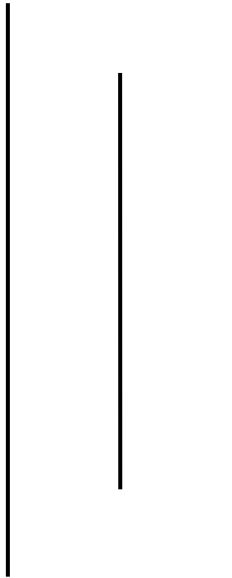


# **SYLLABUS FOR LICENSING EXAMINATION**



## **Program:**

**Bachelor of Optometry (B.Optom)**

**&**

**Doctor of Optometry (OD)**

## **Background**

‘Optometry is a healthcare profession that is autonomous, educated and regulated (licensed/ registered), and optometrists are the primary healthcare practitioners of the eye and visual system who provide comprehensive eye and vision care, which includes refracting and dispensing, detection/diagnosis and management of disease in the eye, and rehabilitation of conditions of the visual system,’ as defined by the World Council of Optometry (WCO).

- Examination should be conducted with multiple choice questions (MCQs) having three plausible options and one correct option.
- There should be 100 MCQs that have to be answered within 2 hours. The pass marks should be 50% of the total questions. The 50% questions should be arranged in such a way that a candidate must know the answer of these questions.

## **Contents**

1. Basic Science and Organ Systems (5)
2. Ocular Anatomy and Physiology (10)
3. Physiologic and Geometric Optics (3)
4. Visual Science (10)
5. Ocular Disease (7)
6. Diagnostic and investigative optometry(10)
7. Ophthalmic and Dispensing optics (10)
8. Pediatric Optometry and Binocular Vision (10)
9. Contact Lens and ocular prosthesis (10)
10. Low Vision and visual rehabilitation (10)
11. Community optometry (5)
12. Geriatric optometry and vision care (4)
13. Research Methodology and Biostatistics (3)
14. Ethics in Optometry (3)

## **1. Basic Science and Organ Systems**

- This includes general concepts of the basic medical sciences and help them apply those concepts through correlating the normal structures, their functions and pathological states in relation to clinical presentation, pathophysiology, their diagnosis and management.
  
- It includes
  - ❖ Basic Anatomy
  - ❖ Physiology
  - ❖ Microbiology
  - ❖ Biochemistry
  - ❖ Pathology, and
  - ❖ Pharmacology
  - ❖ Musculoskeletal system
  - ❖ GI system
  - ❖ Digestive system
  - ❖ Respiratory system
  - ❖ Nervous system
  - ❖ Cardiovascular system
  - ❖ And Endocrine System
  - ❖ Reproductive system

## **2. Ocular Anatomy and Physiology(10)**

- This section covers
  - ❖ Embryology of eye
  - ❖ Anatomy, physiology, nerve supply and vascular supply pertaining to
    - Orbit
    - Lids
    - Extra ocular muscles
    - Lacrimal apparatus
    - Conjunctiva
    - Cornea
    - Epi-sclera and Sclera
    - Anterior chamber and its angle structure,
    - Uvea
    - Lens
    - Vitreous
    - Retina and Optic nerve.

### **3.Physical and geometrical Optics(3)**

- Physical optics includes properties of light such as
  - ❖ Propagation
  - ❖ Reflection
  - ❖ Refraction
  - ❖ Interference
  - ❖ Diffraction
  - ❖ Polarization
  - ❖ Absorption and Scattering
  - ❖ LASER, and Photometry along with its application in eye.
  
- Geometrical optics includes
  - ❖ The phenomenon of image formation by simple lens and lens system including reflection and refraction at plane surface and curved surface,
  - ❖ Vergence and image attributes and location
  - ❖ Calculation of cardinal point
  - ❖ Thin and thick lenses
  - ❖ Prism
  - ❖ Magnification
  - ❖ Spherical and cylindrical lenses
  - ❖ And aberration of lenses.

#### **4. Visual Science(10)**

- This section should covers
  - ❖ Measurement of visual threshold
  - ❖ Principle and components of visual functions such as visual acuity, contrast sensitivity, light and dark adaptation, spatial vision, temporal vision, color vision
  - ❖ Eye movements
  - ❖ Entopic phenomenon,
  - ❖ Circadian cycles in vision,
  - ❖ Functional retinal physiology
  - ❖ Parallel processing
  - ❖ Striated cortical and extra-striated cortical functions related to processing of visual information, motion detection, signal detection, spatial and temporal perception, binocular space perception
  - ❖ Organization of all these receptive field structures and neural channeling.

## **5.Ocular Disease(7)**

- This section cover description, sign and symptoms, assessment Differential diagnosis and management of various ocular diseases such as
  - ❖ Unilateral or bilateral red eye
  - ❖ Gradual loss of vision
  - ❖ Sudden loss of vision
  - ❖ Swelling and pain in and around the eye
  - ❖ Watering of eye
  - ❖ Dry eye and Ocular surface disorder
  - ❖ Night blindness
  - ❖ Leukocoria
  - ❖ Neuroophthalmic conditions
  - ❖ Abnormal pupillary reactions
  - ❖ Ocular emergencies
  - ❖ Congenital disorders
  - ❖ Degenerative disorders
  - ❖ Dystrophies,
  - ❖ Ocular manifestation of systemic diseases
  - ❖ Optometric management of headache,
  - ❖ Phakomatosis and tumours.

## **6. Diagnostic and investigative optometry(10)**

- This section should cover related to diagnosis and investigation performed in eye. They includes
  - ❖ measurement of visual acuity at distance and near
  - ❖ Examination of peripheral and central visual field by available and reliable techniques
  - ❖ Examination of color vision
  - ❖ Slit lamp biomicroscopy alone or with the aid of external lens system
  - ❖ Ultrasonography
  - ❖ Interferometric examinations
  - ❖ Schiøtz examination,
  - ❖ LASER examinations
  - ❖ Ophthalmic and optometric Imaging
  - ❖ Electrophysiological tests.
  - ❖ Techniques and principle of determination of refractive error for distance and near and assessment of accommodative apparatus.
  - ❖ Topographic & Tomographic examination
  - ❖ Specular & Confocal Microscopy



## **7. Ophthalmic and Dispensing Optics(10)**

- This section should cover including various topic related to ophthalmic optics and Dispensing of ophthalmic aids. They include
  - ❖ Lens materials
  - ❖ Characteristics of ophthalmic lens
  - ❖ Measurement of various lens parameters and powers
  - ❖ Ophthalmic prisms
  - ❖ Lens power transposition and verifications
  - ❖ Various tinted and protective lenses
  - ❖ Latest ophthalmic lens and designs
  - ❖ Various lens design and verification in special conditions like aniseikonia, lenticular, aspheric.
  - ❖ Selection of lens and frames
  - ❖ Face and frame measurement
  - ❖ Spectacle and frame mounting
  - ❖ Spectacle fittings and principles
  - ❖ And practical aspects of lens laying off, edging and frame adjustment
  - ❖ Special dispensing for different vocations

## **8. Pediatric Optometry and Binocular Vision(10)**

- Pediatric optometry should cover
  - ❖ Visual Development , emmetropization and maturation of vision.
  - ❖ pediatric vision assessment
  - ❖ pediatric refraction
  - ❖ pediatric vision correction
  - ❖ Pediatric vision assessment in special conditions like physical and mental disabilities.
- Binocular vision includes
  - ❖ Principles of eye movement, disorders, assessments and managements.
  - ❖ Principles of muscle actions, field of vision and fixation.
  - ❖ Principles of binocular single vision, various grades of binocular vision.
  - ❖ Motor and sensory adaptation to various oculo-motor disorders, non-strabismic disorders, strabismic disorders, accommodative disorders, vergence disorders, amblyopia and nystagmus.
  - ❖ Management includes optical therapy, non optical therapy, vision therapy and surgical therapy.

## **9. Contact Lens and ocular prosthesis(10)**

- This section should cover
  - ❖ Various anatomical and physiological aspects related to contact lens fittings
  - ❖ Lens optics
  - ❖ Lens design material
  - ❖ Verifications and standards
  - ❖ Solutions and staining related to contact lens fitting and dispensing
  - ❖ Special designed contact lenses
  - ❖ Patient management related to contact lens wear,
  - ❖ Complication related to contact lens and special fitting procedures.
  - ❖ Ocular Prosthesis materials, design, manufacturing handling and fitting and care

## **10. Low Vision and visual rehabilitation(10)**

- This section should cover
  - ❖ Definition, disorders causing low vision and visual impairment
  - ❖ Examination of low vision patients
  - ❖ Assessment techniques
  - ❖ Low vision magnification systems
  - ❖ Devices, prescribing guidelines
  - ❖ Optical and non-optical aids
  - ❖ Psychological, behavioral and social counseling
  - ❖ Visual rehabilitation and agencies working for blind and visual impairments.

## **11. Community optometry (5)**

- This section should cover
  - ❖ Introduction to community health, epidemiology
  - ❖ Determinants of health and population
  - ❖ Environmental sanitation
  - ❖ Health behavior, health facilities and institutions, health planning and programs
  - ❖ Definition, components, concepts, importance of community health diagnosis
  - ❖ Program related to elimination of eye and vision related problems
  - ❖ Nutritional deficiencies and its consequence in vision
  - ❖ Occupational ocular health hazards, and eye protection standards.

## **12 Geriatric optometry and vision care(4)**

- This section should cover
  - ❖ Anatomic, physiological and visual changes with age
  - ❖ Examination of aging patients
  - ❖ Various ocular disorder of aging population
  - ❖ Management of visual disorders in aging population and counseling.

## **13. Research Methodology and Biostatistics(3)**

- This section should cover
  - ❖ Basic concepts of research designs.
  - ❖ Sampling.
  - ❖ Data collection, data analysis, basic biostatistical methods to present data.
  - ❖ Proposal writing and report writing.

## **14. Ethics & Practice Management in Optometry(3)**

- This section should cover
  - ❖
  - ❖ National health system
  - ❖ National eye health policies
  - ❖ Practice management
  - ❖ Legal issues related to the practice
  - ❖ Registration and governance of clinical practices
  - ❖ Professionalism and communication
  - ❖ Code of conducts of health systems and councils of Nepal.
  - ❖ And standards of practice, standards of dispensing visual products.
  - ❖ Currents trends in Optometry Practice