बी.पी. कोइराला मेमोरियल क्यान्सर अस्पताल
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यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

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

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

परीक्षा योजना (Examination Scheme)

प्रथम चरण (First Phase) **: लिखित परीक्षा**

Paper	Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time Allowed
I	General Subject	100	40	10 × 5 = 50 (Short answer) 5 × 10 = 50 (Long answer)	3.00 hrs
II	Technical Subject	100	40	6 × 10 = 60 (Long answer) 2 × 20 = 40 (Problem Solving)	3.00 hrs

द्वितीय चरण (Second Phase)

Subject	Full Marks	Examination
Interview	30	Oral

द्रष्टव्य :

१. यो परीक्षा योजनालाई प्रथम चरण (लिखित परीक्षा) र द्वितीय चरण (अन्तर्वार्ता) गरी दुई चरणमा विभाजन गरिएको छ ।

२. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।

३. प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।

४. परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।

५. विषयगत प्रश्नमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरु हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरुको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।

६. यस पाठ्यक्रममा जे सुकै लेखिएको भएतापनि पाठ्यक्रममा परेका ऐन, नियमहरु, परीक्षाको मिति भन्दा ३ महिना अगाडी (संशोधन भएका वा संशोधित भई हटाईएका वा थप गरी संशोधित भई कायम रहेका) लाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।

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

८. पाठ्यक्रम लागू मिति :– २०७९/०७/२४

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Paper I: General Subject

Section (A): 40% Marks (4×5 marks, 2×10 marks)

1. Administration and Management

1.1. Public Administration: concept, scope, functions and challenges
1.2. Management: concept, scope, functions, principles, and its practices
1.3. Contemporary management issues and challenges
1.4. Hospital Management : concept, scope, function, principle and its practices
1.5. Human resource management: concept, functions and different aspects
1.6. Basic managerial skills: coordination and public relation, communication and counselling, problem solving and decision making, leadership, team building, rapport building, planning, organizing, monitoring and evaluation
1.7. Emerging management concepts and their application in the Nepalese Public Management: Time management, Resource management (human, financial and physical), Technology management, Performance management, Stress management, Conflict management, Risk management and Participative management
1.8. Planning: concept, principles, nature, types, instrument and steps
1.9. Motivation, appreciative inquiry and social responsibility
1.10. Positive attitude and self-development
1.11. Group dynamic and organizational behavior
1.12. Grievance redressal and settlement
1.13. Financial Management: Concept, Approaches, Budget Formulation and Implementation, Auditing and topics related to Fiscal administration

Section (B): 40% Marks (4×5 marks, 2×10 marks)

2. General Health Issues

2.1. Present Constitution of Nepal (health and welfare issues)
2.2. National Health Policy
2.3. Health sector in current periodical plan
2.4. Health Service Act, 2053 and Health Service Regulation, 2055
2.5. Professional council related acts and regulations
2.6. Act Regulating Narcotics
2.7. NMC and National Health Agencies
2.8. Indigenous and traditional faith healing and health practices
2.9. International health agencies: Role and responsibilities of WHO, UNICEF, UNFPA and interagency relationships
2.10. Health and Human Right including Women's Right, Children's Right, Professional's Right, Client Right and Informed consent
2.11. Gender issues and health
2.12. Urbanization and health impacts
2.13. National health training system
2.14. Supervision, types and its usage in Health Sector

2.15. Monitoring and Evaluation System in Health
2.16. Health Management Information System
2.17. Health economics - basic terms, health insurance and financing in Health Care
2.18. Federal governance and decentralization in health
2.19. Evidence Based Medicine / Critical Appraisal of Scientific Literature
2.20. Principles of Research Methodology and Scientific paper writing/publication
2.21. Professional and medical ethics
2.22. Informed Consent and Medico legal Issues
2.23. Medical Audit and Quality Assurance
2.24. Information technology and Tele medicine
2.25. Drug act and regulation
2.26. Rational use of drugs, national drug policy and importance of essential drug list
2.27. Ethics, Integrity and Accountability of health professionals
2.28. Private sector health institution its regulation and management
2.29. Health institution development and management
2.30. Patient safety & Breaking Bad News
2.31. Cancer Registry: Hospital and Community Based Cancer Registry
2.32. Preventive Oncology
    2.32.1. Epidemiology
    2.32.2. Primary prevention (Cancer Awareness, Cancer Education, Vaccination)
    2.32.3. Secondary Prevention (Screening, Screening Methods)
2.33. Multidisciplinary Approach in Cancer Management

Section (C): 20% Marks (2×5 marks, 1×10 marks)

3. Organizational Knowledge

3.1. B.P.Koirala Memorial Cancer Hospital : History, organizational structure, functions, roles, services, possibilities, problems and challenges
3.2. Service provided by B.P.Koirala Memorial Cancer Hospital-service types, quality, technology, citizen engagement in service design
3.3. Relations between Government and other national and international related organizations
3.4. Health manpower recruitment and development in B.P.Koirala Memorial Cancer Hospital
3.5. B.P.Koirala Memorial Cancer Hospital related act and regulations

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Paper II : Technical Subject
Section (A) – 50 % Marks

1. **Basic Sciences**
   1.1. Anatomy
      1.1.1. Anatomy of scalp and skull : The structure of the scalp, cranial and facial bones, skull base, cranial cavities and meninges with emphasis on surgical approaches
      1.1.2. Anatomy of brain and spinal cord : The structure and function of cerebral hemispheres, brainstem, cerebellum and the cranial nerves. The arterial supply and venous drainage of the brain with special emphasis on microsurgical anatomy of the carotid and vertebral system. The neuroembryology and anomalies resulting form maldevelopment.
      1.1.3. Anatomy of spine : The anatomical structure of the cervical thoracic and lumbo sacral spines with structures around them and be able to plan surgical approaches to the spine anteriorly, posteriorly and laterally. The microsurgical anatomy of the spinal cord and its vascular supply and drainage. The anatomical basis of surgical exposure of the peripheral nerves.
      1.1.4. Developmental anatomy of the nervous system : The development of the nervous system and the embryological basis of various congenital abnormalities of the cranium, spine, brain and spinal cord.
      1.1.5. Classification of nervous system

   1.2. Physiology
      1.2.1. Physiology of cerebrospinal fluid (CSF) circulation
      1.2.2. CSF
      1.2.3. Cerebral metabolism and the pathophysiology of ischemic brain damage, blood-brain barrier and physiology of the, Pulmonary and cardiovascular physiology relating to neurosurgical critical care
      1.2.4. Rehabilitation after CNS Lesions
      1.2.5. Neurosurgical epidemiology and outcome assessment evaluation of new technologies and evidence based approach to practice.
      1.2.6. Pain: general historical considerations, approach to the patient with Chronic Pain and medical and surgical management of pain.
      1.2.7. Tele-medicine

   1.3. Pathology and microbiology
      1.3.1. Basic and gross histopathological characteristics of brain tumors
      1.3.2. Organisms implicated in the CNS infections
      1.3.3. Principle of frozen section

   1.4. Pharmacology
      1.4.1. Pharmacokinetics of antiepileptic drugs (AEDs)
      1.4.2. Dosage of commonly used AEDs.
      1.4.3. Use of mannitol / 3% sodium chloride and steroids in Neurosurgery
      1.4.4. Antibiotics in neurosurgery

2. **Radiation Therapy and Radiosurgery**
   2.1. General and historical considerations of radiotherapy and radiosurgery, Radiobiology, Principles of radiotherapy, Fractionated radiation therapy for malignant brain

tumours, Radiotherapy for benign skull base tumours, Fractionated radiation therapy for pituitary tumours, Radiotherapy of tumours of the spine, Radiosurgery of tumours, Radiosurgery for arteriovenous malformations, Functional radiosurgery, Interstitial and intracavitary irradiation of brain tumours, Linac radiosurgery, Gamma knife radiosurgery, Proton radiosurgery and Fractionated and stereotactic radiation, Extracranial stereotactic radiation, intensity modulation, and multileaf collimation.

3. **Neurological Investigations**
   - 3.1. Clinical Neurophysiology : procedure and interpretation – Electroencephalogram (EEG) and Evoked potentials (EP) - VEP, SSEP, MEP, BAER, ENMG, TMS
   - 3.2. Neuroimaging : CT, MRI, fMRI, MRS, SPECT, PET, DTI, Vascular imaging, Neuroangiographic anatomy, TCD
   - 3.3. Imaging of cerebral circulation : Catheter angiography; Duplex sonography; CT angiography and perfusion imaging; MR angiography and perfusion imaging; Transcranial Doppler sonography
   - 3.4. Neurological Evaluation
   - 3.5. Awake Craniotomy
   - 3.6. Fluorescence use in Brain Tumors
   - 3.7. Concept of common Neurological problem and their approaches in:
     - 3.7.1.Headche
     - 3.7.2.Amnesia
     - 3.7.3.Insomnia
   - 3.8. Neoplasm of Brain and Spinal chord

4. **Cancer Diagnostics**
   - 4.1. Role of radiological interventions
   - 4.2. Molecular and cytogenetics
   - 4.3. Tumor markers, IHC (Immunohistochemistry), Flowcytometry
   - 4.4. Nuclear and radionuclear imaging
   - 4.5. Interventional radiology
   - 4.6. Basics of radiation oncology
   - 4.7. Basics of surgical oncology
   - 4.8. Basics of medical oncology

5. **General Surgical Principles**
   - 5.1. Shock
   - 5.2. Surgical infection
   - 5.3. Fluid and electrolyte imbalance
   - 5.4. Preoperative and post- operative patient care
   - 5.5. TNM classification of cancers

6. **Principles of Trauma Care**
   - 6.1. Modern neurotraumatology: a brief historical review, Cellular basis of injury and recovery from trauma, Clinical pathophysiology of traumatic brain injury, and investigation and management of traumatic brain and spinal injury.
   - 6.2. Guidelines for management of neuro-trauma

Section (B) – 50 % Marks

7. **Introduction to Neurological Surgery**
   - 7.1. History and physical examination, Differential diagnosis of altered states of consciousness, Neuro-ophthalmology, Neuro-otology, Neurourology, Neuropsychological assessment, Brain death, Radiology of the skill, Magnetic resonance imaging of brain, Molecular imaging of the brain with positron emission tomography, Radiology of the spine
   - 7.2. Anesthesia : preoperative evaluation, Complication avoidance in neurosurgery, General principles of operative positioning, Surgical positioning and exposures for cranial, procedures, Surgical exposures and positioning for spinal surgery and Peripheral nerves.
   - 7.3. Concept of Endoneurosurgery
   - 7.4. Pre-operative and Post-operative Care

8. **Neurosurgical Oncology**
   - 8.1. Brain tumors : epidemiology, histological classification, clinical features, investigations and management of primary and secondary brain tumors including basic principles of cranial surgery for brain tumors, basic principles of skull base surgery, surgical complications and their avoidance, surgical navigation for brain tumours as well as principles of chemotherapy and radiotherapy. Sellar and parasellar tumors, Orbital tumors, Management of Spinal tumors (Intra and extramedullary)

9. **Vascular Surgery**
   - 9.1. Historical considerations, ischemic disease and stroke, Carotid occlusive disease, Traumatic carotid injury, Nonatherosclerotic carotid lesions, Extracranial vertebral artery, Intracranial occlusion disease, Cerebral venous and sinus thrombosis, Spontaneous intracerebral hemorrhage, intracranial aneurysms, arteriovascular malformations, spinal cord vascular lesions.
   - 9.2. Subarachnoid Hemorrhage (SAH) pre-and post-operative management
   - 9.3. Principles of Aneurysm and Arteriovenous Malformations (AVM) surgery
   - 9.4. Spontaneous Intracerebral Hemorrhage (ICH) and Intraspinal Hemorrhage
   - 9.5. Occlusive cerebrovascular disease

10. **Stereotactic and Functional Neurosurgery**
    - 10.1. History of functional neurosurgery, Rationale for surgical interventions in movement disorders, Approach to movement disorders, Patient selection in movement disorder surgery and different surgeries for movement disorders.
    - 10.2. Principles of Stereotactic and Functional Neurosurgery
    - 10.3. Surgical therapy of movement disorders and epilepsy

11. **Paediatric Neurosurgery**
    - 11.1. Neurological surgery in childhood: general and historical considerations, Neurological examination in infancy and childhood, Neuroanesthesia in children, and diagnosis and management of neurosurgical conditions in infancy and childhood including Encephaloceles, Myelomeningocele and myelocystocele, Lipomyelomeningocele, Tethered spinal cord, Occult spinal dysraphism and the tethered spinal cord, Dandy-walker syndrome, Arachnoid cysts, hydrocephalus in children, arteriovenous malformations and intracranial aneurysms in children, and head trauma in children and brain tumors in children.

12. **Surgery of the Peripheral Nervous System**
    - 12.1. General principles in evaluating and treating peripheral nerve injuries, Peripheral neuropathies.
    - 12.2. Carpal Tunnel Syndrome and Other Entrapment Neuropathies
    - 12.3. Principles of Electromyography/Nerve Conduction Studies (EMG/NCT)

13. **Spinal Surgery**
    - 13.1. Overview and historical considerations, Biologic strategies for central nervous system repair, Concepts and mechanisms of biomechanics, Intraoperative electrophysiologic monitoring of the spinal cord and nerve roots, Bone metabolism and it relates to spinal disease and treatment, Normal and abnormal embryology of the spinal cord and spine
    - 13.2. Approach to the patient and medical management of spinal disorders, Metabolic and other nondegenerative, Infections of the spine and spinal cord, Treatment of disk and ligamentous diseases of the spine, Benign extradural lesions of the dorsal spine, Treatment of disk disease of the spine, Adult thoracolumbar scoliosis, Acquired abnormalities of the craniocervical junction, Tumours of the craniovertebral junction, Spinal cord tumours in adults, Tumours of the vertebral axis: benign, primary malignant, and metastatic tumours,
    - 13.3. Spine trauma: approaches to the patient and diagnostic evaluation

14. **Recent advances in cancer management**
    - 14.1. Essentials of molecular biology
    - 14.2. Molecular biology of cancer
    - 14.3. Newer approaches in cancer; Immunotherapy, Biotherapy, Genetherapy