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JOHANNESBURG
ACADEMIC OFFICE

August 2019

R E G U L A T I O N S

FOR ADMISSION TO THE FELLOWSHIP OF

THE COLLEGE OF NEUROLOGISTS OF SOUTH AFRICA

FC Neurol(SA)

1.0 STRUCTURE

1.1 The examination comprises Part I and Part II : Part II must be passed within six years of passing Part I

2.0 CONCURRENT ADMISSION TO PARTS I AND II

2.1 Part I and Part II may be taken concurrently if all training requirements for entry into Part 1 and Part II have been completed

2.2 If the candidate at one and the same examination session passes Part I but fails Part II, he/she will receive credit for Part I and may proceed to Part II at a subsequent examination

2.3 If the candidate at one and the same examination session fails Part I but passes Part II, no credit will be given for passing Part II, which will have to be retaken

3.0 ADMISSION TO THE PART I EXAMINATION

(to be read in conjunction with the Instructions)

3.1 The candidate must hold a postinternship qualification to practise medicine which is registered or registrable with the Health Professions Council of South Africa

3.2 The CMSA Senate, through its Examinations and Credentials Committee, will review all applications for admission to the examination, and may also review the professional and ethical standing of candidates

4.0 SYLLABUS

See Guidelines - Appendix A

5.0 CONDUCT OF THE PART I EXAMINATION[1]

The Examination shall consist of the following:

- Two papers, each paper consisting of 75 multiple choice questions
- Candidates will be given 2 hours (120 minutes) to complete each of the two papers.

Both examinations to be written on the same day[2]

6.0.../

[1] Detailed explanation of rules
[2] Both examinations to be written on the same day

6.0 ADMISSION TO THE PART II EXAMINATION

(to be read in conjunction with the Instructions)

A candidate may be admitted to the Part II examination if he/she has

6.1 passed Part I or intends taking Parts I and II concurrently

6.2 been qualified to practise medicine for a period of not less than four years, including the year of internship

6.3 submitted their Portfolio with their application form before 15 January or 15 June for the respective examinations

6.3.1 the Portfolio should include the following minimum procedures done by the candidate under supervision:

EEGs	100
Nerve conduction studies	50
EMGs	50

It is recommended that all candidates entering into their registrar training from 1 January 2019 use the LogBook online portfolio. This is a free service and the app is available in both Apple and Android format. Please register at www.logbox.co.za.[3]

6.4 completed the training as prescribed below:

6.4.1 fulltime appointment as a registrar in a department of neurology recognised by the CMSA, for a period of three years; **OR**

6.4.2 fulltime appointment as a registrar in a department of neurology recognised by the CMSA, for a minimum period of two years six months and approved experience in neuropathology for a maximum period of six months; **OR**

6.4.3 fulltime appointment as a registrar in a department of neurology recognised by the CMSA, for a minimum period of two years and fulltime appointment as a registrar in general medicine, psychiatry, neurosurgery or neuro-ophthalmology for a maximum period of one year

6.5 The CMSA may accept from registrars part-time training of up to 50% of the training required for admission to the examination, provided the candidate submits evidence of prior approval by the Health Professions Council of South Africa of a part-time programme acceptable for specialist registration

7.0 SYLLABUS

See Guidelines - Appendix A

8.0 CONDUCT OF THE PART II EXAMINATION[4]

8.1 The FC Neurol(SA) Part II examination will consist of the following:

8.1.1	One 3-hour paper, consisting of 75 multiple choice questions	75 marks
8.1.2	One 3-hour paper, consisting of short answer questions	75 marks
8.1.3	One 3-hour Objective Examination (OSCE) comprising:	
	• 30 EEG Multiple Choice Questions (example provided)	30 marks
	• 5 Neurophysiology Questions (short answers)	30 marks
	• 5 Radiology Questions (short answers)	15 marks

8.2 Clinical component of the FC Neurol(SA) Part II examination:
Each candidate should asses one long case for 60 minutes before he/she is examined on that case. In addition, each candidate should be examined on one or more short cases. With respect to short cases, it was agreed that candidates should examine these in the presence of, and directed by, the examiners.

8.3 Weighting of examination

8.3.1 written papers – 30% (Subminimum 50%)

8.3.2 Objective Test – 20% (subminimum 50%)

8.3.3 clinical cases – 50% (Subminimum 50%)

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[3] LogBox recommendation effective for new Registrars – 1 January 2019

[4] Detailed explanation of rules

9.0 ADMISSION AS A FELLOW

9.1 Only candidates who have completed training in a CMSA recognised registrar post may be awarded a fellowship if successful in the examination.

9.2 **Candidates who have written the examination as a prerequisite from the HPCSA for inclusion on the specialist register are not eligible to be awarded a Fellowship but will be sent a letter confirming their success in the examinations**

All other candidates will be asked to sign a declaration as below:

I, the undersigned, …… do solemnly and sincerely declare

that while a member of the CMSA I will at all times do all within my power to promote the objects of the CMSA and uphold the dignity of the CMSA and its members

that I will observe the provisions of the Memorandum and Articles of Association, By-laws, Regulations and Code of Ethics of the CMSA as in force from time to time

that I will obey every lawful summons issued by order of the Senate of the said CMSA, having no reasonable excuse to the contrary

and I make this solemn declaration faithfully promising to adhere to its terms

Signed at ..…….. this …….…….....day of

…….. 20 ……..

Signature ….……

Witness ……
(who must be a Founder, Associate Founder, Fellow, Member, Diplomate or Commissioner of Oaths)

9.3 A two-thirds majority of members of the CMSA Senate present at the relevant meeting shall be necessary for the award to any candidate of a Fellowship

9.4 A Fellow shall be entitled to the appropriate form of certificate under the seal of the CMSA

9.5 In the event of a candidate not being awarded the Fellowship (after having passed the examination) the examination fee shall be refunded in full excluding HPCSA candidates who are not entitled to a Fellowship.

9.6 The first annual subscription is due one year after registration (statements are rendered annually)

A P P E N D I X A

GUIDELINES ON THE SYLLABUS

1.0 PART 1

1.1 **Aims:**

The candidate should demonstrate a detailed understanding and knowledge of:

- the structure and function of the nervous system
- the basic concepts underlying the EEG, nerve conduction and EMG
- the basic concepts of statistics and commonly used statistical tests
- the basic concepts and mechanisms of immunology
- the basic concepts of genetics and molecular biology
- the basic concepts in neurochemistry and neuropharmacology.

1.2 **Syllabus:**

Neuroanatomy

Development of the nervous system
Cells of the central and peripheral nervous system
The skull
Spinal cord and vertebral system
Brainstem nuclei and tracts
Cranial nerves
Reticular formation
Cerebellum
Diencephalon
Basal ganglia
The cerebral hemispheres: topography
Anatomy and functional localisation of the cerebral cortex
Deep white matter
Motor systems
Olfactory system
Limbic system
The CSF, ventricular system and meninges
General sensory systems
The visual system
The vestibular system
The autonomic nervous system
The blood supply and venous drainage of the nervous system
Peripheral nerves, plexuses and roots
The muscular system

Neurophysiology
Membrane potentials
CNS synapses and synaptic transmitters
Physiology of sensory receptors and transmission of sensory information
Organization and physiology of somatic senses
Pain and thermal sensations
Physiology of the special senses: vision, visual pathways and the visual cortex, hearing, taste and smell, and the vestibular system
Physiology of the motor functions of the spinal cord
Cortical and brainstem control of motor function
Cerebellum and its motor functions
Basal ganglia and their motor functions
Cerebral cortex: cognitive functions, learning and memory
The limbic system and the hypothalamus
Physiology of sleep
The generation of EEG activity
The autonomic nervous system
Physiology of the cerebral blood flow and its regulation
The CSF system: formation, flow and absorption
The physiology of nerve and muscle membranes
Neuromuscular transmission and skeletal muscle contraction

Genetics
The cellular and molecular basis of inheritance.
Chromosomes and cell division (human chromosome, methods of chromosome analysis, molecular cytogenetics, chromosome nomenclature, cell division, gametogenesis)
Basic principles of DNA technology
Modes and patterns of inheritance
Mechanisms and tools of genetic diagnoses

Neuroimmunology
Introduction to host defense mechanisms.
Cellular basis of the immune response: humeral and cell mediated
Major Histocompatibility Complex (MHC), HLA and the immune response
Complement activation pathways
CMI reactions I and II - macrophages, antigen presentation, HLA class I and II antigens, cytokine functions and the role of CD4+helper, CD8+ cytotoxic and suppressor cells
Hypersensitivity reactions (I to IV)
Tolerance and autoimmune mechanisms immune responses specific to the nervous system

Neurochemistry:
Cell membranes
Brain lipids
Myelin: structure and biochemistry
Axonal transport
Intermediary metabolism and the brain
Biochemistry of muscle
Fatty acid and mitochondrial metabolism and the brain
Neurotransmitters

Biostatistics and epidemiology…/

Biostatistics and Epidemiology, incorporating tests such as
Mean and standard deviation
Probability and confidence intervals
Type 1 and type 2 errors and power
The t tests
The x^2 test
Fischer's test
Rank score tests
The candidate shall understand the basic tools of statistics and evidence based medicine.

Neuropharmacology
General principles of pharmacology, pharmacokinetics, and pharmacodynamics

2.0 PART II:

2.1 **Aims:**
The aim of the examination in Neurology is to determine that the candidate is able to treat or deal effectively with the clinical problems of neurology at a specialist level without supervision. The candidate should exhibit detailed knowledge of common neurological conditions. The candidate should also have a detailed knowledge of medicine relevant to neurology and a broad knowledge of psychiatry, neurosurgery and neuro-ophthalmology relevant to neurological conditions

2.2 **Knowledge and understanding:**

The candidate should have demonstrated the following:

2.2.1 Knowledge and comprehension of applied neuroanatomy, neurophysiology, neuropharmacology, and neuropathology

2.2.2 In the Part II examination the focus is on the candidate's clinical approach to neurology. However, it is anticipated that the candidate will have retained a good knowledge of the basic neurosciences from the Part I examination. These components may therefore form part of the Part II examination, particularly if clinical interpretation or application is required. Knowledge and comprehension of technical terms, facts, concepts, principles, laws, methods and procedures as applied to the practice of neurology

2.2.3 The ability to elicit a clinical history from a patient or relative (or other person able to provide the history), to perform a competent physical examination, to demonstrate the neurological signs, and appropriately interpret the clinical signs, and to combine the information obtained from the history and examination to reach a diagnosis or differential diagnosis and solve clinical problems.

From this and supplementary laboratory, neurophysiological and radiological investigations possibly provided or required, the candidate should be able to formulate a rational plan for further management with due regard to prioritisation, cost-effectiveness and holistic care

2.2.4 The ability to interpret radiological, laboratory and other investigations relevant to the management of neurological conditions

2.2.5 A thorough knowledge of neurological disorders

2.2.6 Demonstrate effective therapeutic skills

2.2.7 Exhibit a clear understanding of the importance of following an evidence-based approach to disease management and basic statistics

2.2.8 The candidate should treat patients with appropriate professional courtesy

2.3 **Guide to the detailed syllabus for the FC Neurol(SA) Part II :**

2.3.1 The following detailed syllabus is meant to provide candidates studying for the FC Neurol(SA) Part II examination with an outline of the aspects of neurology with which they should be conversant. It is not possible to give an exhaustive list of every subcategory of neurological condition. In the majority of situations where most standard neurology texts and reviews cover the topics concerned, a general heading has been provided

3.0 The Syllabus for the FC Neurol(SA) Part II should include at least the following:

3.1 **Clinical Syndromes:**

- Disorders of the pyramidal system
- Disorders of the extrapyramidal system
- Disorders of co-ordination
- Disorders of the sensory system including special senses
- Disorders of the peripheral nervous system
- Disorders of cranial nerves
- Disorders of higher function, language, mood and behaviour
- Disorders of the autonomic nervous system
- Disorders of consciousness
- Disorders of the spinal cord
- Disorders of muscle, the myoneural junction and anterior horn cell

3.2 **Neurological conditions:**

- Epilepsy and related disorders
- Sleep disorders
- Infections of the nervous system, including prion diseases
- Cerebrovascular diseases
- Demyelinating conditions
- Metabolic conditions – inherited and acquired
- Developmental diseases of the nervous system
- Degenerative diseases of the nervous system
- Diseases of the nervous system due to nutritional deficiency and alcohol
- Neurotoxicology including disorders caused by physical and chemical agents and drugs
- Headache
- Pain syndromes
- Neuro-trauma
- Neoplasms of the nervous system

3.3 **Therapeutics in Neurology**

3.4 **Electrophysiological, Radiological and other Investigations**

3.5 **Biostatistics, Neuroepidemiology and Genetics**

3.6 **Neurological manifestations of General Medical Disorders**

3.7 **Neuro-rehabilitation**

3.8 **Neuro-patholgy**

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4.0 FC Neurol(SA) Part II Core Curriculum[5]

Knowledge of the clinical features, pathophysiology, pathology, differential diagnosis, relevant investigations, specific pharmacological and general treatments, management and prognosis including, but not limited to, the following topics

4.1 Headache and neuropathic pain syndromes

4.1.1 The primary headaches

- Migraine
- Tension-type headache
- Trigeminal autonomic cephalalgias
- Other primary headaches

4.1.2 **The secondary headaches**

- Headache attributed to trauma and head and neck
- Headache attributed to cranial and cervical vascular disorder
- Headache attributed to non-vascular intra-cranial disorder
- Headache attributed to a substance or its withdrawal
- Headache attributed to infection
- Headache attributed to homeostasis
- Headache attributed to disorder of the cranium, eyes, ears, nose, sinuses, teeth, mouth, and neck
- Headache attributed to psychiatric disorder.

4.1.3 **Painful cranial neuropathies; and other facial pains.**

Painful lesions of the cranial nerves and other facial pains.

4.1.4 **Neuropathic pain**

- Central
- Peripheral
- Complex regional pain syndrome

4.1.5 **Cerebrovascular disorders**

- Knowledge of the cerebral and spinal circulations, and their physiological control.
- Pathophysiology of cerebral infarction, cerebral hemorrhage, subarachnoid hemorrhage and cerebral venous thrombosis.
- Clinical factors of stroke, transient ischemic attack (TIA), subarachnoid hemorrhage and cerebral venous thrombosis.
- Investigation and management of acute stroke and TIA, including thrombolysis and interventional treatment.
- The role of evaluation scales
- The use of imaging in stroke
- Cerebral aneurysm and arteriovenous malformations: recognition and management.
- Multidisciplinary stroke care, stroke units, nutrition after stroke, rehabilitation after stroke, community care
- The role of secondary prevention
- Risk factors and epidemiology
- Differential diagnosis of stroke
- Traumatic brain injury, including extradural and subdural haematoma, subarachnoid haemorrhage, and emergency care

4.2…/

[5] Core curriculum – effective FS 2020

4.2 **Epilepsy and disorders of consciousness**

4.2.1 **Epilepsy**

- Generalised and focal seizure types, and the epilepsy syndromes.
- The differential diagnosis of epilepsy
- The scope and limitations of imaging and neurophysiological investigation
- The use and adverse effects of anti-epilepsy drugs
- The recognition and management of status epilepticus
- The role of epilepsy surgery
- Management of refractory seizures
- Psychosocial issues and epilepsy
- Sudden unexpected death in epilepsy
- Woman, pregnancy and epilepsy
- Paediatric and adolescent epilepsies that present to adult neurology

4.2.2 **Disorders of consciousness**

- Syncope, confusion (delirium), a depressed level of consciousness, coma, vegetative state, persistent vegetative state, minimally conscious state, locked-in state and brain death.
- Medico-legal aspects
- Use of tests to diagnose brain death

4.2.3 **Movement disorders**

- Parkinson's disease, other causes of Parkinsonism, chorea, athetosis, dystonia, tics, tremor, myoclonus, rigidity, cramp and muscle spasm, dyskinesia, gait disorders and ataxia.
- Cerebellar and cerebellar pathways disorders.
- The role of neurosurgical intervention
- Movement disorder emergencies

4.2.4 **Peripheral and autonomic nervous system disorders**

- Genetic and acquired axonal and demyelinating neuropathies, traumatic neuropathies, entrapment neuropathies and plexopathies.
- Management of acute, severe, neuromuscular weakness.
- Clinical features, investigation and treatment of autonomic disorders.
- Pharmacological and physical treatment of urinary retention, urinary incontinence,
- erectile dysfunction, constipation, postural hypotension, autonomic dysreflexia.

4.3 **Higher Function and Behavior disorders**

- Knowledge of the clinical features of disorders of language, memory, visuospatial function, behavior and other cognitive disorders.
- The clinical recognition of the various dementias, including the differential diagnosis, role of investigations, treatment and management.
- The role of neuropsychological evaluation
- Behavioural management
- Medico-legal and psycho-social aspects
- Agnosia, apraxia
- The recognition of functional disorders
- Common psychiatric disorders which may present to adult neurology

4.4…/

4.4 **Muscle and neuromuscular junction disorders**

- Genetic myopathy
- Metabolic myopathy
- Endocrine myopathy
- Mitochondrial myopathy
- Drug-related myopathy
- Infective myopathy
- Immune and inflammatory myopathy
- Congenital myopathies presenting to adolescent and adult neurology
- Symptoms of muscle pain, and muscle masses.
- Myasthenia gravis
- Other neuromuscular junction disorders.

4.5 **Cranial nerve and Special Sense disorders**

- Congenital and acquired disorders of the cranial nerves.
- Dizziness and vertigo
- Neuro-ophthalmology

4.6 **Infectious disorders**

- Neurological infectious diseases (viral, bacterial, fungal, parasitic)
- Clinical syndromes of meningitis and encephalitis
- Use of diagnostic methods
- Prion disorders
- Epidemiological principles and public health policy
- HIV, tuberculosis and neurosyphilis in detail

4.7 **Demyelinating, inflammatory, vasculitic and immune disorders**

- Multiple sclerosis
- Other primary demyelinating disorders, including but not limited to, neuromyelitis optica and acute disseminated encephalomyelitis
- Systemic inflammatory disorders, including but not limited to sarcoidosis
- Vasculitis syndromes
- Auto-immune disorders

4.8 **Toxic, Metabolic and Endocrine disorders**

- Inherited metabolic disease (adolescent or adult onset)
- Acquired metabolic disease
- Nutritional deficiency states
- Adverse effect of drugs
- Exogenous toxins
- Heavy metals
- Chemical agents
- Hyper/hypo function of endocrine system
- Mitochondrial disorders

4.9 **Motor neurone syndromes, and disorders of the spinal cord and roots**

- The motor neurone syndromes
- Disorders of the spine, spinal cord, spinal roots and cauda equina
- Emergency management of spinal cord or root compression
- Care of paralysis, sensory loss, sphincter dysfunction and autonomic dysreflexia

4.10…/

4.10 **Neoplastic and para-neoplastic disorders**

- A broad outline of the classification of primary neoplasms (benign and malignant) of the nervous system, with knowledge of the clinical features, investigation and treatment of the common neoplasms.
- A knowledge of the neurological complications of neoplasms arising outside the nervous system.
- Malignant meningitis
- The clinical features and immunology of para-neoplastic syndromes.
- The adverse effects of oncology treatments.
- Raised intra-cranial pressure, brain oedema, and brain displacements and herniations

4.11 **Sleep disorders**

- Insomnia
- Sleep-related breathing disorders, including but not limited to obstructive sleep apnoea
- Central disorders of hypersomnolence, including but not limited to narcolepsy
- Circadian rhythm sleep-wake disorders
- Parasomnias
- Sleep-related movement disorders, including but not limited to restless legs syndrome, periodic limb movement disorder and sleep myoclonus.
- Scope and limitations of the sleep laboratory, including polysomnography.

4.12 **CSF disorders**

The disorders of CSF pressure, volume and circulation, including but not limited to hydrocephalus, normal pressure hydrocephalus, idiopathic intracranial hypertension and intracranial hypotension.

5.0 Suggested reading in preparation for the FC Neurol(SA) examination:

5.1 A number of well-known Neurology textbooks are available. All texts have advantages and disadvantages. A common approach is to use the textbooks recommended by your Department, supplemented by appropriate journal articles. Candidates should adopt a critical approach and be conversant with current trends in the literature

5.2 Additional texts will be required for clinical neurophysiology and clinical examination of the nervous system