

पाटन स्वास्थ्य विज्ञान प्रतिष्ठान सेवाआयोग
प्राज्ञिक सेवा, आखाँ रोग समूह, **Vitro-Retina** उपसमूह, सह-प्राध्यापक पद, दशौँ (१०) तहको
खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

Paper II: Technical Subject

Section (A) General Ophthalmology - 45 Marks

1. **Anatomy, Physiology and Developmental anomaly of:**
 - 1.1 Eyelids
 - 1.2 Orbit
 - 1.3 Eye Ball

2. **Ocular investigations in ophthalmology:**
 - 2.1 X-Ray of orbit
 - 2.2 Ocular USG
 - 2.3 Fluorescence angiography
 - 2.4 OCT, CT and MRI Scan

3. **Ocular Pathology**
 - 3.1 Ocular histology
 - 3.2 Ocular microbiology
 - 3.3 Ocular immunology

4. **Optics & Refraction**
 - 4.1 Refractive errors
 - 4.2 Contact lens
 - 4.3 Low vision aids
 - 4.4 Refractive surgeries

5. **Conjunctiva**
 - 5.1 Differential diagnosis of Conjunctivitis with other red eye conditions
 - 5.2 Management of ophthalmia neonatorum
 - 5.3 Tumors

6. **Cornea**
 - 6.1 Applied Anatomy, physiology and innervations of cornea in relation to keratorefractive surgery and cataract surgery
 - 6.2 Types of keratitis
 - 6.3 Corneal ulcers
 - 6.4 Dystrophies & Degenerations
 - 6.5 Keratoplasty

7. **Sclera**
 - 7.1 Applied anatomy of sclera in relation to Squint and retinal detachment surgeries
 - 7.2 Episcleritis
 - 7.3 Scleritis
 - 7.4 Sclerokeratitis

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8. **Strabismus**

- 8.1 Binocular single vision & anomalies
- 8.2 Extraocular muscles and ocular motility
- 8.3 Strabismus: Definition, Classification and management.
- 8.4 Amblyopia and its management

9. **Lids and ocular adnexa, orbit & lacrimal system**

- 9.1 Applied anatomy and physiology in relation to surgeries of lids and ocular adnexa, lacrimal system (NLD) and orbit
- 9.2 Proptosis
- 9.3 Ptosis
- 9.4 Common orbital tumours and its surgical management
- 9.5 Common eye lids tumors
- 9.6 Recent advances in management of nasolacrimal duct (NLD) block in various age groups

10. **Crystalline lens**

- 10.1 Applied Anatomy and physiology of lens
- 10.2 Cataract: type and causes of cataract
- 10.3 Management of cataract
- 10.4 Recent advances in cataract surgeries
- 10.5 Challenges in management of complicated cataract

11. **Glaucoma**

- 11.1 Anatomy of angle structures and its clinical implications
- 11.2 Glaucoma: classification of glaucoma and diagnosis
- 11.3 Surgical management
- 11.4 Antiglaucoma drugs

12. **Uveal tract**

- 12.1 Anatomy and physiology of uveal tract and clinical applications
- 12.2 Uveitis: types and aetiopathology and management of uveitis
- 12.3 Management of uveitic cataract

13. **Ocular emergencies and Injuries**

- 14.1 Classification of ocular trauma/injuries
- 14.2 Diagnosis, management and prevention of ocular injuries
- 14.3 Intraocular foreign bodies
- 14.4 Chemical Burns of eye

14. **Parasitic and Protozoal infestations of eye**

15. **Effects of High altitude on eye**

16. **Recent advances in diagnosis and management of dry eye**

17. **LASER in ophthalmology**

18. **Ocular gene therapy**

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Section (B) Vitro-Retina - 55 Marks

1. Basic anatomy and Physiology

- 1.1 Development of Retina
- 1.2 Vitreous
- 1.3 Neurosensory Retina
- 1.4 Retinal layers and neurosensory elements
- 1.5 Retinal vasculature and oxygen supply
- 1.6 Cell biology of retinal pigment epithelium along visual cycle
- 1.7 Mechanism of normal retinal adhesion
- 1.8 Anatomy of Bruch's membrane, choroid and sclera

2. Diagnostic Approach to Retinal diseases

- 2.1 Fundus camera imaging
- 2.2 Optical coherence tomography
- 2.3 Fundus fluorescence angiography and Indocyanine green angiography
- 2.4 Fundus autofluorescence
- 2.5 Ultrasonography

3. Retinal Physiological and Psychophysis

- 3.1 Electroretinography
- 3.2 Electro-oculography
- 3.3 Visual evoked cortical potential
- 3.4 Color vision
- 3.5 Contrast Sensitivity

4. Diseases of Retina and Vitreous

- 4.1 Age Related Macular Degeneration
 - 4.1.1 Genetics and AMD
 - 4.1.2 Dry AMD
 - 4.1.3 Neovascular AMD
 - 4.1.4 Other causes of Choroidal neovascularization: angioid streak, ocular histoplasmosis, pathological myopia, idiopathic CNVM
- 4.2 Retinal Vascular Diseases: Diabetic Retinopathy
 - 4.2.1 Pathogenesis of diabetic retinopathy
 - 4.2.2 Classification of diabetic retinopathy
 - 4.2.3 Management of proliferative and non-proliferative diabetic retinopathy
 - 4.2.4 Diabetic macular edema: classification and treatment
 - 4.2.5 Cataract surgery in patients with diabetes
- 4.3 Retinal Vascular Diseases associated with cardiovascular disease
 - 4.3.1 Systemic Hypertension: hypertension retinopathy, hypertension choroidopathy and hypertension optic neuropathy
 - 4.3.2 Retinal Vein Occlusion: branch retinal vein occlusion, hemi-retinal vein occlusion, and Central retinal vein occlusion and management
 - 4.3.3 Ocular ischemic Syndrome: Symptoms and sign of ocular ischemic syndrome, etiology and course of ocular ischemia and treatment
 - 4.3.4 Arterial Occlusive Diseases: Branch retinal artery occlusion, Cilioretinal arterial occlusion, central retinal arterial occlusion, ophthalmic artery occlusion
 - 4.3.5 Arterial Macroaneurysm

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4.3.6 Other retinal vascular diseases: Sickle cell retinopathy, Vasculitis, Coat's diseases, macular telangiectasia, Valsalva retinopathy

5. Optic Nerve:

- 5.1 Blood supply of optic nerve head
- 5.2 Optic disc abnormality: disc pit, coloboma, morning glory syndrome
- 5.3 Ischemic optic neuropathy: AION, PION, and arteritic AION. Temporal artery biopsy techniques and indication

6. Retinal degeneration and Dystrophy:

- 6.1 Macular dystrophy: Stargardt disease, Best disease or Best Vitelliform Dystrophy, Adult onset Vitelliform lesion, early onset Drusenoid macular dystrophy, Pattern Dystrophy,
- 6.2 Inner retinal Dystrophy: X linked retinoschisis
- 6.3 Choiroidal Dystrophy
- 6.4 Retinitis pigmentosa and allied disorder

7. Retinal detachment:

- 7.1 Lesions that predispose to retinal detachment
- 7.2 Pathophysiology of retinal detachment
- 7.3 Retinal breaks
- 7.4 Retinal detachment: types and management
- 7.5 Pathogenesis and management of proliferative vitreoretinopathy

8. Diseases of Vitreo-Retinal interface:

- 8.1 Epiretinal membrane
- 8.2 Vitreomacular Traction
- 8.3 Idiopathic macular hole – stages and management

9. Retinopathy of prematurity:

- 9.1 Terminology and Classification
- 9.2 Pathophysiology
- 9.3 Screening recommendation
- 9.4 Prevention and risk factors
- 9.5 Treatment: laser, cycloablation, anti VEGF and vitrectomy and scleral buckling

10. Choroidal Diseases:

- 10.1 Central Serous chorioretinopathy
- 10.2 Angiod streak
- 10.3 Ocular histoplasmosis

11. Inflammatory disease:

- 11.1 Sympathetic ophthalmia
- 11.2 Vogt- Koyanagi- Harada Disease
- 11.3 Sarcoidosis
- 11.4 White dot syndrome

12. Infectious Disease:

- 12.1 HIV associated infection
- 12.2 Mycobacterial infection
- 12.3 Ocular toxoplasmosis
- 12.4 Eales disease
- 12.5 Toxocariasis
- 12.6 Syphilitic Chorioretinitis
- 12.7 Ebola virus panuveitis
- 12.8 Endogenous endophthalmitis

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- 12.9 Acute retinal necrosis syndrome
- 13. Common Tumors of Retina and choroid:**
 - 13.1 Retinoblastoma
 - 13.2 Cavernous Hemangioma
 - 13.3 Optic disease melanocytoma
 - 13.4 Choroidal melanoma
 - 13.5 Von- HippalLindau disease
 - 13.6 Tuberos sclerosis
 - 13.7 Phakomatoses
 - 13.8 Retinal and choroidal metastasis
- 14. Pathological myopia**
- 15. Posterior manifestation of ocular trauma and management**
- 16. Management of IOFB**
- 17. Posterior segment viewing system during vitreous surgery**
- 18. Techniques of scleral buckling**
- 19. Pneumatic retinopexy**
- 20. Tamponade agents**
- 21. Principle and techniques of pars plana vitrectomy**
- 22. Vitreous surgery for macular disorder:** Epiretinal membrane, macular hole, Vitreomacular traction
- 23. Intravitreal injection techniques**
- 24. Anti- VEGF agents**
- 25. Recent advances in management of diabetic macular edema**
- 26. Dengue induced retinopathy**
- 27. Pharmacology during surgery**
- 28. Laser therapy for posterior segment diseases**
 - 28.1 Basic principle of photocoagulation
 - 28.2 Transpupillary thermotherapy
 - 28.3 Photodynamic therapy
- 29. Ocular gene therapy**
- 30. Ocular anesthesia**
- 31. Ocular microbiology:**
 - 31.1 common ocular flora
 - 31.2 Common ocular pathogens causing endophthalmitis

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