RASHIDA IQBAL FINANCIAL AID ORGANIZATION

Guidelines of Ophthalmology

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How to Study Ophthalmology?

Ophthalmology is a *relatively* easy subject, demanding less time than the other 3. This guideline aims to give an overview of the exam-relevant topics and how you need to study them.

Which book should I use?

The choice of book should depend on your learning style and how much time you want to invest in this subject. Both Jogi and Jatoi will get the job done. Parsons' Diseases of the Eye is an extensive book and contains details somewhat irrelevant for a 4th Year Students and so *is only recommended if you have spare time.* In any case we have added important tables from Parsons' in this document, and have also made a document of Key Points and Clinical Cases.

What Should I study?

The guideline has been made keeping in view the ToS given by UHS, and covers almost all of the important topics. The order of topics is as given in Jatoi. Those topics which are absolutely essential are marked with *High yield topic* and should be given 1st priority.

How much time should I give?

You should at least make sure to go through each of the topics once before the Send-Up, otherwise you will have difficulty cramming all of the material during your final prep. *In any case you can easily complete all of the essential material from either book in* ***5-7 dedicated days.***

Do remember us in your prayers. Good Luck for you Professional Exam!

Regards
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Topics Covered in the Multiple-Choice Questions (MCQs)

1. Anatomy Eye	**3**
2. Physiology	**3**
3. Ocular Therapeutics	**2**
4. Hereditary diseases eye	**1**
5. Orbit	**2**
6. Lids & Adnexa	**2**
7. Lacrimal System	**2**
8. Conjunctiva	**2**
9. Cornea	**4**
10. Uvea	**3**
11. Glaucoma	**3**
12. Lens	**4**
13. Vitreo Retina	**7**
14. Neuro Ophthalmology	**2**
15. Visual Pathways	**1**
16. Squint	**3**
17. Refraction	**1**
Total **45**	

Topics covered in the Short Essay Questions (SEQs)

1. Lids, Adnexa and Conjunctiva
2. Orbit
3. Conjunctiva
4. Cornea
5. Cataract
6. Retina/Systemic diseases
7. Retina/Hereditary diseases
8. Squint
9. Neuro Ophthalmology

TOPIC 1: ANATOMY OF EYE

Just give a read for MCQs.

From Jatoi: Complete

From Jogi: Complete

- Go through this table:

The eye originates from neural ectoderm, surface ectoderm and mesoderm.

SURFACE ECTODERM	MESODERM	NEURAL ECTODERM
1. Conjunctival epithelium	1. Corneal stroma	1. Sensory retina
2. Corneal epithelium	2. Corneal endothelium and Descemet's membrane	2. Retinal pigment epithelium
3. Crystalline lens	3. Iris stroma	3. Pigment epithelium of iris
4. Eyelash	4. Choroid	4. Ciliary body epithelium
5. Epithelium of	5. Sclera	5. Sphincter pupillae
— meibomian glands	6. Vitreous	6. Dilator pupillae
— glands of Moll	7. Extraocular muscles	7. Melanocytes
— lacrimal gland	8. Ciliary muscles	8. Neural part of optic nerve
— accessory lacrimal glands	9. Bony orbit	

TOPIC 2: PHYSIOLOGY OF EYE

From Jatoi: Just give it a read if you have time. No need to memorise.

From Jogi: **Colour Blindness** and **Binocular Vision** (Pg. 16,17)

TOPIC 3: NEUROLOGY OF VISION *High yield topic*

From Jatoi: Chap # 17 (complete)

From Jogi: Chap # 03 (complete). Especially do **Lesions of Visual Pathway** (pg 20,21,22)

TOPIC 4: EYELID

These topics must be done regardless of the book you are following. Focus on S/S and treaments:

- Bleptharitis
- Stye
- Chalazion
- Trichiasis
- Entropion **(Especially types,surgeries and indications)** *High yield topic*
- Ectropion **(Especially types,surgeries and indications)** *High yield topic*
- Ptosis **(Especially types,surgeries and indications)** *High yield topic*
- Common tumors **(BCC and SCC)** for mcqs

These are some important tables:

DIFFERENCES BETWEEN SQUAMOUS AND ULCERATIVE BLEPHARITIS

	SQUAMOUS BLEPHARITIS	ULCERATIVE BLEPHARITIS
1. Clinical features		
i. Scales	White, fine and dry	Yellowing, coarse, and sticky
ii. Ulceration	Absent	Present
iii. Bleeding	Absent	Present
iv. Loss of eyelashes	Few and temporary	Permanent and almost all lashes are involved
2. Course	Mild	Progressive
3. Complications	Occasional	Usual and serious

TABLE 28.1 Surgical Treatment of Various Types of Ptosis

Ptosis Surgery	Requisite Levator Action	Amount of Ptosis that Can be Treated	Indications
Fasanella–Servat	Good	<2 mm	Horner syndrome
Levator resection—anterior approach	Moderate	Any	Larger resections in congenital or acquired ptosis
Levator resection—conjunctival approach	Moderate	Any	Moderate congenital or acquired ptosis
Levator resection with aponeurotic reinsertion	Moderate	Any	Acquired ptosis
Frontalis suspension	Poor	>2 mm	Congenital—especially Marcus Gunn ptosis or for temporary relief

TABLE 28.2 Common Malignant Tumours of the Eyelid

Type	Common Location	Clinical Features	Spread	Therapy
Basal cell carcinoma	Medial canthus/ lower lid	Nodule, central ulceration with pearly surface, telangiectasia	Local	Resection, radiation
Squamous cell carcinoma	Lower lid, from previous actinic keratosis	–Ulcer with thickened margins, keratosis –Papillomatous	Local, lymph nodes	Resection, radiation, cryotherapy
Sebaceous cell carcinoma	Upper lid	Nodule resembling chalazion, multifocal, females >males, recurrences common	Local, intraepithelial, lymph nodes	Resection, cryotherapy, exenteration
Malignant melanoma	Previous nevi	>6 mm size pigmented lesion, vascularization, inflammation	Local, vascular, lymph nodes	Resection, exenteration

DIFFERENCES BETWEEN STYE (HORDEOLUM), CHALAZION AND INTERNAL HORDEOLUM

	STYE (HORDEOLUM)	CHALAZION	INTERNAL HORDEOLUM
1. Onset	Acute	Chronic	Acute meibomian gland
2. Gland	Zeis's gland	Meibomian gland	Suppurative
3. Type of inflammation	Suppurative	Granulomatous	Severe pain
4. Symptoms	Acute pain and swelling	Painless Disfigurement	Yellow point seen on everting the lid
5. Signs	Localised, hard (pus) and tender swelling near the lid margin	Hard swelling away from lid margin	Vertical incision and drainage
6. Treatment	Hot fomentation Antibiotic and Removal of eyelash	Vertical incision and drainage	Antibiotic and analgesic

TOPIC 5: LACRIMAL APPARATUS

These topics must be done regardless of the book you are following:

- Tear film composition
- Dacryocystitis **(Acute and Chronic)**
- Congnital and Acquired nasolacrimal duct obstruction **(treatment especially)** *High yield topic*
- Epihora
- Dry eye (especially **Keratoconjuctivitis Sica** and **Xerophthalmia**) *High yield topic*

WHO CLASSIFICATION OF XEROPHTHALMIA (VITAMIN A DEFICIENCY)

Primary signs	
XIA	Conjunctival xerosis
XIB	Bitot's spots with conjunctiva xerosis < 1/3 corneal surface
X2	Corneal xerosis
X3A	Corneal ulceration with xerosis 1/3 corneal surface
X3B	Keratomalacia 1/3 corneal surface > 1/3 corneal surface
Secondary signs	
XN	Night blindness
XF	Xerophthalmia fundus (pale yellow spots)
XS	Xerophthalmia scars (in cornea)

TABLE 29.2 Diagnosing the Level of Lacrimal Passage Obstruction

	On Examination	Findings on Syringing	Therapy
Punctal occlusion	Scarring around / absence of puncta	Unable to pass cannula	Punctal dilation
Upper/lower canaliculus block	No regurgitation on pressure over lacrimal sac	Regurgitation through same puncta / good flow through other	Astringents
Common canalicular block	No regurgitation on pressure over lacrimal sac	Regurgitation through opposite puncta	Canaliculodacryocysto-rhinostomy
Partial nasolacrimal duct block	Regurgitation on pressure over lacrimal sac Jones test 1 shows some fluorescein in the nose	Regurgitation through opposite puncta after a few minutes of flow Pressure syringing leads to flow	Pressure syringing with occlusion of opposite puncta Astringents
Complete nasolacrimal duct block	Regurgitation on pressure over lacrimal sac	Early regurgitation through opposite puncta	Dacryocystorhinostomy

TOPIC 6: CONJUNCTIVITIS

These topics must be done regardless of the book you are following:

- **Conjunctivitis**
  - Bacterial (Mucopurulent, purulent, membranous) *High yield topic*
  - Ophthalmia Neonatorum *High yield topic*
  - Viral
  - Allergic (**Vernal conjunctivitis: Types and Treatment**)
  - Trachoma (especially **signs**, **FISTO** classification and treatment) *High yield topic*
- **Pterygium**

DIFFERENTIAL DIAGNOSIS OF VARIOUS CONJUNCTIVITIS

CLINICAL FEATURES	BACTERIAL	VIRAL	TRACHOMA INCLUSION	SPRING CATARRH
1. *Injection*	Marked	Moderate	Mild	Mild to moderate
2. *Haemorrhage*	+	+	–	–
3. *Chemosis*	++	+ or –	+ or –	++
4. *Exudate*	Purulent or mucopurulent	Scanty watery	Scanty	Ropy white
5. *Pseudomembrane*	+ or –	+ or –	–	–
6. *Papillae*	+ or –	+ or –	+ or –	+
7. *Follicles*	–	+	+	–
8. *Pannus*	–	–	+	–
9. *Preauricular lymph nodes*	–	–		–

DIFFERENCES BETWEEN TRUE AND PSEUDOMEMBRANE

	TRUE MEMBRANE	PSEUDOMEMBRANE
1. *Structure*	Fibrinous exudate is situated over and within the conjunctival epithelium	Fibrinous exudate is situated over the surface of conjunctival epithelium.
2. *On peeling*	It cannot be peeled off easily.	It is separated easily.
3. *Bleeding*	Bleeding occurs when the membrane is removed.	There is no bleeding.

TABLE 14.4 Ophthalmia Neonatorum: Mode of Presentation, Differential Diagnosis and Treatment

Time of Onset After Birth	Differential Diagnosis	Treatment
Within the first 48 hours	*Neisseria gonorrhoeae*	Ceftriaxone injection i.m., gentamicin drops, bacitracin eye ointment
	Chemical	Wash eyes, erythromycin ointment, observe, usually improves in 24 hours
48–72 hours	Other bacteria	Neomycin–bacitracin eye ointment, gentamicin or tobramycin drops
5–7 days	*Herpes simplex* virus (HSV II)	Acyclovir 3% eye ointment, systemic acyclovir for systemic involvement in consultation with a paediatrician
>1 week	*Chlamydia trachomatis* (D–K)	Erythromycin or chlortetracycline eye ointment, oral erythromycin for systemic infection

TABLE 14.3 World Health Organization (WHO) Classification of Trachoma *(FISTO)*

TF	Trachomatous	**F**ollicles	Implies active disease which needs treatment	Trachomatous inflammation, follicular: five or more follicles of at least 0.5 mm diameter on the upper tarsal plate should be present. Some papillae may be present in addition but the palpebral conjunctival blood vessels are visible. This stage implies that the patient, if properly treated, should recover with no scarring or minimal scarring
TI	Trachoma	**I**ntense	Severe disease which needs urgent treatment	Trachomatous inflammation, intense: the follicles and papillae are so numerous and inflamed that more than 50% of the palpebral conjunctival blood vessels cannot be seen clearly. This stage indicates a severe infection with high risk of serious complications
TS	Trachomatous	**S**carring	Old, now inactive infection	Trachomatous scarring: tarsal conjunctival cicatrization with white fibrous bands
TT	Trachomatous	**T**richiasis	Needs corrective surgery	Presence of at least one trichiatic eyelash
CO	Trachomatous	**O**pacities	Corneal opacities from previous trachoma cause visual loss	Presence of a corneal opacity covering part of the pupillary region

DIFFERENCES BETWEEN PTERYGIUM AND PSEUDOPTERYGIUM

	PTERYGIUM	PSEUDOPTERYGIUM
1. *Age*	— Elderly	— Any age
2. *Etiology*	— Degeneration of subconjunctival tissue	— Inflammation (peripheral corneal ulcer)
3. *Site*	— Always situated at 3 or 9 o'clock 	— Chemical burn — Situated at any meridian 
4. *Probe test*	— A probe cannot be passed under the neck	— A probe can be passed
5. *Course*	— Progressive usually	— Stationary

TOPIC 7: CORNEA *High yield topic*

These topics must be done regardless of any book you are following. Focus on History points and Buzzwords:

- Corneal Ulcer **(Staging, Treatment, Complications)** *High yield topic*
- Viral Keratitis **(especially HSV and HZV)** *High yield topic*
- Mycotic Ulcer *High yield topic*
- Keratoconus **(especially signs elicited on examination and treatment)**
- Exposure Keratopathy
- Neurotropic Keratopathy

PIGMENT DEPOSITION IN THE CORNEA

TYPE OF PIGMENT	DISORDERS	CORNEAL LOCATION
IRON	• Keratoconus (Fleischer's ring)	Epithelium
	• Pterygium (Stocker's line)	Epithelium
	• Filtering bleb (Ferry's line)	Epithelium
	• Old opacity (Hudson-Stähli line)	Epithelium
	• Siderosis	Mainly stroma
	• Blood staining of the cornea	Mainly stroma
COPPER	• Wilson's disease	Descemet's membrane
	• Chalcosis	
	• (Kayser-Fleischer ring)	
MELANIN	• Pigment dispersion syndrome	Endothelium
	• (Krukenberg's spindle)	

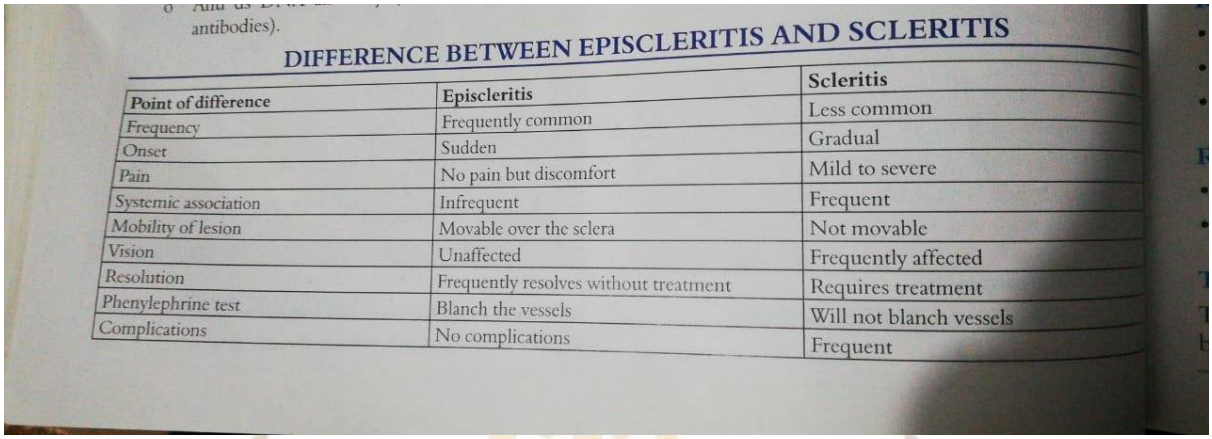
CLINICAL FEATURES OF DIFFERENT CORNEAL ULCERS

CLINICAL FEATURES	BACTERIAL	VIRAL	FUNGAL
Symptoms			
1. *Discharge*	Mucopurulent ++	Watery	May be present
2. *Pain*	Severe	Moderate	Mild
3. *Systemic-Fever headache, etc.*	—	++	—
4. *Recurrence*	—	++	—
5. *History of trauma*	Common with penetrating injury	—	Vegetative matter injury
Signs			
1. *Injection*	Marked	Moderate	Marked
2. *Follicles*	—	+	—
3. *Ulcer*	Central disc with necrotic material	Typical dendritic and geographical pattern	Dry yellow-grey with satellite lesions
4. *Depth*	May be deep	Usually superficial	Deep
5. *Corneal sensations*	Present	Absent	Present
6. *Preauricular*	+	+	—

TOPIC 8: SCLERA

Focus on differences between Scleritis and Episcleritis.

- Table from pg # 112, Jatoi
- Give a quick read to Staphyloma



antibodies).

DIFFERENCE BETWEEN EPISCLERITIS AND SCLERITIS

Point of difference	Episcleritis	Scleritis
Frequency	Frequently common	Less common
Onset	Sudden	Gradual
Pain	No pain but discomfort	Mild to severe
Systemic association	Infrequent	Frequent
Mobility of lesion	Movable over the sclera	Not movable
Vision	Unaffected	Frequently affected
Resolution	Frequently resolves without treatment	Requires treatment
Phenylephrine test	Blanch the vessels	Will not blanch vessels
Complications	No complications	Frequent

TOPIC 9: LENS AND CATARACT *High yield topic*

These topics must be done regardless of any book you are following:

- Quickly review lens anatomy
- Congenital Cataract **(Lamellar and Blue Dot)**
- Acquired Cataract **(Senile; Traumatic)**
- Cataract due to systemic diseases (diabetic, wilsons disease etc)
- **Stages** of Cortical Cataract
- Cataracat surgeries **(Types especially Phacoemulsification with Investigations and Complications)**
- Visual rehabilitation after cataract surgery **(Aphakic Glasses vs IOL)**

DIFFERENCES BETWEEN IMMATURE AND MATURE CATARACT

SIGNS	IMMATURE CATARACT	MATURE CATARACT
1. *Visual acuity*	• Impaired	• Markedly impaired (HM, PL)
2. *Pupillary reflex*	• Grey	• White
3. *Iris shadow*	• Present	• Absent
4. *Purkinje's image*	• All 4 images are present	• Absence of 4th Purkinje's image
5. *Plane mirror examination at 1 m*	• Black opacity against a red background	• No red glow seen
6. *Distant direct ophthalmoscopy at 22 cm*	• Same as above	• Same as above
7. *Ophthalmoscopic examination*	• Same as above	• Same as above

TABLE 18.8 Comparison of Different Optical Devices for Refractive Correction of Aphakia

	Comfort and Convenience	Optical Aberrations	Aniseikonia* and Related Symptoms	Indications
Spectacles	Heavy Patient 'blind' without glasses Cosmetically poor	Visual distortion, pin-cushion effect because of relative central magnification Restricted field with 'jack-in-the-box' phenomenon† and roving ring scotoma‡	Magnification of 20–30% so produces diplopia	Fellow eye aphakic and good vision with previous aphakic correction; high axial myopia with intraocular lens power <8 D; patient refuses intraocular lens implantation
Contact lenses	Stringent daily schedule for cleaning and maintenance Insertion and removal cumbersome 'Blind' without lenses	Nil	Magnification about 8%, tolerable	Young children <2 years
Intraocular lenses	Comfortable in every way	Nil	Magnification 1–2%, negligible	Universal

*Aniseikonia: A difference in size of images perceived by the two eyes. Occurs because of magnification due to the optical correction.
†'Jack-in-the-box': images suddenly pop into view.
‡Roving ring scotoma: images suddenly disappear from view.

TOPIC 10: GLAUCOMA *High yield topic*

These topics must be done regardless of any book you are following:

- Measurement of IOP **(Types of Tonometry)**
- **Definition** & Classification of glaucoma *High yield topic*
- Primary Open Angle **(especially disual field defects and Treatment: drugs and surgeries)**
- Primary Closed Angle **(acute primary angle closure glaucoma)**
- Secondary glaucoma (Lens induced; Uveitis; Inflammatory; Neovascularization)

DIFFERENCES BETWEEN CONGENITAL GLAUCOMA AND KERATOGLOBUS

CLINICAL FEATURES	INFANTILE GLAUCOMA	KERATOGLOBUS	HIGH MYOPIA
1. Intraocular pressure	Raised	Normal	Normal
2. Corneal opacity	Present	Absent	Absent
3. Optic disc cupping	Present	Absent	Absent
4. Angle of anterior chamber	Abnormal	Normal	Normal

DIFFERENCES BETWEEN NORMAL PHYSIOLOGICAL CUP AND GLAUCOMATOUS CUP

CLINICAL FEATURES	NORMAL PHYSIO-LOGICAL CUP	GLAUCOMATOUS CUP
1. Excavation	Nil	It reaches to the edge of the disc
2. Margins	Shelving	Steep
3. Lamina cribrosa	Normal position	Backward displacement
4. Retinal vessels	Continuity is intact.	Bayonetting sign—retinal vessels appear to be broken off at the margin of the cup.
5. Parallax	Nil	Marked in deep cup.
6. Pulsation of arteries	Nil	May be present when there is raised tension.

DIFFERENCES BETWEEN PRIMARY ANGLE-CLOSURE AND OPEN ANGLE GLAUCOMA

CLINICAL FEATURES	PRIMARY ANGLE-CLOSURE	PRIMARY OPEN ANGLE
1. *Type of patient*	• Women • 5-6th decade • Anxious, excitable habit • Unstable vasomotor system	• Either sex • A decade later in 6-7th decade • Nil • In subjects of sclerosis
2. *Type of eye*	• Small hypermetropic eye with narrow angle	• Any type of eye
3. *Course*	• Sudden acute onset • Premonitory symptoms • Turbulent course	• Insidious onset • Practically symptomless • Chronic, slowly progressive
4. *Clinical features*	Typical 5 stages: i. Primary angle-closure glaucoma suspect (latent) ii. Subacute or Intermittent iii. Acute primary angle-closure iv. Chronic primary angle-closure v. Absolute primary angle-closure	• Classical triad signs: i. Raised intraocular pressure ii. Cupping of the optic disc iii. Visual field defects
5. *Complications*	• Field defects and cupping of the disc appear late but develop rapidly • Intercalary, ciliary and equatorial staphyloma	• Field defects and cupping of the disc develop early but progress slowly • Cataract • Uveal tract atrophy
6. *Treatment*	• Surgical always Initially medical	Medical always or preferably
Similarity	1. Always eventually bilateral. 2. The end stage is absolute primary angle-closure glaucoma.	• Always bilateral • The last stage is absolute primay angle-closure glaucoma.

TOPIC 11: UVEITIS

These topics must be done regardless of the book you are following:

- Uveitis (**Classification of uveitis and Anterior Uveitis**)
  *Do **Table on pg # 179**(Difference between types of uveitis) from Jatoi*
- **Endophthalmitis** *High yield topic*
- **Panophthalmitis**

TABLE 17.3 Investigations of Patients With Different Types of Uveitis

Type of Uveitis	Possible Aetiology	Investigations
Acute anterior	Idiopathic	
	Seronegative spondyloarthropathies (ankylosing spondylitis, Reiter disease)	Urine for WBCs, X-ray of sacroiliac joints, ESR, C-reactive protein, HLA-typing
	Sarcoidosis	Chest X-ray, Mantoux test, serum ACE
	Secondary syphilis	Serological tests
Chronic anterior	Heterochromic uveitis	Gonioscopy
	Juvenile chronic arthritis	Antinuclear antibody
Acute posterior	Toxoplasmosis	Serology if appearance is equivocal
Chronic posterior	Pars planitis	None of value
	Toxocariasis	Eosinophil count, skin test, serum IgE

ACE, angiotensin-converting enzyme; ESR, erythrocyte sedimentation rate.

DIFFERENCES BETWEEN CONJUNCTIVITIS, IRITIS AND ACUTE GLAUCOMA

CLINICAL FEATURES	CONJUNCTIVITIS	IRITIS	ACUTE GLAUCOMA
1. ***Symptoms***			
1. *Onset*	Gradual	Usually gradual	Sudden
2. *Pain*	Mild discomfort	Moderate	Severe
3. *Discharge*	Mucopurulent	Watery	Watery
4. *Coloured halos*	May be present	Absent	Present
5. *Systemic complications*	Absent	Mild	Prostration and vomiting
2. ***Signs***			
1. *Congestion*	Superficial conjunctival	Deep ciliary	Deep ciliary
2. *Tenderness*	Absent	Marked	Marked
3. *Media*	Clear	Opacities may be seen	Corneal oedema
4. *Anterior chamber*	Normal	May be deep	Shallow
5. *Pupil*	Normal	Small, irregular	Large, oval
3. ***Investigations***			
1. *Vision*	Good	Fair	Poor
2. *Tension*	Normal	Normal or low	Raised
3. *Slit-lamp examination*	Normal	Aqueous flare and kp	Corneal oedema and anterior synechiae

TOPIC 12: VITREO-RETINA *High yield topic*

These topics must be done regardless of the book you are following. For all diseases of retina, focus on **signs,symptoms, stages/grading and treatment**:

- Posterior Vitreous Detachment
- Viterous Hemorrhage **(types)**
- Viterous opacities (types with causes; *give a read for mcqs*)
- Retinal Detachment (**types and treatment**) *High yield topic*
- Diabetic Retinopathy (Do from Jatoi as **grades** are different in Jogi) *High yield topic*
- Hypertensive Retinopathy (Do from Jatoi as **grades** are different in Jogi) *High yield topic*
- Central Retinal Vein Occlusion **(especially differences from DR and HR)**
- Central Retinal Arterial Occlusion **(Types)**
- Age Related Macular Degeneration (**Types and Treatment)**
- Retinitis Pigmentonsa **(especially signs and symptoms; difference from Vitamin A deficiency)** *High yield topic*
- Retinoblastoma (**Relevant investigations, staging and treatment)** *High yield topic*

TOPIC 13: OPTIC NERVE

These topics must be done regardless of the book you are following:

- Papilloedema **(especially causes)**
- Papillitis **(S/S and treament)** *High yield topic*
- Optic Atrophy (Quick read)

DIFFERENCES BETWEEN PAPILLOEDEMA AND PAPILLITIS

CLINICAL FEATURES	PAPILLOEDEMA	PAPILLITIS
1. *Incidence*	Bilateral	Unilateral
2. *Onset*	Gradual with slow progress	Sudden with rapid progress
3. *Visual acuity*		
Early	• Transient attacks of blurred vision	• Profound visual loss
Late	• Central vision is affected late	• Complete blindness
4. *Visual fields*	Enlargement of blind spot	Typically central scotoma
5. *Fundus examination*		
i. Optic disc	Difference of 2-6 D between the vessels on top of the disc and surrounding retina.	Difference is usually not more than 2-3D.
ii. Colour of disc	Reddish-grey	Marked hyperaemia
iii. Vessels	Marked venous dilatation, haemorrhages and exudates	Venous dilatation and exudates are less marked
iv. Macula	Macular star may be present	Macular fan may be present occasionally.
6. *Fluorescein angiography*	Vertical oval pool of dye due to leakage	Minimum leakage of dye
7. *Central nervous system involvement*	Presence of headache, projectile vomiting (raised intracranial pressure)	Presence of numbness, paresthesia, weakness and incoordination of limbs (demyelinating disease)
8. *CT scan and MRI*	Intracranial space occupying lesion can be detected	Demyelinating disorder can be seen

TOPIC 14: ORBIT

These topics must be done regardless of the book you are following.

- Proptosis (**Causes** from Jogi *pg. 496*)
- Preseptal Cellulitis
- Orbital Cellulitis **(Differences from CVT; Orbit Syndromes)**
- Thyroid eye disease **(Grading and signs)** *High yield topic*

TOPIC 15: OCULAR INJURIES

These topics must be done regardless of the book you are following.

- Extraocular Foreign Bodies (focus on treatment)
- Intraocular foreign bodies **(especially siderosis bulbi and chalcosis)**
- Burns and Chemical Injuries (focus on grading and treatment)
- Sympathetic Ophthalmitis (**S/S** are important; *in Jatoi this is written in the chapter on Uveitis*)
- **Blow out fracture**

TOPIC 16: ERRORS OF REFRACTION

These topics must be done regardless of the book you are following.

- Myopia (types, signs and refrative correction) *High yield topic*
- Hypermetropia (types and refrative correction)
- Astigmatism (types and refrative correction)
- **Presbyopia** *High yield topic*
- **Amblyopia** (*in Jatoi this is written in the chapter on Squint*) *High yield topic*

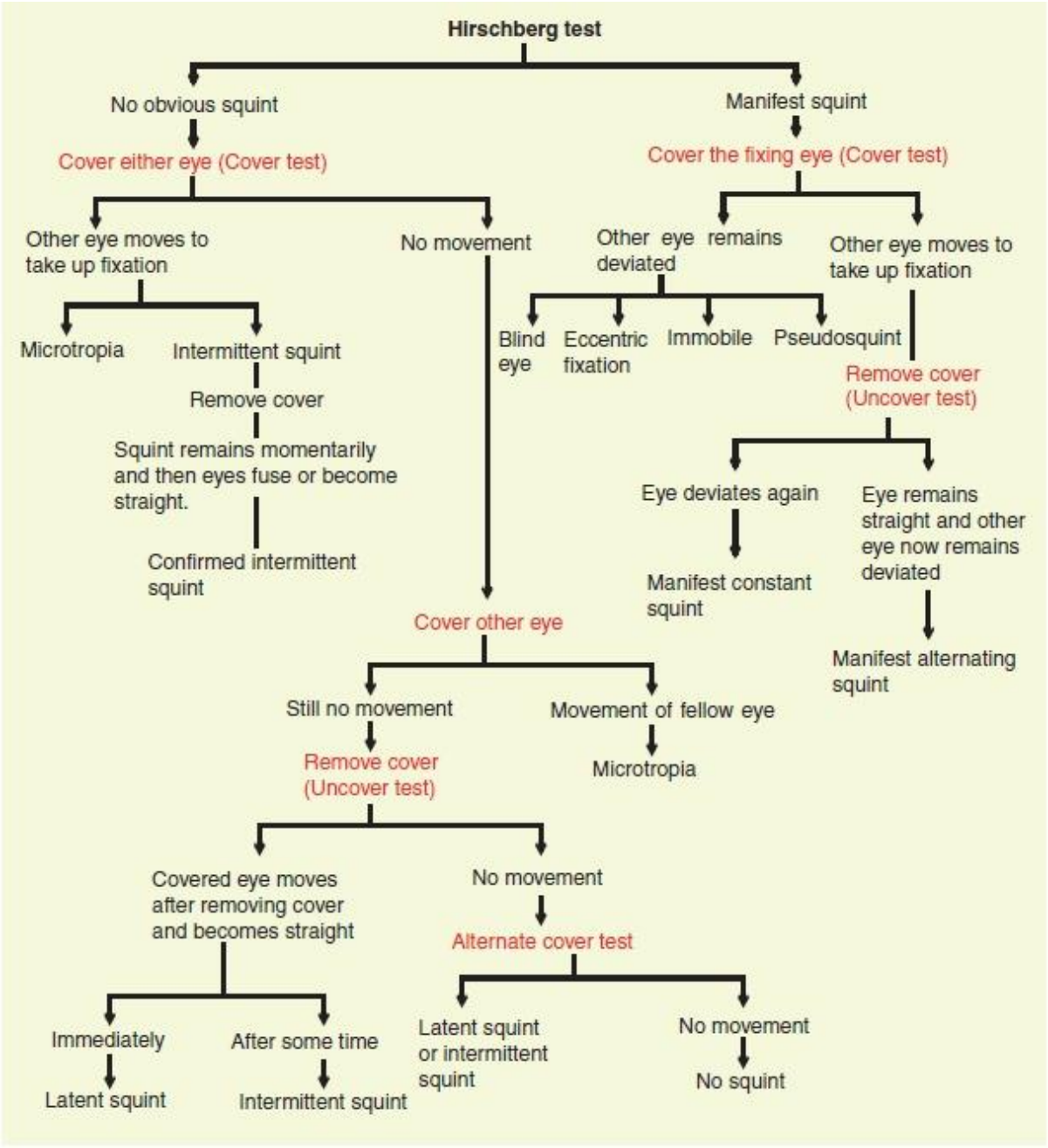
TOPIC 17: STRABISMUS

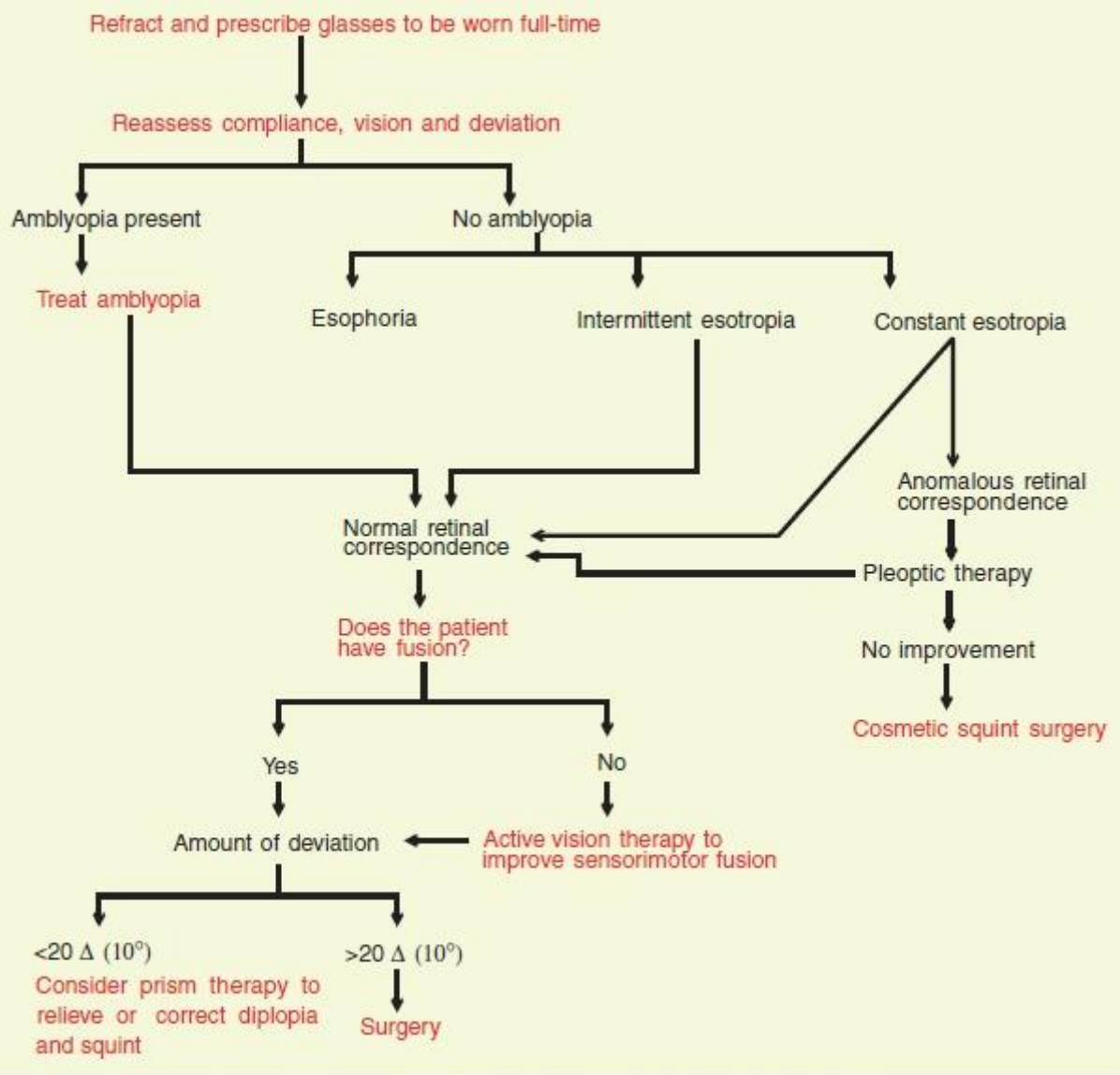
These topics must be done regardless of the book you are following:

- Types of extraocular movements
- Squint **(Definition, Classification and Principle of Management)** *High yield topic*
- The **4 Os** of Management of Squint
- 3rd Nerve Palsy *High yield topic*

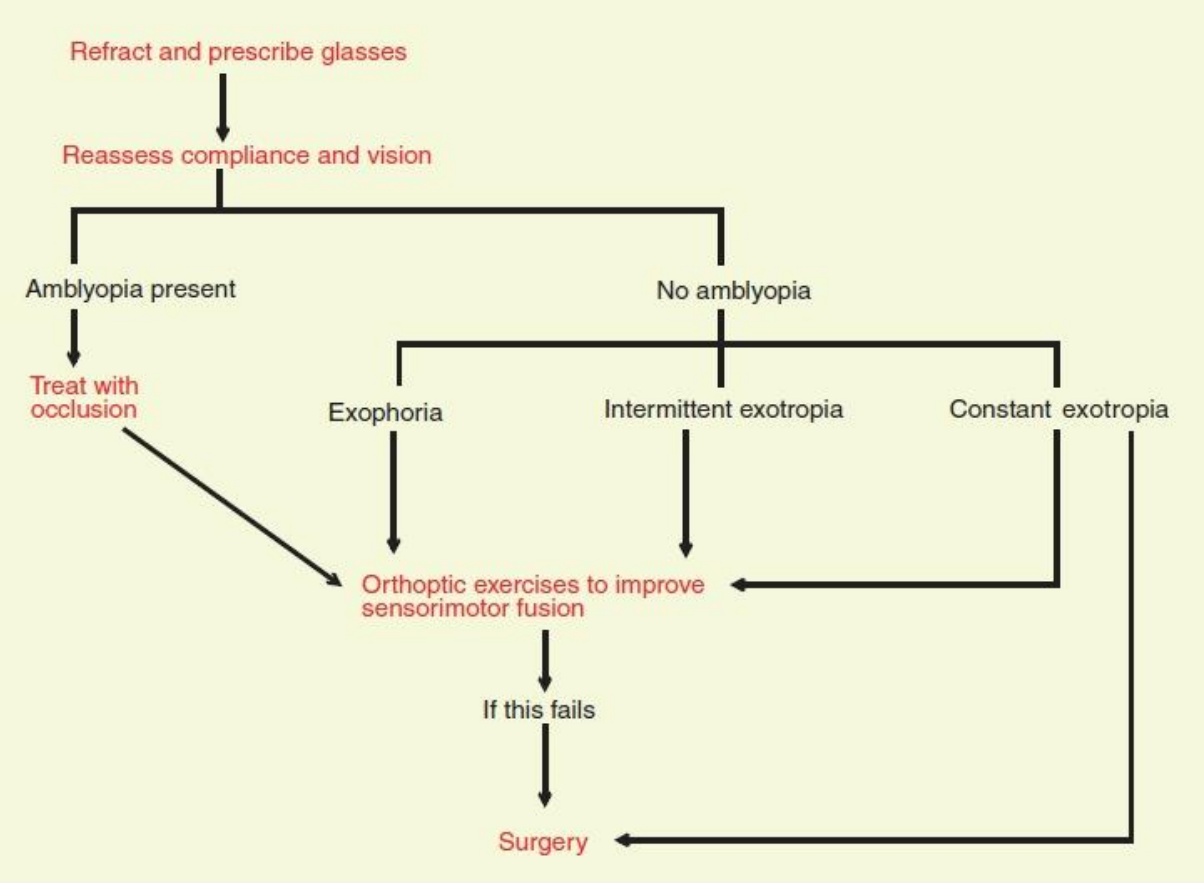
TABLE 26.3 Outline of Clinical and Investigative Evaluation of a Patient with Strabismus

Case history	Chief complaint
	Onset and duration
	Previous treatment
	Family history
	Treatment goals and expectations
Diagnostic tests	Visual acuity and monocular fixation pattern
	Cycloplegic refraction and fundus examination
	Look for any change in head posture and test ocular movements
	Determine details of deviation (Table 26.4)
	Tests for binocularity
	Forced duction test (if movements are restricted)
Management plan	Estimate prognosis
	Patient/parent counselling





FLOWCHART 26.2 Steps in planning the management of esodeviation.



FLOWCHART 26.3 Steps in planning the management of exodeviation.

TOPIC 18: PUPIL

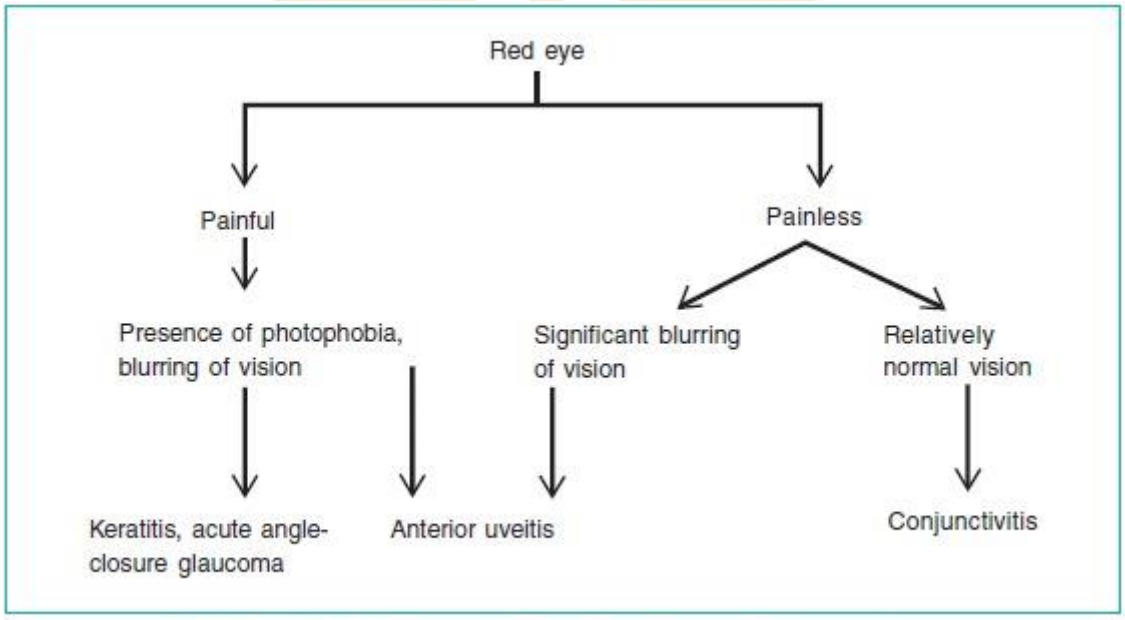
These topics must be done regardless of the book you are following:

- Pupillary reflexes (**Direct** and **Indirect** light Reflex; Near Response)
- Arygl Robertson Pupil
- Marcus Gunn pupil/ RAPD *High yield topic*
- Amaurotic Pupil
- Horner Syndrome

TOPIC 19: MISCELLANEOUS TOPICS

These topics must be done regardless of the book you are following:

- Differentials of red eye (*chapter # 13 Jatoi*) *High yield topic*
- Differentials of Leucocoria (*written in the chapter of Lens in Jatoi; dicussed along Retinoblastoma in the chapter of Retina in Jogi*) *High yield topic*
- Different types of Lasers used in Opthalmology
- Chapter #25 of Jatoi *High yield topic*



FLOWCHART 9.1 Approach to diagnosis of a case with an acute red eye.