निजामती कर्मचारी अस्पताल

प्राविधिक सेवा, सर्जरी समूह, स्पाइनल सर्जरी उपसमूह, सिनीयर रजिष्ट्रार (स्पेसलिष्ट) पद, नवौं तहको खुला तथा आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजनगरिएको छ :

प्रथम चरण :– लिखित परीक्षा (Written Examination) पूर्णाङ्क :– २००

द्वितीय चरण :– अन्तर्वार्ता (Interview) पूर्णाङ्क :– ३०

१. प्रथम चरण (First Phase): **परीक्षा योजना** (Examination Scheme)

Paper	Subject		Marks	Full Marks	Pass Marks	No. Questions & Weightage	Time
I	General Subject	Part I: Management	50	100	40	6 × 5 = 30 (Short answer) 2 × 10 = 20 (Long answer)	3.00 hrs
		Part II: General Health Issues	50			6 × 5 = 30 (Short answer) 2 × 10 = 20 (Long answer)	
II	Technical Subject			100	40	4 × 15 = 60 (Critical Analysis) 2 × 20 = 40 (Problem Solving)	3.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Full Marks	Examination System
Interview	30	Oral

द्रष्टव्य :

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।

२. अस्पतालको प्राविकि सेवा अन्तर्गतका सबै समूह/सबै उपसमूहहरुको लागि प्रथमपत्रको पाठ्यक्रमको विषयवस्तु एउटै हुनेछ । तर द्वितीयपत्र Technical Subject को पाठ्यक्रम समूह/उपसमूह अनुरुप फरक फरक हुनेछ ।

३. प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ । परीक्षामा सोधिने **प्रश्नसंख्या र अङ्कभार** यथासम्भव सम्बन्धित पत्र, विषयमा दिईए अनुसार हुनेछ ।

४. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरुको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।

५. वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।

६. बहुवैकल्पिक प्रश्नहरु हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।

७. विषयगत प्रश्नहरुको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरु (Short notes) सोध्न सकिने छ ।

८. विषयगत प्रश्नमा प्रत्येक पत्र/विषयका प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरु हुनेछन् । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरुको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।

९. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरु परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्क्रममा परेको सम्झनु पर्दछ ।

१०. प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

११. पाठ्यक्रम लागु मिति :आ.व. २०७९/०८०

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Paper I: General Subject
Part I: Management
(6 × 5) + (2 × 10) = 50 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

Part II: General Health Issues
(6 × 5) + (2 × 10) = 50 Marks

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.
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. General introduction of Civil Service Hospital and its Bylaws

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Paper II: Technical Subject

Section (A) – 50 % Marks

I. Basic Science

1. Anatomy

1.1. Embryology of spine: Development of dermatomes, myotomes, nerve roots and spinal cord
1.2. Structure and biomechanics of craniovertebral junctuion
1.3. Ligaments of upper cervical spine
1.4. Anatomy of atlas and axis
1.5. Anatomy of subaxial spine
1.6. Anatomy of thoracic spine
1.7. Anatomy of lumbar spine
1.8. Anatomy of sacrum and coccyx
1.9. Anatomy of brachial and lumbosacral plexuses and peripheral nerves
1.10. Concept of dermatomes and myotomes

2. Physiology

2.1. Physiology of cerebrospinal fluid circulation
2.2. Myelopathy and radiculopathy
2.3. Biomechanics of spine:
  2.3.1. Normal curvatures
  2.3.2. Saggital/coronal balance
  2.3.3. Physiological loads
  2.3.4. Concept of stability
  2.3.5. Principal of spinal instrumentations
2.4. Physiology of bladder and bowel function
2.5. Physiology of sexual function
2.6. Nutrition status in spine patients
2.7. Age related changes in spine
2.8. Pathways of spinal pains

3. Pathology

3.1. Basic pathologies involving the spine
3.2. Congenital anomalies: congenital scoliosis, hemivertebra, Klippel-Feil deformity
3.3. Craniovertebral anomalies, basilar invagination
3.4. Traumatic syndromes of spine
3.5. Tumors involving vertebral column and spinal cord
3.6. Degenerative diseases of spine
3.7. Pathology of different pain syndromes
3.8. Infections of spine
3.9. Neurmuscular disorders
3.10. Different neurologic bladder syndromes

4. Pharmacology

4.1. Steroids: indication and contraindications

4.2. Analgesics use in spinal injury and pain syndrome

II. Principles and practice (Clinical features, diagnosis and nonoperative management)

5. Common presentations of spine cases (Patient Assessment)

5.1. Pain
- 2.3.6. Causes of pain
- 2.3.7. Characteristics of pain in relation to anatomical origin of pain
- 2.3.8. Radicular pain
- 2.3.9. Claudication

5.2. Stiffness / spasticity

5.3. Deformity
- 5.3.1. Scoliosis/Kyphosis, gibbus/Kyphoscoliosis/List/Torticolis/Hump

5.4. Neurological deficits
- 5.4.1. Monoplegia/Hemiplegia/Paraplegia/Quadriplegia
- 5.4.2. Grading of neurological deficits: Frankel grading/ ASIA grading

5.5. Types of partial cord injuries (Brown Sequard syndrome, anterior cord syndrome, posterior cord syndrome, central cord syndrome)

5.6. Conus medullaris syndrome

5.7. Cauda equina syndrome

5.8. Myelopathies (cervical and thoracic)

5.9. Spinal dysrrhaphisms

5.10. Bowel and bladder dysfunctions

5.11. Sexual dysfunctions

5.12. Swellings on back and other cutaneous signs

5.13. Knowledge on Yellow flag and Red flag signs in spine

5.14. Associated co-morbidities related to spinal diseases

6. Examination of the Spine

6.1. General examination of Spine
- 6.1.1. Inspection
  - 6.1.1.1. Any obvious swellings or surgical scars, dimples, tufts of hair
  - 6.1.1.2. Deformity: scoliosis, kyphosis, loss of lumbar lordosis or hyperlordosis of the lumbar spine.
  - 6.1.1.3. Shoulder asymmetry and pelvic tilt
  - 6.1.1.4. Gait and attitude
- 6.1.2. Palpation
  - 6.1.2.1. Tenderness over bone and soft tissues, step off deformity
  - 6.1.2.2. Digital rectal examination
- 6.1.3. Movement
  - 6.1.3.1. Ranges of movement of major joints
  - 6.1.3.2. Examination of the shoulders and examination of the sacroiliac joints and hips

6.2. Neurological Assessment in spinal disorders

6.2.1. Examination of cranial nerves, motor and sensory systems including peripheral nerves
6.2.2. Deep tendon reflexes/cutaneuous reflexes/abdominal reflexes
6.2.3. Examination for cerebellar dysfunctions
6.3. Vascular examination
6.3.1. Peripheral vascular examination
6.4. Psychosocial factors
6.4.1. Waddell's sign
6.5. Movements (normal ranges)
6.5.1. Flexion: Schober's test
6.5.2. Extension; Lateral flexion, rotation
6.5.3. Straight leg raising test, Bowstring test, Lasegue's sign, femoral stretch test
6.6. Chest examination
6.7. Abdominal and cardiovascular examinations
6.7.1. Non-musculoskeletal causes of back pain - e.g., urological, gynaecological, gastrointestinal and vascular
6.7.2. Primary malignancy sites

7. Investigations

7.1. Laboratory investigations
7.1.1 Basic hematological and biochemical tests
7.1.2 Rheumatologic profile
7.1.3 Immunological tests
7.1.4 Understandings on microbiology: staining, culture and sensitivity of common microorganisms affecting spine
7.1.5 Genetic tests
7.1.6 Principles and interpretation of histopathology
7.1.7 Immuno-histochemistry of commonly diagnosed spinal diseases

7.2. Imaging studies in spine
7.2.1 Plain X-ray
7.2.2 Tomography
7.2.3 Ultrasonography
7.2.4 CT scan
7.2.5 Bone scan
7.2.6 MRI
7.2.7 Fluoroscopy
7.2.8 Latest imaging technologies: PET, SPECT
7.3. Neuro physiological investigations
7.4. Spinal injections

8. Management of spine diseases

8.1. Congenital, traumatic, infective/inflammatory, degenerative, neoplastic, metabolic, mechanical, disc prolapse, spondylolisthesis, spondylolysis
8.2. Grading and scoring in spinal diseases

8.2.1 Concept of spinal instability
8.2.2 ASIA, TLICS, SLICS, AO,JOA score, Nurick score, ODI, VAS

8.3. Non-surgical Management
8.3.1 Principle of management
8.3.2 Indications
8.3.3 Pain management
8.3.4 Physiotherapy
8.3.5 Bracing, corset
8.3.6 Skull traction
8.3.7 Halo vest, traction
8.3.8 Principles of post acute care and rehabilitation

Section (B) – 50 % Marks

III. Operative Spine Surgery

9. Positioning in spine surgery

10. Surgical approaches

10.1. Cervical spine
10.1.1 Upper cervical spine – C0/1/2 exposure
10.1.2 Smith Robinson approach – related complications
10.1.3 Anterior odontoid (trans oral) and manubrium splitting approach
10.1.4 Management of vascular complications in cervical spine
10.1.5 Anterior and posterior approaches to the cervical spine

10.2. Thoracic spine
10.2.1 Principles of thoracotomy in relation to spine surgery
10.2.2 Thoracotomy approach and thoraco-abdominal approach
10.2.3 Anterolateral approach
10.2.4 Costotransversectomy

10.3. Lumbar spine
10.3.1 Anterolateral retroperitoneal approach to lumbar spine
10.3.2 Posterior approach in lumbar spine
10.3.3 Wiltse approach in lumbar spine

10.4. Spinal biopsy techniques – open and percutaneous

10.5. Peri/Post operative management
10.5.1 Pre-operative assessment
10.5.2 Intra operative anesthesia management
10.5.3 Post operative care & pain management

11. Techniques

11.1 Cervical spine
11.1.1 Cranio-vertebral junction – Chiari malformations and basilar invagination – treatment protocols
11.1.2 Pearls and pitfalls in C0/1/2 techniques
11.1.3 Sub axial lateral mass and pedicle screw techniques
11.1.4 ACDF/ACCF complications

11.1.5 Laminoplasty and laminectomy techniques
11.1.6 Difficulties in anterior odontoid screw fixation
11.1.7 Triple wiring techniques in upper and subaxial cervical spine
11.1.8 Ossification of ligamentum flavum and ossification of posterior longitudinal ligament (OYL and OPLL)

11.2 Thoracic spine
11.2.1 Thoracic disc herniation – surgical techniques
11.2.2 AIS – approaches and surgical techniques
11.2.3 Scheurmann's kyphosis – treatment protocol

11.3 Lumbar spine
11.3.1 Surgical management of thoraco-lumbar trauma
11.3.2 Adult spinal deformity – operative treatment
11.3.3 Lumbar disc herniation and cauda equine syndrome
11.3.4 Lumbar spine stenosis
11.3.5 Lumbar spondylolisthesis – treatment techniques
11.3.6 Bony and spinal tumors – surgical techniques
11.3.7 Management of dural tears
11.3.8 Metastatic / bony spine tumors – operative management
11.3.9 Pseudoarthrosis and PJK – treatment methods
11.3.10 Sacral and coccygeal trauma – surgical fixation methods
11.3.11 Meningicele and meningomyelocele – treatment methods

11.4 Minimally invasive spine surgery
11.4.1. Posterior cervical foraminotomy
11.4.2. Percutaneous pedicle screw fixation in thoracic and lumbar spine
11.4.3. MISS TLIF
11.4.4. Endoscopic spine surgery

11.5 Management of post-operative complications

IV. Recent Advances

12. Trauma

12.1. Role of early surgery (within 72 hours) versus delayed surgery in acute cervical spinal cord injury
12.2. Role of C1-C2 wiring alone in the treatment of traumatic atlanto axial subluxation
12.3. Recent trend in the surgical treatment of Odontoid fractures
12.4. Role of steroids in acute spinal cord injury
12.5. Recent advances in spinal cord injury rehabilitation
12.6. Link between spinal cord recovery and high blood pressure
12.7. Spinal cord epidural stimulation (ScES) treatment
12.8. Human stem cell therapy and spinal cord regeneration

13. Tumor

13.1. Intradural tumors/Primary tumors of spine, spinal metastasis
13.2. The significance of grade, age, and extent of surgical resection with overall survival and cause-specific survival for both astrocytomas and ependymomas of spinal cord

13.3. The role of radiotherapy and chemotherapy in pediatric spinal intramedullary tumors
13.4. The indications of craniospinal irradiation in spinal tumors

14. Degenerative

14.1. Role of decompressive surgery and ventral versus dorsal approaches for the surgical management of cervical spondylotic myelopathy
14.2. Role of laminoplasty and laminoplasty baskets in cervical canal stenosis
14.3. Timing of surgery for cauda equina syndrome
14.4. The prevalence and significance of posticus ponticus in humans
14.5. Role of atlanto axial joint distraction as a treatment of basilar invagination
14.6. Surgical treatments of Chiari malformation 'I'
14.7. Recent advances in surgical treatment in elderly and osteoporotic spine

15. Miscellaneous

15.1. Role of neuromonitoring in spinal surgery
15.2. Role of Neuro Navigation in spinal surgery
15.3. Role of Robotic Surgery in spinal Surgery
15.4. USG guided root block/facet block/medial branch block in radiculopathy
15.5. MIS in the treatment of spinal infections

16. Outcome assessment in spine surgery

16.1.Pain :general aspects & instrumentation
16.2. Disability
16.3. Quality of safe
16.4. Psychological aspects work satisfactions/fear
16.5. Avoidance belief