

**DETAILED SYLLABUS FOR THE POST OF ASSISTANT PROFESSOR
(NEURO SURGERY) (MEDICAL EDUCATION)**

(Cat.No. : 092/2025)

Module 1 10 marks

Basic Sciences (Anatomy, Physiology , Pathology)

1. Gross anatomy of Brain, Spine and Spinal cord.
2. Anatomy and function of Cranial and spinal Nerves.
3. Anatomy and physiology of Brachial and Lumbosacral plexus.
4. Gross and microscopic anatomy of Arterial supply of Brain and spinal cord.
5. Autonomic Nervous system anatomy and applied anatomy.
6. Cerebral and Spinal venous drainage.
7. Cerebrospinal fluid formation, circulation and related disorders.
8. Embryology of Brain and spinal cord .
9. Blood brain barrier and cerebral perfusion.
10. Pathology of genetic disorders of the brain and spinal cord
11. Brain metabolism - normal and in cerebral ischemia.

Module 2 10 marks

Basic Neurology

1. Functional organisation of Brain and spinal cord
2. Disorders of Lobe function
3. Higher mental function abnormalities
4. Disorders of Visual pathway and ocular motor nerves.
5. Electrophysiological investigations - EEG, BAER, NCV and EMG, VEP, intraoperative neuromonitoring, cortical mapping.
6. Disorders of Trigeminal nerve and Trigeminal Neuralgia.
7. Cerebral vasculitic disorders.
8. Brain stem syndromes and Lower Cranial Nerve lesions
9. Parkinsonism, and other dementias, Normal Pressure Hydrocephalus.
10. Motor Neuron Disease - types, clinical features, diagnosis and management.
11. Demyelinating diseases of Brain and spinal cord

Module 3 10 marks

Developmental disorders

1. Chiari malformations, aetiopathology, clinical features, diagnosis and management.
2. Aqueductal stenosis and Obstructive Hydrocephalus – types, diagnosis and management.
3. Spina bifida – occulta and aperta, diagnosis and management.
4. Encephalocoeles – types, diagnosis and management.
5. Neuronal migration and disorders of neuronal migration.
6. Clinical features of Phakomatoses.
7. Facial dysmorphic syndromes- clinical features and their management.
8. Developmental anomalies of Cranial arterial circulation
9. Dermoid, Epidermoid cysts of the Skull and intracranial compartments
10. Congenital scoliosis and CVJ anomalies, diagnosis, imaging and management.

Module 4 10 marks

Neuroradiology

1. Basics of CT and MRI, their development .
2. Contrast agents used in CT and MRI and their properties
3. CT myelogram, cisternogram and their applications.
4. Various sequences of MRI used in Neurosurgery and their applications
5. MR Spectroscopy
6. X Ray studies of skull and spine, relevance and applications.
7. DSA and 4 vessel angiogram and their applications in Stroke
8. Neuroradiological intervention in Stroke
9. Therapeutic roles of neuroradiology in Neurosurgery
10. Intraoperative uses of CT, MRI, C-arm.

Module 5 10 marks

Infections in Neurosurgery

1. Common infections of Brain and spine
2. Meningitis and its complications in children and adults
3. Spread of infections to Brain and Spine
4. Parasitic infestations of Brain and their management
5. Postoperative infections and their management.

6. Brain abscess and its management
7. Ventriculitis – causes, management and complications
8. Fungal infections of the brain.
9. CSF studies and their relevance in Brain and spine infections.
10. Infective spondylodiscitis, postoperative discitis and their management.

Module 6 10 marks

Brain and spine trauma

1. Traumatic skull and spine injuries
2. Classification of spine injuries and brain trauma
3. Paediatric head injuries, clinical features, imaging and management.
4. Traumatic Intracranial haemorrhages, classification, diagnosis and management.
5. Craniovertebral junction and subaxial cervical spine trauma.
6. Diffuse Axonal injury, pathology and management.
7. Thoracic and Dorsolumbar spine trauma, diagnosis and management.
8. Grading of severity of Traumatic Brain injury and outcome scores.
9. Sequelae of Traumatic Brain and spine injury
10. Advances in the management of Traumatic Brain and spine injuries and neurorehabilitation.

Module 7 10 marks

Neuro oncology

1. 2021 WHO classification of Brain tumours
2. Common intracranial tumours in adults, orbital tumours and surgical approaches.
3. Paediatric Brain tumours
4. Primary tumours of the Skull and spine
5. Malignant spinal cord neoplasms
6. Metastases of the brain and spine.
7. Non neoplastic cystic lesions of the Brain and spine.
8. Management of malignant neoplasms of Brain and spine
9. Radiosurgery for Brain and spine neoplasms
10. Special investigations for Brain and spine neoplasms , diagnosis and management.

Module 8 10 marks

Neurovascular disorders

1. Cerebral aneurysms, types, clinical features, diagnosis and surgical management.
2. Classification of Arteriovenous malformations of the brain and spinal cord.

3. Diagnosis, clinical features and surgical management of AVMs.
4. Alternate management of aneurysms and AVMs and their outcomes.
5. Interventional neuroradiology in the management of aneurysms and AVMs.
6. Neurovascular compression syndromes.
7. Stroke – ischaemic and Haemorrhagic- clinical features and management
8. Vasospasm – clinical features, diagnosis and management.
9. Non aneurysmal Subarachnoid haemorrhage
10. Vein of Galen malformation, dolichoectasia of cerebral arteries.

Module 9 10 marks

Neurocritical care and Functional Neurosurgery

1. Intensive care management of Traumatic Brain and spine injuries.
2. Guidelines for management of raised Intracranial pressure
3. Postoperative management of Pituitary neoplasms and Craniopharyngiomas.
4. Types of and management of electrolyte disturbances in Neurosurgical Intensive Care.
5. Principles of Ventilation in Neuro critical care.
6. Abnormal respiratory patterns in severe brain injury
7. Movement disorders, diagnosis, medical and surgical management.
8. Epilepsy – types, diagnosis, medical and surgical management.
9. Spasticity – types, diagnosis, medical and surgical management.
10. Deep Brain Stimulation, Radiofrequency lesioning- Principles and common targets .

Module 10 10 marks

Degenerative Spine disorders and Peripheral Nerves

1. Cervical and Lumbar spondylosis
2. Disc diseases – Cervical, Lumbosacral- clinical features, diagnosis and management.
3. OPLL and Cervical Block vertebrae
4. Ankylosing spondylitis.
5. Lumbar and Lumbosacral listhesis – types, diagnosis and management.
6. Lumbar canal stenosis and management.
7. Craniovertebral junction disorders in Rheumatoid arthritis, Down's and other syndromes with ligamentous laxity.

8. Scoliosis – diagnosis, management and rehabilitation.
9. Piriformis syndrome, carpal tunnel syndrome – diagnosis and management.
10. Peripheral Nerve entrapment syndromes.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.