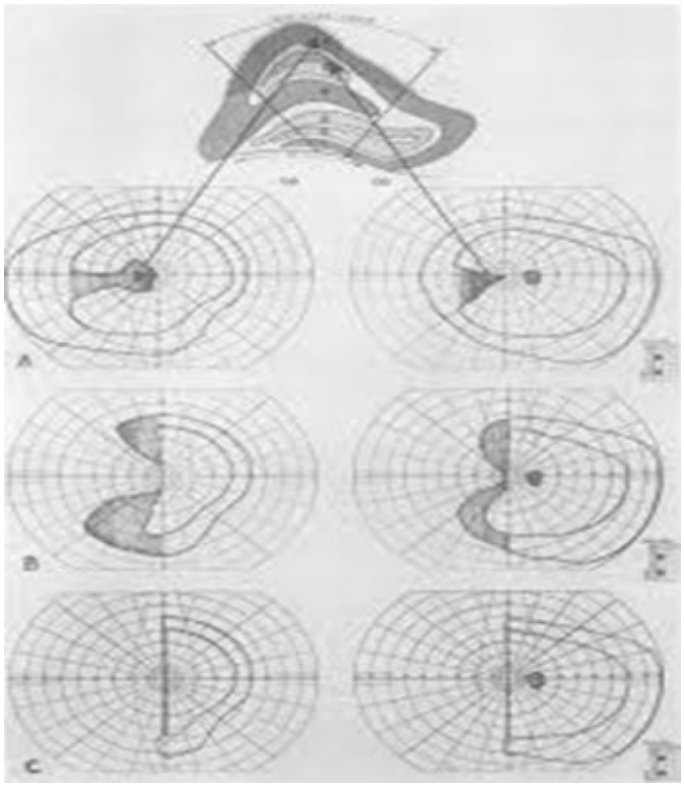
b) Optic chiasma

c) Lateral geniculate body

d) Occipital lobe

Correct Answer - C
Ans: C. Lateral geniculate body
(Ref Walsh and Hoyt; Clinical Neuro-Ophthalmology 6/e p122)

- Key-hole shaped visual field defects are typically seen in the lesions involving lateral geniculate body but keyhole shaped defect (not visual field defect) is seen in the coloboma of Iris.


A
B
C

104. Which of the following is the most common funga. infection of the eye seen in an HIV positive patient?

a) Aspergillus

b) Candida

c) Toxoplasma

d) Rhinosporidium

Correct Answer - B
Ans: B. Candida
(Ref.: Ryan's Retina 5/e p733)
Candidemia:

- Most common fungal infection seen in patients with HIV
- Candida albicans - Important nosocomial pathogen - Most common Candida species.
- Most commonly cause of keratitis, conjunctivitis and endogenous fungal endophthalmitis.

105. In which of the following, long spaced collagen present?

a) Diaphragm

b) Cornea

c) Basement membrane

d) Tympanic membrane

Correct Answer - B
Answer- B. Cornea
'Long-spacing collagen is a common component of normal human corneal stroma and its occurrence seems to correlate
with the age-related changes of the tissue.
Corneal transparency is mainly dependent on the arrangement of these collagen fibers in stroma.

106. Which of the following is true about Pterygium?

a) Probe can be passed underneath the pterygium at the limbus

b) Associated with exposure to infrared radiation

c) Bare sclera technique has 30-80% recurrence

d) Elastotic degeneration with distortion of Descemet's membrane

Correct Answer - C

Answer- C. Bare sclera technique has 30-80% recurrence

Simple excision ('bare sclera' technique) is associated with a high rate of recunence (around 80%) that maybe more aggressive than the initial lesion.

Pterygium:

- Probe cannot be passed underneath the pterygium at the limbus, as its adherent all around
- Associated with exposure to ultra-violet radiation
- Bare sclera technique has 30-80% recurrence
- Elastotic collagenous degeneration with proliferation ofvascularized granulation tissue, which invades cornea
- Corneal epithelium, Bowman's layer and superficial stroma are destroyed by invading tissue.

107. Which of the following drug should not be given in a patient of narrow angle glaucoma?

a) Phenylephrine

b) Timolol

c) Acetazolamide

d) Homatropine

Correct Answer - D

Answer- D. Homatropine

Homatropine is a mydriatic, which can precipitate angle closure glaucoma and contraindicated in angle closure glaucoma.

Phenylephrine, Timolol and Acetazolamide are used for the treatment of angle closure glaucoma.

'Mydriatic drugs such as atropine, Homatropine, cyclopentolate, tropicamide and phenylephrine are precipitating factors for angle closure glaucoma, so contraindicated in angle closure glaucoma.

108. Changes seen in conjunctiva after vitamti. A deficiency:

a) Actinic degeneration

b) Hyperplasia of goblet cells

c) Hyperkeratosis of squamous epithelium

d) Stromal infiltration

Correct Answer - C
Answer- C. Hyperkeratosis of squamous epithelium
Change seen in coniunctiva after vitamin A deficiency is hyperkeratosis of squamous epithelium.
'Vitamin A is necessary for normal differentiation of nonsquamous epithelium; keratinization is a direct consequence
of its deficieny.
Reduced aqueous tear production, and irregularities of the keratinized surface may all contribute to stromal melting, which can occur in the absence of inflammatory infiltration or bacterial invasion.
Squamous metaplasia and keratinization.

109. Which of the following is true regarding concentration of proteins in senile cataract?

a) More insoluble protein, less soluble protein

b) More soluble protein, less insoluble protein

c) Equal concentration of soluble and insoluble protein

d) None of the above

Correct Answer - A

Answer- A. More insoluble protein, less soluble protein

In young individuals, most lens proteins are soluble (alpha, beta and gamma crystallines).

Lenses with cataracts contain more insoluble proteins.

With age, some crystallines become insoluble which is important in senile cataractogenesis.

110. Concentration of tropicamide:

a) 0.01

b) 0.02

c) 0.03

d) 0.04

Correct Answer - A

Answer- A. 0.01

Tropicamide is the shortest acting mydriatic, concentration used is 0.5-l% drops (0.005-0.010).

Tropicamide:

- Concentration used: 0.5-l% drops (0.005-0.010)
- Duration of action: Though effective for upto 3 hours, maximum effect appear 30 minutes after the last drop and lasts for only 10-15 minutes
- Used in Adults.

111. A 36 years old female on prone dark room test develops pain in eyes. Which of the following drugs should be avoided?

a) Acetazolamide

b) Pilocarpine

c) Atropine

d) Timolol

Correct Answer - C
Answer- C. Atropine
'Mydriatic drugs such as atropine, Homatropine, cyclopentolate, tropicamide and phenylephrine are precipitating factors
for angle closure glaucoma, so contraindicaled in angle closure glaucoma.'

112. Which of the following is false about indirect opthalmoscopy?

a) Convex lens is used

b) Image is virtual and erect

c) Magnification is 4-5 times

d) It is so bright that regular haziness is penetrated

Correct Answer - B

Answer- B. Image is virtual and erect

Indirect Ophthalmoscopy:

- Convex lens is used of +16 to +18 Diopter
- Image is real and inverted
- Magnification is 4-5 times
- It is so bright that regular haziness is penetrated, useful for hazy media.

113. Cells most commonly affected in glaucomatous optic atrophy?

a) Amacrine cells

b) Bipolar cells

c) Ganglion cells

d) Rods and cones

Correct Answer - C
Answer-C. Ganglion cells
Glaucoma, the second leading cause of blindness, is characterized by changes in the optic disc and visual field defects'.
The elevated intraocular pressure was considered the prime factor responsible for the glaucomatous optic neuropathy involving death of retinal ganglion cells and their axons.
Glaucoma, a leading cause of irreversible visual loss, is characterized by loss of retinal ganglion cells (RGC) and their axons over a period of many years.
Mainly the ganglions cells are affected in glaucoma patients, which may lead to glaucomatus optic atrophy'

114. Optic atrophy is not seen in:

a) Retinitis pigmentosa

b) Methanol poisoning

c) Central retinal arterial occlusion (CRAO)

d) Polypoidal choroidal vasculopathy

Correct Answer - D

Answer- D. Polypoidal choroidal vasculopathy

Retinitis pigmentosa, Methanol poisoning and Central retinal arterial occlusion (CRAO) can lead to optic atrophy.

Occurs secondary to retinal disease (disease of inner retina or its blood supply)

Its ascending type of optic atrophy.

Causes:

- Retinitis pigmentosa
- CRAO
- Extensive retino choroiditis

115. Which of the following is true about degenerative myopia?

a) More common in males as compared to females

b) Myopic degeneration can lead to retinal detachment

c) It is seen in less than 6 dioptres of myopia.

d) Retinal tear is less common and it is a late complication

Correct Answer - B

Ans. b. Myopic degeneration can lead to retinal detachment

Degenerative myopia:

* It is seen in more than 6 dioptres of myopia.
* More common in females as compared to males.
 - The condition has a racial predilection; it is more common in Jews and Japanese people, and most cases are of genetic origin.
 - Patients with degenerative myopia typically complain of decreased vision, headaches, and sensitivity to light.
 - If retinal degeneration or detachment is present, patients may also report light flashes and floaters, which are associated with retina changes.
 - Those with degenerative myopia have an increased incidence of cataract formation (nuclear cataracts are most typical).

Some of the most typical features of degenerative myopia are:

* Vitreous liquefaction and posterior vitreous detachment
* Peripapillary atrophy appearing as temporal choroidal or scleral crescents or rings around the optic disc
* Lattice degeneration in the peripheral retina
* Tilting or malinsertion of the optic disc, usually associated with myopic conus
* Thinning of the retinal pigment epithelium with resulting atrophic

appearance of the fundus
* Ectasia of the sclera posteriorly (posterior staphyloma)
Breaks in Bruch’s membrane and choriocapillaris, resulting in lines across the fundus called “lacquer cracks”
Fuch’s spot in the macular area.

116. Cells affected in glaucomatous optic neuropathy are:

a) Amacrine cells

b) Bipolar cells

c) Ganglion cells

d) Rods and cones

Correct Answer - C

Answer- C. Ganglion cells

- Glaucoma, the second leading cause ofblindness, is characterized by changes in the optic disc and visual field defects.
- The elevated intraocular pressure was considered the prime factor responsible for the glaucomatous optic neuropathy involving death of retinal ganglion cellsaand their axons.
- Glaucoma, a leading cause of irreversible visual loss, is characterized by loss of retinal ganglion cells (RGC) and their axons over a period of many years.
- Mainly the ganglions cellsa are affected in glaucoma patients, which may lead to glaucomatus optic atrophy.
- Glaucomatous optic neuropathy is characterized by changes in the optic disc and visual field defects.
- The morphologic changes in the optic disc are in the form of thinning of neuro retinal rim, pallor and progressive cupping of the optic disc.
- The hemorrhage-associated retinal nerve fiber layer defects precede measurable changes ofthe optic disc configuration.
- The visual field defects in glaucoma are often detected only after 40% of the axons are loss.

117. Gene commonly indicated in congenital cataract:

a) PAX-6

b) CRYGS-3

c) LMX- IB

d) PITX-3

Correct Answer - B
Answer- B. CRYGS-3

- 'Gene-S crystalline gene (CRYGS) mutalion causes dominant progressive cortical cataract in humans.

118. Most common tumor of lacrimal gland:

a) Trans-scaphoid perilunate fracture

b) Scaphoid fracture

c) Distal radius fracture

d) **Hamate** fracture

Correct Answer - D

Ans. d. Hamate fracture

- Most common tumor of lacrimal gland is Non-Hodgkin's lymphoma (37%)> Pleomorphic adenoma (25%). Most common
- malignant epithelial tumor of the lacrimal gland is adenoid cystic carcinoma.

Lacrimal Gland Tumor

MC tumor of lacrimal gland	**Non-Hodgkin's lymphoma°**
MC epithelial tumor of lacrimal gland	**Pleomorphic adenoma°**
MC malignant epithelial tumor of lacrimal gland	**Adenoid cystic carcinoma°**

119. Which of these is not a correct definition of blindness as per NPCB?

a) Diminution of field vision to 20° or less in better eye

b) Inability of a person to count fingers from a distance of 6 meters or 20 feet

c) Vision 6/60 or less with the best possible spectacle correction in the better eye

d) Vision 4/60 or less with the best possible spectacle correction in the better eye

Correct Answer - D

Ans: D. Vision 4/60 or less with the best possible spectacle correction in the better eye

(Ref National Programme for Control of blindness - http://npc.1).inc.in/incicA I .o.sp.'link 0=55)

- Vision 4/60 or less with the best possible spectacle correction in better eye is not included in the NPCB definition of blindness.

120. What is the usual weight of rabbit used in ophthalmological experiments?

a) 0.5-1 kg

b) 1.5-2.5 kg

c) 5-7 kg

d) 10-12 kg

Correct Answer - B

Ans: B. 1.5-2.5 kg

(Ref: Animal Models in Eve Research/ p188).

The usual weight of rabbit used in ophthalmological experiments is between 1.5-2.5 Kg.

Laboratory Animals:

Laboratory Animals

Animal	Weight
Rat	180-200 gm
Guinea Pig	400-600 gm
Mouse	20-25 gm
Rabbit	1.5-2.5 Kg°
Hamster	80-90 gm

121.

Maximum contribution to the refractive power of the eye is by which part of the eye?

a) Anterior surface of cornea

b) Posterior surface of cornea

c) Anterior surface of lens

d) Posterior surface of lens

Correct Answer - A

Ans: A. Anterior surface of cornea

- Maximum contribution to refractive power of eye - By anterior surface of cornea.
- Cornea's anterior surface is approximately spherical with a radius of curvature that is typically 8 mm.
- This surface is responsible for about two-thirds of the eye's refractive power.

122. Corneal ulcer resembling fungal ulcer is seen in infection with which of the agents?

a) Nocardia asteroides

b) Mycobacterium

c) Klebsiella pneumoniae

d) Chlamydia trachomatis

Correct Answer - A

Ans: A. Nocardia asteroides

(Ref: Yanoff & Duker 4Ie p219; Smolin and Thoft's'The Cornea 4Ie p248)

- Keratitis caused by Nocardia asteroides, which is a filamentous bacteria, closely resembles the morphology of corneal ulcers caused by fungi.
- Corneal infections with Nocardia, Actinomyces, and Streptomyces typically follow an indolent clinical course, which may simulate mycotic keratitis with hyphal edges, satellite lesions, and elevated epithelial lesions.
- The ulcer is characteristically superficial, with a wreath-shaped gray-white infiltrate and an undermined necrotic edge.
- The base might assume a cracked windshield appearance.
- Nocardia keratitis often resembles fungal infection, with a filamentous appearing border and satellite lesions. Infection appears to be indolent; the anterior chamber reaction is often minimal.
- However, rarely, more severe anterior chamber reaction and hypopyon seen.

123. A 33 years old male came with pain and watering in the right eye for 36 hours. On examination, a 3 x 2 cm corneal ulcer is seen with elevated margins, feathery hyphae, finger like projections and minimal hypopyon in cornea. What is the likely causative organism?

a) Aspergillosis

b) Pseudomonas

c) Acanthamoeba

d) HSV-1

Correct Answer - A

Ans: A. Aspergillosis

Ref: Yanoff & Duker 4/e p225; Parson 22/e p203, 21/e p199)

- Finding suggestive of fungal corneal ulcer. In the question, Aspergillus is the only fungus.

Mycotic or fungal keratitis:

- Commonly due to Aspergillus, Fusarium or Candida albicans.
- Fungal ulcers are typically seen after injury with vegetable matter such as a thorn or wooden stick and are characterized by a relatively indolent course.
- Symptoms are much milder than the clinical signs would suggest.
- Dry slough with feathery borders, surrounded by a yellow line of demarcation, which gradually deepens into a gutter.
- An immune ring (Wessely) may be visible due to deposition of immune complexes and inflammatory cells around the ulcer.

- Marked ciliary and conjunctival congestion.
- Hypopyon is thick and immobile - Due to direct invasion into the anterior chamber of fungal hyphae enmeshed in thick exudates.

124. Phenol red thread test is used for dry eye:

a) In the test, volume of tears is measured as it changes color on contact with tears

b) If the color changes to blue, it depicts surface mucin deficiency

c) Requires pH meter for reading the result

d) Requires topical anesthetic agent

Correct Answer - A

Ans: A. In the test, volume of tears is measured as it changes color on contact with tears

(Ref: Yanoff & Duker 4/e p277)

- Phenol red dye test measures the production of tears without topical anesthesia, as the dye changes its color to red on contact with tears.
- It doesn't require pH ureter for reading the result.
- Phenol red is a pH indicator used in cell biopsy as it changes colour from yellow to red on pH range from 6.8 to 8.2.
- Used to measure residual tears in inferior conjunctival sac, especially in dry eye patients.

125. Immediately after photodynamic therapy, color of the lesion becomes:

a) Unchanged

b) Grey

c) Yellow

d) White

Correct Answer - A

Ans: A. Unchanged

(Ref Yanoff & Duker 4/e p589)

- Photodynamic therapy (PDT) is used in the treatment of wet ARMD.
- Verteporfin dye and diode laser is used. Immediately after PDT, there is no colour change but after sometime (1 day after PDT) hypopigmentation or whitening of treated area occurs.

126. What is the angle subtended by the largest letter in the Snellen chart on a person's eye who is reading it from a distance of 6 meters?

a) 1 minute

b) 10 minutes

c) 50 minutes

d) 60 minutes

Correct Answer - C

Ans: C. 50 minutes

(Ref: Yanoff & Duker 4/e p42; Parson 22/e p98, 21/e p98-100)

- The angular spacing between the bars of the C or E in Snellen's chart is 1 minute for the 6/6 letter (smallest letter).
- The largest letter on the Snellen's chart is the 6/60 letter.
- When viewed from a distance of 6 meter, this letter subtends an angle of 50 minutes in the eye and the bars of the letter subtend an angle of 10 minutes.

127. Interruption of the optic chiasm will lead to:

a) Bitemporal hemianopia

b) Binasal hemianopia

c) Homonymous hemianopia

d) Normal vision

Correct Answer - A
Answer- A. Bitemporal hemianopia

- Interruption of the optic chiasma will lead to bitemporal homonymous hemianopia because optic chiasma contains crossed over meclial fibers from both optic nerves, which are responsible for temporal Jield of vision.
- "Hemianopia denotes loss of half of the field of vision. The commonest clinical form is homonymous hemianopia, in which the right or left half of the binocular field of vision is lost, owing to loss of the temporal half of one field and lhe nasal half of the other. This condition is due to a lesion situated in any part of the visual paths from the chiasma to the occipital lobe.

128. Which of the following is the nucleus for upwards gaze?

a) Paramedian Pontine Reticular Formation

b) Nucleus Raphe Magnus

c) Cuneiform nucleus

d) Nucleus of Cajal

Correct Answer - D
Ans: D. Nucleus of Cajal
Ref: Conjugate Gaze Palsies - Neurologic Disorders.,, Merck Manuals professional, Ed,,2015 and Merck Sharp & Dohme Corp, I Mar. 2014. lleb. 8 Oct. 2015.

- The three key structures in the control of the vertical gaze includes,
- Rostral interstitial nucleus of medial longitudinal fasciculus (riMLF).
- Interstitial nucleus of Cajal (INC)
- Posterior commissure (PC).

129. In 3rd nerve palsy all seen except?

a) Pupil dilation

b) Ptosis

c) Outward upward rolling of pupil

d) Impaired pupillary reflex

Correct Answer - A
Ans: A. Pupil dilation
Ref: American Academy of Ophthalmolog 2018, third nerve palsy

- The pathway for pupillary constriction for each eye has an afferent limb taking sensory information to the midbrain, and two efferent limbs (one to each eye).

130. Stenopic slit'is used for all except-

a) Fincham's test

b) Determine the axis of cylinder

c) Corneal tattooing

d) Iridectomy

Correct Answer - C
Ans: C. Corneal tattooing
Ref: A, K. Khurana Comprehensive Ophthalmologt,4,h ed.

- Stenopic slit is useful in finding out the axis of the cylinder.
- (option b) stenopic slit is used in cases of corneal opacities to find out the optimal site for optical iridectomy.
- After dilating the pupil with a mydriatic, the slit is rotated in front of the eye and the axis which gives maximum clarity is chosen for optical iridectomy

131. Which of the following is used as an adjuvant therapy for fungal corneal ulcer?

a) Atropine eye drops

b) Pilocarpine eye drops

c) Dexamethasone

d) Lidocaine

Correct Answer - A
Ans: A. Atropine eye drops

- Treatment usually includes antifungal medications depending on sensitivity.
- Atropine eye drops are given to release ciliary spasms & to give symptomatic reliel.

132. A 55-year-old man complaints of glare in eye while driving his car in the night, his best corrected vision is 6112. Whtt is the most probable diagnosis?

a) ARMD

b) Post capsular opacification lens

c) Corneal degeneration

d) Diabetic retinopathy

Correct Answer - B

Ans: B. Post capsular opacification lens

- Posterior capsular opacification of lens is responsible for glare in eye at night.
- At night pupil dilates usually & hence more light enters in the eye, so more light creates more aberrations in the eye, hence more glare.
- In early posterior subcapsular cataract visual acuity canbe 6/12

133. A 15-year-oldboy presented with headache and blurring of vision. On examination there was diptopia on looking towards left in the right eye. What is your diagnosis?

a) Tb meningitis

b) Internuclear ophthalmoplegia

c) Cranial neuritis

d) Demyelination

Correct Answer - B
Ans: B. Internuclear ophthalmoplegia

- Demyelination
- *Ref Bilateral Internuclear ophthalmoplegio in Multiple sclerosis,iejm journal,20l6*
- Typically, symptoms & examination findings i.e. diplopia on looking towards left in the right eye is characteristic of internuclear ophthalmoplegia.

134. First order neuron of visual pathway -

a) Photoreceptor

b) bipolar neuron

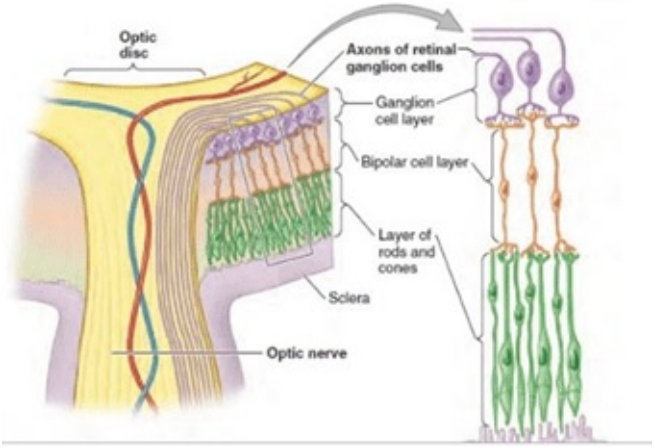
c) lateral geniculate body

d) all of the above

Correct Answer - A

Answer-:A: photoreceptor

- Rods and cones are the first-order receptor cells that respond directly to light stimulation.
- Bipolar neurons are the second-order neurons that relay stimuli from the rods and cones to the ganglion cells.
- Ganglion cells third-order neurons that form the optic nerve (CN II).



135. IOL placed in the young male., After 10 year what should be done..?

a) IOL should be removed in case of Posterior Capsule ossification [PCO]

b) Never be removed

c) Remove when presbyopia sets in

d) Should be changed after 10 year

Correct Answer - A

Answer A. IOL should be removed in case of Posterior Capsule ossification [PCO]

1. The indications for removing an intraocular lens (IOL) are:

- Chronic uveitis
- Endothelial corneal dystrophy
- Uncontrollalbe glaucoma
- Metal loop cutting pupillary sphincter
- Gross decentration of IOL (fibrous bands)
- Extraocular dislocation of IOL G. Recurrent severe hyphema
- Development of rubeosis iridis
- Removal of iris (1) Iris tumor (2) Epithelial downgrowth
- Endophthalmitis
- Unilateral IOL in pending bilateral aphakia

2. The following may be indications for removing and/or replacing and/or replacing an IOL:

- Wrong dioptric power
- Foreign body attached to IOL
- IOL covered with pigment
- Repair retinal detachment after extracapsular cataract extraction
- Choyce lens too short

- Dannheim IOL with absorbed supramid loop tips
- Dislocated Ridley IOL
- Sclero-conjunctival erosion of Strampelli's "external-fixation" IOL loop
  Reference - https://www.ncbi.nlm.nih.gov/pubmed/904866

136. on examination 18 month old child has inward deviation of both eyes, which of the following test should be done?

a) Forced duction test

b) Cover Uncover Test

c) Fundus Examination

d) All of the above

Correct Answer - B

Answer- B- Cover Uncover Test

Since the diagnosis is latent strabismus the correct answer is B

> Cover-uncover test. It tells about the presence and type of heterophoria. To perform it, one eye is covered with an occluder and the other is made to fix an object. In the presence of heterophoria, the eye under cover will deviate. After a few seconds the cover is quickly removed and the movement of the eye (which was under cover) is observed. Direction of movement of the eyeball tells the type of heterophoria

>The **forced duction test** is performed in order to determine whether the absence of movement of the eye is due to a neurological disorder or a mechanical restriction. The anesthetized conjunctiva is grasped with forceps and an attempt is made to move the eyeball in the direction where the movement is restricted.

> **FUNDUS EXAMINATION** This is essential to diagnose the diseases of the vitreous, optic nerve head, retina and choroid.

137. A patient with a history of diabetes for one year with no other complications should have an ophthalmic examination?

a) As early as feasible

b) After 5 years

c) After 10 years

d) Only after visual symptoms level

Correct Answer - A

Answer- A i.e. As early as feasible

- All diabetic (IDDM & NIDDM both) aged over 12 years and/or entering puberty should be screened (visual activity measurement and fundus examination by ophthalmoscopy)
- For retinopathy. and those with risk for visual loss referred to an ophthalmologist.
- Type I DM (IDDM) require ophthalmoscopic examination within 3 years of diagnosis and annual review. (If lt is diagnosed before the age of puberty).
- Type II DM (NIDDM) require ophthalmoscopic examination at the time of diagnosis (because it is usually diagnosed after the age of 12 years) and annual review.

138. All of the following can be used to decrease IOP in glaucoma except

a) Mannitol

b) Carbonic anhydrase inhibitor

c) Apraclonidine

d) Dexamethasone

Correct Answer - D
Answer: D. Dexamethasone
Steroids cannot be given in glaucoma as they can themselves lead to increase in intraocular pressure

139. Anterior ethmoidal artery closely relates to?

a) Recurrent laryngeal nerve

b) Nasociliary nerve

c) Optic nerve

d) Posterior ethmoidal artery

Correct Answer - B
Answer: B. Nasociliary nerve
* Once branching from the ophthalmic artery, it accompanies the Nasociliary nerve through the anterior ethmoidal canal to supply the anterior and middle ethmoidal cells, frontal sinus, and anterosuperior aspect of the lateral nasal wall.

140. The ETDRS chart is used for visual evaluation in diabetic patients. What does ETDRS stand for

a) Extended treatment for diabetic retinopathy study

b) Early treatment for diabetic retinopathy study

c) Emergency treatment for diabetic retinopathy study

d) Emerging treatment for diabetic retinopathy study

Correct Answer - B
Answer: B. Early treatment for diabetic retinopathy study
ETDRS stands for Early treatment for diabetic retinopathy study

141. Intraocular pressure in pregnancy

a) Increases

b) Decreases

c) Remains same

d) None

Correct Answer - B
Answer: B. Decreases
Pregnancy, particularly the second half, is associated with decreased IOP in healthy eyes.

142. 14 year old child with blindness, sensorineural hearing loss, progressive hematuria, hypertension with similar family history in father

a) Alport syndrome

b) Goldenhar syndrome

c) Goodpasture syndrome

d) Nager syndrome

Correct Answer - A
Answer: A. Alport syndrome
* Alport syndrome is a genetic condition characterized by kidney disease, hearing loss, and eye abnormalities.
* People with Alport syndrome experience progressive loss of kidney function.
*** Almost all affected individuals have blood in their urine (hematuria), which indicates abnormal functioning of the kidneys.**