

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

यस पाठ्यक्रमयोजनालाई दुई चरणमा विभाजनगरिएको छ :

प्रथम चरण :- लिखित परीक्षा(Written Examination)

पूर्णाङ्क :- २००

द्वितीय चरण :-अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

प्रथम चरण(First Phase) :लिखित परीक्षा योजना(Written Examination Scheme)

Paper	Subject	Marks	Full Marks	Pass Marks	No. Questions & Weightage	Time Allowed
I	Part I: Management, General Health Issues, Academic Research and Teaching-Learning Practices	50	100	40	10×5 = 50(Subjective)	1.30 hrs
	Part II: Technical Subject (Relevant Subject)	50			50 ×1 = 50(Objective Multiple Choice)	45m in
II	Technical Subject (Relevant Subject)		100	40	7×10 = 70 (Long answer) 2 ×15 = 30 (Critical Analysis)	3.00 hrs
द्वितीय चरण(Second Phase)						
	Interview		30		Oral	

द्रष्टव्य :

- लिखित परीक्षाको माध्यमभाषा नेपालीवाअंग्रेजीअथवा नेपाली र अंग्रेजीदुवै हुन सक्नेछ ।
- प्रतिष्ठानको प्राज्ञिक सेवाअन्तर्गतकासवै समूह/सवै उपसमूहहरुको लागिप्रथमपत्रको Part I को पाठ्यक्रमको विषयवस्तु एउटै हुनेछ । तर प्रथमपत्रको Part II र द्वितीयपत्रTechnical Subjectको पाठ्यक्रमसमूह/उपसमूहअनुरूप फरक फरक हुनेछ ।
- प्रथम र द्वितीयपत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ । प्रथमपत्रको Part II र द्वितीयपत्रको विषयवस्तु एउटै समूहको हकमा समानहुनेछ । परीक्षामा सोधिने **प्रश्नसंख्या र अङ्कभार** यथासम्भव सम्बन्धितपत्र, विषयमादिईए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक(Multiple Choice)प्रश्नहरुको गलत उत्तर दिएमाप्रत्येक गलत उत्तर बापत २० प्रतिशतअङ्कट्यागिनेछ । तर उत्तर नदिएमा त्यस बापतअङ्कदिइने छैन र अङ्कट्यापनिगिने छैन ।
- वस्तुगत बहुवैकल्पिकहुने परीक्षामा परीक्षार्थीले उत्तर लेख्दाअंग्रेजी ठूलो अक्षर (Capital letter) A,B,C,Dमा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वाअन्यकुनै सङ्केत गरेको भए सवै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिकप्रश्नहरु हुने परीक्षामाकुनै प्रकारको क्याल्कुलेटर (Calculator)प्रयोग गर्न पाइने छैन ।
- विषयगतप्रश्नहरुको हकमा एउटै प्रश्नकादुई वादुई भन्दा बढी भाग(Two or more parts of a single question) वा एउटा प्रश्नअन्तर्गत दुई वा बढी टिप्पणीहरु (Short notes) सोध्न सकिने छ ।
- विषयगतप्रश्नमाप्रत्येक पत्र/विषयकाप्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरु हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरुको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजनाअन्तर्गतकापत्र/विषयकाविषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियमतथानीतिहरु परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधनभएकावा संशोधनभई हटाईएकावाथप गरी संशोधनभई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
- प्रथमचरणको परीक्षाबाट छनौट भएकाउम्मेदवारहरुलाई मात्रद्वितीयचरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रममलागुमिति : २०७९/१२/२९

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Paper I: General Subject

Part I:

(Management, General Health Issues, Academic Research and Teaching-Learning Practices)

Section (A) - 25 Marks

1. Management

- 1.1. Health care management system in Nepal and other parts of the world
- 1.2. Fundamental principles of healthcare institution and hospital management.
- 1.3. Effective hospital management principles
- 1.4. Purpose of medical and non-medical data and records
- 1.5. Ethics and responsibility of management
- 1.6. Concept of management and its application in health care including hospital
 - 1.7.1 Management: Concept, principles, functions, scope and role, level and skills of manager
 - 1.7.2 Planning: Concept, principles, nature, types, instruments and steps
 - 1.7.3 Leadership: Concept, function, leadership styles, leadership and management
 - 1.7.4 Coordination: Concept, types, techniques of effective coordination
 - 1.7.5 Communication and counselling: Concept, communication processes and barrier to effective communication, techniques for improving communication
 - 1.7.6 Decision making: Importance, types, rational process of decision making, problem solving techniques, improving decision making
 - 1.7.7 Participative management: Concept, advantage and disadvantage, techniques of participation
 - 1.7.8 Time management: Concept, essential factors and strategies for effective time management
 - 1.7.9 Conflict management: Concept, approaches to conflict, levels of conflict, causes of conflict and strategies for conflict management
 - 1.7.10 Stress management: Concept, causes and sources of stress, techniques of stress management
 - 1.7.11 Change management: Concept, sources of organizational change, resistance to change, management of resistance to change
 - 1.7.12 Appreciative inquiry: Concept, basic principle and management
 - 1.7.13 Human resource management: Concept, functions and different aspects
 - 1.7.14 Health manpower recruitment and development
 - 1.7.15 Financial management: Concept, approaches, budget formulation and implementation, Auditing and topics related to fiscal administration

2. General Health Issues

- 2.1. Present constitution of federal republic of Nepal (including health and welfare issues)
- 2.2. Organizational structure of Ministry of Health at national/federal, regional/state, district (if applicable), municipal and village council level
- 2.3. Professional council and related regulations
- 2.4. National Health Policy
- 2.5. Health Service Act and Regulation
- 2.6. Second Long term health plan
- 2.7. Health Management Information System, forms, indicators, annual reports
- 2.8. Human Development Indices, Sustainable Development Goals
- 2.9. Health volunteers in the national health system, its rationale, use and effectiveness
- 2.10. Local governance and community participation in health service delivery
- 2.11. Health Insurance and financing in health care
- 2.12. Alternative health care system: Ayurveda, homeopathy, Unani, Chinese etc.

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- 2.13. Indigenous and traditional faith health and health practices
- 2.14. International Health Agencies: Roles and responsibilities of WHO, UNICEF, UNFPA, Inter-agency relationships, Government-agency coordination: Joint Annual Review meeting
- 2.15. Supervision, types and its usage in health sector
- 2.16. Monitoring and evaluation system in health sector
- 2.17. National Health Training Centre
- 2.18. National and International Disaster Plan, Coordination
- 2.19. Patan Academy of Health Sciences Act, Mission, Goals, Organogram
- 2.20. Scope and function of Patan Academy of Health Sciences executive bodies (senate, executive committee, academic council, faculty board, hospital management committee, subject committee), various other committees

Section (B) - 25 Marks

3. Academic Research

- 3.1 Ethics, Bio-ethics and Professionalism
- 3.2 Human dignity and Human Right
- 3.3 Benefit and Harm
- 3.4 Autonomy and Individual responsibility
- 3.5 Consent and capacity to consent
- 3.6 Privacy and confidentiality
- 3.7 Respect for humans and personal integrity
- 3.8 Non-discrimination and non-stigmatization
- 3.9 Respect for cultural diversity and pluralism
- 3.10 National Health Research Council (NHRC) and its guidelines
- 3.11 Research process: ethical research proposal development, research principles, methods and materials, conclusion/recommendation/lesson learnt, commonly used referencing styles
- 3.12 IRB/IRC forms, types, use, importance; getting IRB/IRC clearance
- 3.13 Ethics on research methodology: sample selection, sample size calculation, ensuring reliability and validity of the instruments as well as methods proposed for health research
- 3.14 Quantitative and Qualitative studies
- 3.15 Data analysis (data visualization, descriptive statistics, inferential statistics with statistical hypotheses and appropriate tools/methods for quantitative studies; theme and code generation, thematic analysis, content analysis, grounded theory for qualitative and triangulation for mixed method studies)
- 3.16 Research ethics on vulnerable and non-vulnerable population
- 3.17 Research proposal/protocol/publication:
- 3.18 Publication ethics, plagiarism including self-plagiarism

4. Teaching-Learning, Assessment and Evaluation

- 4.1 Lancet Commission Report on Education of Health Professionals
- 4.2 Adult learning: Theories, principles, use, importance and outcomes, Andragogy vs. Pedagogy
- 4.3 Conventional teaching-learning: Didactic lectures, Teacher centred approaches, use and importance
- 4.4 Surface learning, deep learning and metacognition
- 4.5 Integrated teaching: Genesis, use, importance and outcomes
- 4.6 Problem-based learning: Genesis, use, importance and outcomes
- 4.7 SPICES model its use, importance and outcomes
- 4.8 Socialization, self-directed learning, mentoring, role model

- 4.9 Community orientation/community posting, re-orientation of medical education camp, community based learning and community engaged teaching-learning methods/models, use, importance and outcomes
- 4.10 Outcome Based Education (Competency-based Medical/Health Professions Education): Genesis, use, importance and outcomes
- 4.11 Experiential learning, Reflective practice, Feedback and feed-forward, Situated learning, Co-operative learning, Communities of practice
- 4.12 Assessment of students
 - 4.12.1 Blueprinting(Table and specification) : use, importance and outcomes
 - 4.12.2 Bloom's taxonomy of cognitive, psychomotor and affective domains, use and importance
 - 4.12.3 Diagnostic, Formative, Summative and Professional exams
- 4.13 Assessment of knowledge: Selection methods like Multiple Choice Questions, Extended Matching Items and supply methods like Short Answer Question, Problem Based Question, Long Answer Question with or without model answers and marking schemes, unstructured, semi-structured and structured viva-voce examination, advantages and limitations, use and importance, outcomes and its use in quality control
- 4.14 Assessment of performance (in-vitro): Direct observation of skills in the simulated setting, lab, ward etc. with or without checklist, Objective Structured Practical Examination, Objective Structured Clinical Examination, Standardized patients, use and importance, analysis, quality assurance, outcomes and its use in quality control
- 4.15 Assessment of performance (in-vivo): Mini-Clinical Evaluation Exercise (Mini-CEX), Direct Observation of Procedural Skills (DOPS), Case-Based Discussion (CbD), OSATS/ PBA, Multi-Source feedback (360 degree evaluation) use and importance for competency based health professions education, analysis, quality assurance, outcomes and its use in quality control
- 4.16 Assessment of observable behaviours in small groups e.g. Problem Based Learning sessions, Community Based Learning and Education sessions, Clinical clerkship rotations
- 4.17 Evaluation: Difference between assessment and evaluation, theory of change and its use in health professions education, process and outcome evaluation, qualitative, quantitative and mixed methods used in evaluation of health professions education

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Paper I

Part II: Technical Subject

Section (C) General Ophthalmology - 25 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**

Section (D) Vitro-Retina - 25 Marks

1. **Basic anatomy and Physiology**
 - 1.1 Development of Retina

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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: Sickel 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 Chorioidal 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

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- 12.6 Syphilitic Chorioretinitis
- 12.7 Ebola virus panuveitis
- 12.8 Endogenous endophthalmitis
- 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

--- The end ---