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प्राविधिक सेवा, स्वास्थ्य समूह, अधिकृत तृतीय श्रेणी, प्राविधिक अधिकृत (अप्टोमेट्री) पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

२०८१

लिखित परीक्षा योजना

लिखित परीक्षा : **कुल पूर्णाङ्क :** २००

पत्र/विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या × अङ्क	समय
प्रथम	१००	४०	वस्तुगत - बहुवैकल्पिक प्रश्न (MCQs)	१०० प्रश्न × १ अङ्क	१ घण्टा ३० मिनेट
द्वितीय	१००	४०	विषयगत प्रश्न	८ प्रश्न × १० अङ्क ४ प्रश्न × ५ अङ्क	३ घण्टा

द्रष्टव्य :

1. लिखित परीक्षाका लागि १००/१०० पूर्णाङ्कका दुई पत्रहरु हुनेछन् ।
2. प्रथमपत्र र द्वितीय पत्रको लिखित परीक्षा पाठ्यक्रमको विषयवस्तु एउटै हुनेछ ।
3. प्रथमपत्र र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
4. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नको विकल्प छनौट गर्दा गलत विकल्प छानेमा ऋणात्मक मूल्याङ्कन (Negative Marking) गरिने छ । अर्थात् यसरी मूल्याङ्कन गर्दा प्रत्येक गलत उत्तरको लागि २० प्रतिशत अङ्ककट्टा गरिनेछ । बहुवैकल्पिक प्रश्नको २० प्रतिशत अङ्क प्राप्ताङ्कबाट घटाइने छ । (उदाहरणका लागि परीक्षार्थीले २० अङ्कको बहुवैकल्पिक प्रश्नमा १५ प्रश्नको सही उत्तर र ५ प्रश्नको गलत उत्तर दिएमा निजको प्राप्ताङ्क (०.२० × ५=१.००) अर्थात् १५–१= १४ अङ्क हुनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
5. विषयगत प्रश्नको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
6. विषयगत प्रश्नमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । उम्मेदवारले प्रत्येक खण्डका प्रश्नको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
7. प्रत्येक पत्रको उत्तीर्णाङ्क पूर्णाङ्कको ४० प्रतिशत हुनेछ ।
8. भाषा विषयबाहेक अन्य विषयका लागि उत्तरको माध्यम अंग्रेजी वा नेपाली हुनेछ ।

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प्रथम र द्वितीय पत्र :

Section (A) : 50 Marks

1. **Ocular Anatomy, Physiology and Development**

   1.1 Embryology of eye
   1.2 Anatomy of orbit, eyelids, eyeball, extra ocular muscles, lacrimal apparatus, conjunctiva, cornea, episcleral and sclera, anterior chamber and its angle structure, uvea, lens, vitreous, retina and optic nerve
   1.3 Physiology of orbit, eyelids, eyeball, extra ocular muscles, lacrimal apparatus, conjunctiva, cornea, episcleral and sclera, anterior chamber and its angle structure, uvea, lens, vitreous, retina and optic nerve
   1.4 Nerve supply and Vascular supply pertaining to: orbit, eyelids, eyeball, extra ocular muscles, lacrimal apparatus, conjunctiva, cornea, episcleral and sclera, anterior chamber and its angle structure, uvea, lens, vitreous, retina and optic nerve

2. **Physiologic and Geometric Optics**

   2.1 Physical optics: properties of light - propagation, reflection, refraction, interference, diffraction, polarization, absorption and scattering
   2.2 LASER and photometry along with its application in eye
   2.3 Geometrical optics: 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

3. **Visual Science**

   3.1 Measurement of visual threshold; principle and components of visual functions - visual acuity, contrast sensitivity, light and dark adaptation, spatial vision, temporal vision, color vision
   3.2 Eye movements.
   3.3 Entopic phenomenon.
   3.4 Circadian cycles in vision; functional retinal physiology; parallel processing
   3.5 Striated cortical and extra-striated cortical functions related to processing of visual information, motion detection, signal detection, spatial and temporal perception, binocular space perception
   3.6 Organization of all these receptive field structures and neural channeling.

4. **Ocular Disease**

   Introduction, sign and symptoms, assessment, differential diagnosis and management of the following ocular diseases:

   4.1 Unilateral or bilateral red eye
   4.2 Gradual loss of vision; differential diagnosis: cataract, primary open angle glaucoma (POAG)
   4.3 Sudden loss of vision; differential diagnosis: endophthalmitis, retinal detachment
   4.4 Swelling and pain in and around the eye; differential diagnosis
   4.5 Watering of eye
   4.6 Dry eye and ocular surface disorder
   4.7 Night blindness; differential diagnosis: vitamin A deficiency, retinitis pigmentosa, rod-cone dystrophy
   4.8 Leukocoria; differential diagnosis
   4.9 Neuro-ophthalmic conditions; abnormal pupillary reactions; relative afferent pupillary defect (RAPD), anisocoria, Horner's Syndrome
   4.10 Corneal Dystrophies

4.11 Ocular emergencies: chemical injury, mechanical injury, retinal detachment, primary angle closure glaucoma, central retinal artery occlusion
4.12 Congenital disorders: cataract, glaucoma, anophthalmia, coloboma, retinoblastoma,
4.13 Degenerative disorders: pterygium, pinguecula, age related macular degeneration (ARMD)
4.14 Ocular manifestation of systemic diseases: diabetes, hypertension, thyroid disorders
4.15 Optometric management of headache, phacomatosis and tumors

5. **Diagnostic and Investigative Optometry**

5.1 Measurement of visual acuity at distance and near
5.2 Examination of peripheral and central visual fields (automated and manual)
5.3 Examination of color vision: Ishihara, D-15 and Hundred Hue Test
5.4 Slit lamp biomicroscopy alone and with the aid of external lens system
5.5 Ultrasonography – principles and application
5.6 Interferometric examinations
5.7 Schiemflug examination, Corneal Topography and Tomography
5.8 LASER examinations
5.9 Ophthalmic and optometric imaging
5.10 Electrophysiological tests
5.11 Tonometer – principles, types, clinical importance, application
5.12 Pachometer – principles, types, clinical importance
5.13 Techniques and principle of determination of refractive error for distance and near and assessment of accommodative apparatus
5.14 Topographic and tomographic examination
5.15 Specular and confocal microscopy

Section (B) : 50 Marks

6. **Ophthalmic and Dispensing Optics**

6.1 Lens materials; characteristics of ophthalmic lens; measurement of various lens parameters and powers; ophthalmic prisms; lens power transposition and verifications; tinted and protective lenses
6.2 Latest ophthalmic lens and designs
6.3 Various lens design and verification in special conditions - anseikonia, lenticular, aspheric
6.4 Selection of lens and frames
6.5 Face and frame measurement
6.6 Spectacle and frame mounting
6.7 Spectacle fittings and principles
6.8 Aspects of lens laying off, edging and frame adjustment
6.9 Special dispensing for different vocations

7. **Pediatric Optometry and Binocular Vision**

7.1 Visual development, emmetropization and maturation of vision
7.2 Pediatric vision assessment; pediatric refraction; cycloplegic refraction, pediatric vision correction
7.3 Pediatric vision assessment in special conditions - physical and mental disabilities
7.4 Binocular vision: 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
7.5 Motor and sensory adaptation to various oculo-motor disorders, non-strabismic disorders, strabismic disorders, accommodative disorders, vergence disorders, amblyopia and nystagmus.
7.6 Management includes optical therapy, non-optical therapy, vision therapy and surgical therapy.

8. **Contact Lens and Ocular Prosthesis**

8.1 Anatomical and physiological aspects related to contact lens fittings
8.2 Lens optics; lens design material; verifications and standards; solutions and staining related to contact lens fitting and dispensing; special designed contact lenses
8.3 Patient management related to contact lens wear, complication related to contact lens and special fitting procedures
8.4 Ocular prosthesis materials, design, manufacturing handling and fitting and care

9. **Low Vision, Visual Rehabilitation and Geriatric optometry**

9.1 Definition, disorders causing low vision and visual impairment
9.2 Examination of low vision patients; assessment techniques; low vision magnification systems; devices, prescribing guidelines; optical and non-optical aids
9.3 Psychological, behavioral and social counseling
9.4 Visual rehabilitation and agencies working for blind and visual impairments
9.5 Geriatric optometry: anatomic, physiological and visual changes with age
9.6 Management of visual disorders in aging population and counseling

10. **Community Optometry, Pharmacology and Ethics in Optometry**

10.1 Concept of - health, wellbeing, illness, sickness and disease
10.2 Concept of community eye health
10.3 Magnitude of blindness and visual impairment
10.4 Nutritional deficiencies and its consequence in vision.
10.5 Nature and sources of drug; routes of drug administration
10.6 Ophthalmic drugs: antibiotics, corticosteroids, anesthetics, viscoelastic agents, antiglaucoma drugs
10.7 Ethics in optometry; occupational ocular health hazards and eye protection standards
10.8 World Council of Optometry (WCO)
10.9 Nepal Health Professional Council (NHPC)

11. **त्रि.वि ऐन र नियम सम्बन्धी सामान्य जानकारी**

11.1 त्रि.वि ऐन, २०४९
11.2 त्रि.वि शिक्षक कर्मचारी सेवा सम्बन्धी नियम, २०५०

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प्राविधिक सेवा, स्वास्थ्य समूह, अधिकृत तृतीय श्रेणी, प्राविधिक अधिकृत (अप्टोमेट्री) पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

(Specification Chart)

२०८१

प्रथम पत्र : वस्तुगत - बहुवैकल्पिक प्रश्न (MCQs)

पूर्णाङ्क: १०० **समय: १ घण्टा ३० मिनेट**

खण्ड	एकाई	विषय शीर्षक	अङ्क	प्रश्न संख्या	प्रश्न संख्या × अङ्क भार
A	1.	Ocular Anatomy, Physiology and Development	50	100	100 प्रश्न × 1 अङ्क
	2.	Physiologic and Geometric Optics			
	3.	Visual Science			
	4.	Ocular Disease			
	5.	Diagnostic and Investigative Optometry			
B	6.	Ophthalmic and Dispensing Optics	50		
	7.	Pediatric Optometry and Binocular Vision			
	8.	Contact Lens and Ocular Prosthesis			
	9.	Low Vision, Visual Rehabilitation and Geriatric optometry			
	10.	Community Optometry, Pharmacology and Ethics in Optometry			
	11.	त्रि.वि ऐन र नियम सम्बन्धी सामान्य जानकारी			
कुल जम्मा			100	100	

द्वितीय पत्र : विषयगत

पूर्णाङ्क: १०० **समय: ३ घण्टा**

खण्ड	एकाई	विषय शीर्षक	अङ्क	प्रश्न संख्या	प्रश्न संख्या × अङ्क भार
A	1.	Ocular Anatomy, Physiology and Development	50	8 + 4	8 प्रश्न × 10 अङ्क 4 प्रश्न × 5 अङ्क
	2.	Physiologic and Geometric Optics			
	3.	Visual Science			
	4.	Ocular Disease			
	5.	Diagnostic and Investigative Optometry			
B	6.	Ophthalmic and Dispensing Optics	50		
	7.	Pediatric Optometry and Binocular Vision			
	8.	Contact Lens and Ocular Prosthesis			
	9.	Low Vision, Visual Rehabilitation and Geriatric optometry			
	10.	Community Optometry, Pharmacology and Ethics in Optometry			
	11.	त्रि.वि ऐन र नियम सम्बन्धी सामान्य जानकारी			
कुल जम्मा			100	12	