Syllabus for Licensing Examination of PCL in Ophthalmic Science/Diploma in Ophthalmic Technique
2021

Nepal Health Professional Council

Bansbari, Kathmandu

Table of Content

1. Basic of preparatory/general sciences (Physics biochemistry, zoology, Botany)

This includes essential knowledge

- Laws of reflection and refraction, Refractive index
- Types of chemical bond.
- Characteristics of acids, bases and salts.
- Antacids and antabases and their medical uses
- Structure (Linear Cyclic) of glucose,
- Functions of Carbohydrates
- Introduction of lipid, fat and oil and their natural sources.
- types of tissues
- muscular tissue and its types, striated, smooth and
- cardiac muscles of animals.
- Nervous tissue and its types.
- Morphology of fungal plant
- Characteristics of a virus

2. General Anatomy and Physiology (Systems of the Body)

This includes general concepts of anatomy and physiology of human body:

Anatomical terms,

- Accessory organs and glands of the skin.
- Structures and functions of the heart, Components and function of the blood.
- Terms related to the skeletal system : axial ,appendicular ,articular cartilage ,diaphysis, epiphysis fontanel , hematopoiesis , periosteum
- Classifications of joints,
- structure and Divisions of the central nervous system:Classifications of neurons and neuralgia
- self-healing nature of body cells and tissues.
- Physiological terms: Cardiovascular, Digestion ,Excretion ,Organ ,Peritoneal ,Pericardial ,Thoracic Visceral ,Homeostasis
- Factors affecting growth and repair. Coagulation factors.
- Cranial nerves and their function
- Measurement of pulse and blood pressure

3. Ocular Anatomy and Physiology

This includes general concepts of basic knowledge of the anatomy and physiology of the eye. This includes :

- Embryology of the eye
- Anatomy along with blood and nerve supply of eye lids and adnexa, conjunctiva, cornea, slcera, uveal tract, lens, vitreous humor, retina, angle structure

Physiology of the cornea, aqueous humour, metabolism of cornea, lens and vitreous

Anatomy of orbit and its walls

Anatomy of extraocular muscles

Anatomy and functions of cranial nerves related to eye

Anatomy of lacrimal drainage systems

Formation and drainage of aqueous humour

Anatomy and physiology of visual pathway

Anatomy of pupillary pathway and pupillary reflex

4. Ocular Pharmacology

This includes concepts on pharmacology with special reference to eye. Selection of appropriate drugs for specific disease/conditions, their actions, indications, contraindications and side effects.

This includes

Pharmacological terminologies like half life, plasma concentration of drug, bioavailability, shelf life, expiry date

Concepts of pharmacodynamics, pharmacokinetics

Routes of administration of drugs

Mechanism of action, indication, contraindication, side effects precautions of:

Different types of antibiotics, their mechanism of action and spectrum of activity

Drugs used in gastrointestinal systems, respiratory system, cardiovascular system, Central Nervous System

Analgesic, antipyretic and anti-inflammatory drugs: Mechanism of action, indication, contraindication, side effects and precautions

Steroidal drugs

Nutritional Supplements

Antihistamines and allergic

Mydriatics and Cycloplegics

Miotics and Antiglaucoma drugs

Lubricating drugs

5. Ocular Pathology

This includes different aspects of ocular pathology with special reference to eye.

Includes:

Microbiology

Morphology, classification, structure of bacteria, virus, fungus, parasites

Epidemiology, mode of infection, pathogenicity, laboratory diagnosis of common bacteria, virus, fungus, parasites

Culture media of bacteria, fungus

Different staining techniques, antibiotic susceptibility testing

General composition of blood, types of blood cells with their function

Total Leucocyte count, Differential Leucocyte count with their normal values

Different methods of sterilization and disinfection

6. Systemic Disease of the eye

This includes ideas of disease in general medicine related to the eyes

This includes

Diabetes Mellitus and its effects on eye

Hypertension and its effects on eye

Thyroid Eye Disease and its effects on eye

Vitamin A deficiency and its effects on eye

Tuberculosis

Leprosy

Syphilis

Gonorrhea

Rubella

Toxoplasmosis

HIV/AIDS

7. Binocular Single Vision and its abnormalities

This includes identification and management of different binocular vision abnormalities. This includes:

Understand the function of EOM

Different types of eye movement

Accommodation: Introduction, anomalies and assessment

Latent and Manifest misalignment of the eyes

Motor and Sensory adaptation to strabismus

Basic Tests in Orthoptics setting

Hirschberg and Krimsky test
Cover test and its types
Test of convergence and accommodative problems
Test for suppression
Test for stereopsis
Test for Prism Fusion range

Amblyopia and its management

8. Optics and Refraction

This includes basic knowledge of optics and refraction, understanding of the light and its clinical implications, different optical condition of the eye. This includes

Light, its nature and interaction with reflective and refractive medium

Cardinal points

Schematic Eye

Lens design options in minus and plus lens

Meniscus lens, Lenticular lens and Myodisc

Manufacturing of Ophthalmic lenses

Properties of Ophthalmic lens

Lens aberrations

Myopia and its classification based on etiology

Hyperopia and classification based on etiology

Astigmatism and types of astigmatism

Accommodation and its physiology

Presbyopia and its classification

Parts of retinoscope, optical priniciple, reflex characteristics and procedure

Techniques of subjective refraction and its importance

Specifying lens power, prescription writing and power verification

9. Investigative Ophthalmology

This includes different investigation procedures for specific eye problems and interpretation the findings of the investigations. This includes

Visual acuity (near and distance)

Colour vision and contrast sensitivity assessment

Intraocular pressure

Visual field

Ultrasonography

FFA

Anterior segment and fundus photography

Exophthalmometry

Pachymetry

Keratometry

Gonioscopy

Direct Ophthalmoscopy

Indirect Ophthalmoscopy

Slit lamp bio microscopy

Biometry

10. Ophthalmic Nursing Care and Operation Theatre Management

This includes basic ophthalmic nursing procedure required to perform during, after and before surgery. This includes

Respiration: definition, types, characteristics, factors affecting temperature, pulse, respiration and blood pressure

Principles, Techniques and Measurement of temperature, pulse, respiration and blood pressure

Objective of Operation Theatre

Operation Theatre management and aseptic technique

Trolley preparation in different eye surgery

Scrub and circulation

OT Hazards and risk management

Definition, types of ocular anesthesia, equipment

Management of recovery patient

Pre and post operative management of different types of ocular surgery

Routes of administration of drugs

11. Ocular Surgery Assisting

This includes knowledge and skills on ocular surgical procedures to assist the ophthalmologist. Includes:

Instruments, step, consumable and medicines in

cataract surgery

glaucoma surgery

nasolacrimal passage surgery

Strabismus surgery

Keratoplasty surgery

Vitro-retinal surgery

Lid surgery

Orbitotomy surgery

Enucleation, evisceration and extentration surgery

Excisional biopsy

Electroepilation

Pterygium excision and conjunctival graft

Preparation of patient, surgical area, step of surgery, possible complication and management of extra ocular surgeries

Trolley preparation, consumable and post operative management of

Entropion

Chalazion

lid laceration repair

incision and drainage of lid abscess and externum

12. Community Ophthalmology

This includes planning, implementing, monitoring and evaluating the eye health and interventions in defined population. Developing tools to assess the magnitude of eye problem, calculating disease burden and making conversation with current national and

global eye health strategies and planning on eye health. This includes

- Concept of health given by Alma-Ata declaration/WHO
- Primary health care, its definition and elements
- Measuring disease burden in community (Magnitude, prevalence, incidence)
- Concepts, Importance, Components of community participation
- Health/Eye health status indicators
- Basic Health profile of Nepal
- Prevalence of blindness and visual impairment in Nepal
- Calculation of WHO standard of visual outcome
- Sustainable Development Goals
- WHO action Plan
- WHO and IAPB eye health strategies at global and regional level

13. Code of Ethics