

**Syllabus for the post of**

**Professor, Neurology, Class-I (Advt. No. 16/2023-24)**

**Marks – 200**

**Questions – 200**

**Medium - English**

**1. BASIC SCIENCES RELATED TO NEUROLOGY :**

NEURO ANATOMY,  
NEURO PHYSIOLOGY,  
MOLECULAR BIOLOGY,  
NEURO CHEMISTRY,  
NEURO PHARMACOLOGY,  
NEURO PATHOLOGY,  
NEURO MICROBIOLOGY,  
NEURO TOXICOLOGY,  
NEUROGENETICS AND PROTEOMICS,  
NEURO EPIDEMIOLOGY.

**2. CLINICAL NEUROLOGY INCLUDING PEDIATRIC  
NEUROLOGY and NEURO PSYCHIATRY:**

➤ **GENERAL EVALUATION OF THE PATIENT :**

The science and art of history taking, Physical Examination including elements of accurate history taking, symptoms associated with neurological disease, The physical examination of adults, children, infants and neonates, syndromes associated with congenital and acquired neurological disease, cutaneous markers, examination of unconscious patients, examination of higher mental functions, cranial nerves, the ocular fundus, examination of tone, power of muscles, proper elicitation of superficial and deep reflexes including the alternate techniques and neonatal and released reflexes, neurodevelopmental assessment of children, sensory system, peripheral nerves, signs of Meningeal irritation, skull and spine examination including measurement

of head circumference, shortness of neck and carotid pulsations .and vertebral bruits.

- COMA
- SEIZURES AND EPILEPSY and SYNCOPES
- HEADACHES AND OTHER CRANIAL NEURALGIAS

➤ **CEREBROVASCULAR DISEASES :**

Vascular anatomy of brain and spinal cord, various causes and types of cerebrovascular syndromes, ischemic and hemorrhagic types, arterial and venous types, anterior and posterior circulation strokes, OCSP and TOAST classifications, investigations of strokes including neuroimaging using dopplers, CT and MR imaging and angiography, acute stroke therapy including thrombolytic therapy, interventional therapy of cerebrovascular diseases, principles of management of subarachnoid hemorrhage etc. Special situations like strokes in the young, Strategies for primary and secondary prevention of stroke

➤ **DEMENTIAS:**

Concept of minimal cognitive impairment, Reversible and irreversible dementias, causes such as Alzheimer's and other neurodegenerative diseases and vascular and nutritional and infectious dementias, their impact on individual, family and in society, Genetic and familial syndromes. Pharmacotherapy of dementias, Potential roles of cognitive rehabilitation and special care of the disabled

➤ **PARKINSONISM AND MOVEMENT DISORDERS:**

Disorders of extrapyramidal system such as parkinsonism, chorea, dystonias,athetosis, tics, their diagnosis and management, pharmacotherapy of parkinsonism and its complications, management of complications of parkinsonism therapy, including principles of deep brain stimulation and lesional surgeries. Use of EMG guided botulinum toxin therapy, management of spasticity using intrathecal baclofen and TENS.

➤ **ATAXIC SYNDROMES:**

Para infectious demyelinations, cerebellar tumors, hereditary ataxias, vestibular disorders; Diagnosis and management of brainstem disorders, axial and extraaxial differentiation.

➤ **CRANIAL NEUROPATHIES:**

Disorders of smell, vision, visual pathways, pupillary pathways and reflexes, internuclear and supranuclear ophthalmoplegia; other oculomotor disorders, trigeminal nerve testing, Bell's palsy, differentiation from UMN facial lesions, brainstem reflexes, Investigations of vertigo and dizziness, differentiation between central and peripheral vertigo, Differential diagnosis of nystagmus, investigations of deafness, bulbar and pseudobulbar syndromes,

➤ **CNS INFECTIONS:**

Diagnosis and management of viral encephalitis, meningitis :bacterial, tuberculous, fungal, parasitic infections such as cysticercosis, cerebral malaria, SSPE, Neuro HIV primary and secondary infections with exposure to gram stain and cultures, bac tec, QBC, ELISA and PCR technologies

➤ **NEUROIMMUNOLOGIC DISEASES:**

Diagnosis and management of CNS conditions such as Multiple sclerosis, PNS conditions such as GBS, CIDP, Myasthenia gravis, polymyositis

➤ **NEUROGENETIC DISORDERS:**

Various chromosomal diseases, single gene mutations such as enzyme deficiencies, autosomal dominant and recessive conditions and X-linked disorders, trinucleotide repeats, disorders of DNA repair. Genetics of Huntington's disease, familial dementias, other storage disorders, hereditary ataxias, hereditary spastic paraplegias, HMSN, muscular dystrophies, mitochondrial inheritance disorders.

➤ **DEVELOPMENTAL DISORDERS OF NERVOUS SYSTEM:**

Neuronal migration disorders, craniovertebral junction diseases, spinal dysraphisms, phacomatoses and other neurocutaneous syndromes- their recognition and management.

➤ **MYELOPATHIES:**

Clinical diagnosis of distinction between compressive and non-compressive myelopathies, spinal syndromes such as anterior cord, subacute combined degeneration, central cord syndrome, Brown-sequard syndrome, tabetic syndrome, Eellsberg phenomenon. Diagnosis of spinal cord and root compression syndromes, CV junction lesions, syringomyelia, conuscauda lesions, spinal AVMs, tropical and hereditary spastic paraplegias, Fluorosis.

➤ **PERIPHERAL NEUROPATHIES:**

Immune mediated, hereditary, toxic, nutritional and infectious type peripheral neuropathies; their clinical and electrophysiological diagnosis.

➤ **MYOPATHIES AND NEUROMUSCULAR JUNCTION DISORDERS:**

Clinical evaluation of patients with known or suspected muscle diseases aided by EMG, muscle pathology, histochemistry, immunopathology and genetic studies. Dystrophies, polymyositis, channelopathies, congenital and mitochondrial myopathies.. Neuromuscular junction disorders such as myasthenia, botulism, Eaton-lambert syndrome and snake eand orgganphosphorus poisoning, their eletrophysiological diagnosis and management. Myotonia, stiff person syndrome.

➤ **PAEDITRIC NEUROLOGY:**

Normal development of motor and mental milestones in a child, Cerebral palsy, Attention deficit disorder, Autism, developmental dyslexias, Intrauterine TORCH infections, Storage disorders, Inborn errors of metabolism affecting nervous system, developmental malformations, Child hood seizures and epilepsies, neurodegenerative diseases.

➤ **COGNITIVE NEUROLOGY AND NEUROPSYCHIATRY:**

Detailed techniques of higher mental functions evaluation, basics of primary and secondary neuropsychiatric conditions such as anxiety, depression, schizophrenia, acute psychosis, acute confusional reactions (delirium), organic brain syndrome, primary and secondary dementias, differentiation from pseudodementia Anxiety disorders, Hysteria and personality disorders, depression and Bipolar disease, Schizophrenia Delusional and paranoid state

➤ **TROPICAL NEUROLOGY:**

Conditions which are specifically found in the tropics like neuro cysticercosis, cerebral malaria, tropical spastic paraplegia, Snake/scorpion/ Chandipura encephalitis, Madras Motor Neuron disease etc. will be dealt with in special detail in the curriculum.

**3. DIAGNOSTIC AND INTERVENTIONAL NEUROLOGY INCLUDING NEUROLOGICAL INSTRUMENTATION:**

➤ **DIAGNOSTIC NEUROLOGY:**

Performing and interpreting Digital Electroneurogram, Electromyogram, Evoked potentials, Electroencephalography, Interpretation of skull and spine X rays, computerized tomography of brain and spine, Magnetic resonance images of brain including correct identification of various sequences, angiograms, MR spectroscopy, basics of functional MRI, Interpretation of digital subtraction imaging, SPECT scans of brain, subdural EEG recording, transphenoidal electrode EEG Techniques for temporal lobe seizures, video EEG interpretation of phenomenology and EEG-phenomenology correlations, EEG tapometry, Transcranial Doppler diagnosis and monitoring of acute ischemic stroke, subarachnoid haemorrhage, detection of right-to-left shunts etc; Colour duplex scanning in Carotid and vertebral extracranial segment screening.

➤ **INTERVENTIONAL NEUROLOGY AND NEURO INSTRUMENTATIONS:**

skills in Procedures ;

- a) intrathecal administration of antispasticity drugs, beta interferons in demyelination, opiates in intractable pain etc.,
- b) EMG guided Botox therapy for dystonias,
- c) subcutaneous administration of antimigraine and antiparkinsonian drugs
- d) Intrarterial thrombolysis in extended windows of thrombolysis in ischemic strokes,
- e) Transcranial Ultrasound clot-bust intervention in a registry in acute stroke care unit
- e) Planning in deep brain stimulation therapy in uncontrolled dyskinesias and on-off phenomena in long standing parkinsonism
- f) Planning in vagal nerve stimulation in intractable epilepsy

#### **4. RECENT ADVANCES IN NEUROLOGY:**

➤ **ADVANCES IN NEUROIMAGING TECHNIQUES:**

Integration of CT, MR, SPECT images with each other and with EEG, EVOKED potentials based brain maps in structural and functional localization in neurological phenomena and diseases, Fluorescent ye tagged study of neurons in diseases in animal models in vivo and in tissue cultures in-vitro.

➤ **BIONICS IN NEURAL PROSTHESIS AND REHABILITATION:**

Advanced techniques in neurorehabilitation such as TENS, principles of manmachine interphase devices in cord, nerve and plexus injuries, cochlear implants, artificial vision.

➤ **NEUROPROTEOMICS AND NEUROGENETICS:**

Brain functions are regulated by proteomics and genomics linked to various proteins and genes relevant to the brain, body's maximum number of proteins and genes being expressed in brain as neurotransmitters or channel proteins and predisposing brain to a number of disorders of abnormal functioning of these proteins.

➤ **STEM CELL AND GENE THERAPY:**

Principles of ongoing experiments on stem cell therapy for nervous system disorders such as foetal brain tissue transplants in parkinsonism; intrathecal marrow transplants in MND,MS, Spinal trauma; myoblasts infusion therapy in Dystrophies

➤ **NEUROEPIDEMIOLOGICAL STUDIES AND CLINICAL TRIALS:**

The students of the DNB course will be trained in conducting sound neuroepidemiological studies on regionally and nationally important neurological conditions as well as on diseases of scientific and research interest to the department. They will also be trained in principles of clinical trials with exposure to research

5. **Biostatistics, Research Methodology and Clinical Epidemiology.**
6. **MEDICO LEGAL ASPECTS RELEVANT TO THE DISCIPLINE.**
7. **Health Policy issues as may be applicable to the discipline**
8. **INDIAN MEDICAL COUNCIL (PROFESSIONAL CONDUCT, ETIQUETTE AND ETHICS) REGULATIONS, 2002.**
9. **CURRENT TRENDS IN THE FIELD OF Neurology.**