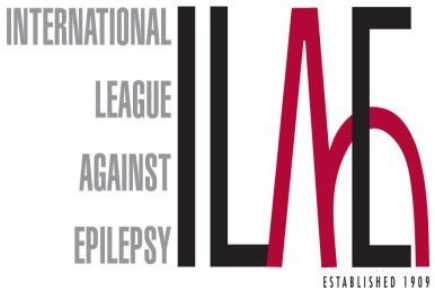
Asian Epilepsy Academy
(ASEPA)
&
ASEAN Neurological Association
(ASNA)

EEG Certification Examination



EEG Certification Examination

- **Aims**
  - To set and improve the standard of practice of Electroencephalography (EEG) in the Asian Oceanian region

Conduct of EEG Examination

- **Part 1 or Part 2**
  - 1 to 4 times a year
  - During regional neurological or epilepsy conferences, e.g.
    - Biennial Conventions of ASEAN Neurological Association (ASNA)
    - Biennial Asian Oceanian Epilepsy Congresses (AOECs)
  - During ASEPA Teaching Courses / Workshops
  - During annual conference of ILAE Chapter, e.g.
    - TES' annual epilepsy conferences
  - Any time of the year in any city or country when there are enough numbers of candidates

Certification Examination

Part 1: Written → **Part 2: Oral**

Who Can Apply For Part 1 Exam?

- Practicing Neurologists or Psychiatrists in their own countries / regions
- Neurology, Epilepsy or EEG Trainees / Residents / Fellows
  - Need to show proof that they have had adequate training and experience in EEG interpretation and reporting
- Experienced EEG technologists, especially those involved in EEG reporting and/or interpretation in their own EEG laboratories

Before Applying For Part 1 Exam

- The Board expects that training in EEG will include broad exposure to the scientific basis of clinical neurophysiology as well as relevant aspects of technique and instrumentation
- All candidates are expected to have extensive experience interpreting EEGs, in various age groups and in a wide range of clinical disorders

Part 1 Examination

- Written
- Answer **150 Multiple Choice Questions** in **3** hours
- 3 Sections (50 questions each)
    1. EEG recording techniques and instrumentation
    2. Normal EEGs
    3. Abnormal EEGs
- **Each question will have 5 choices of which only one is correct**
- No minus mark for wrong answer

Topics Asked In Written Examination

- **Neuroanatomy and Neurophysiology**
  - Anatomy of neural generation
  - Mechanisms of EEG generation
  - Pathophysiology of abnormal waveforms
  - Basic mechanisms of epileptogenesis
- **EEG Recording Techniques**
  - Head measurement and marking
  - Electrode position nomenclature (International 10-20 & 10-10 System)
  - Electrodes: properties and application techniques
  - Impedance measurements)
  - Activation procedures such as hyperventilation, sleep deprivation, photic stimulation
- **Instrumentation, Polarity and Localization**
  - Basic electricity and electronics
  - Amplifiers and their characteristics
  - Calibration
  - Waveform measurements (voltage, frequency, and duration)
  - Filters, sensitivity and frequency response curves
  - Localization and polarity
  - Electrical safety
  - Principles of EEG digitalization including analog-to-digital conversion (vertical and horizontal resolution), sampling rate (aliasing and Nyquist frequency), screen or monitor display (sensitivity scale and pixel resolution), etc
  - Recording reference (electrode site, average reference and Laplacian reference)
  - Montages and reformatting
- **Artefacts**
  - All physiological and non-physiological artefacts including artefacts caused by chewing, sweating, eye movements, ECG, pulse motion, movement of head/body, electrode pops or movements, electrical fields from electrical devices (TV, telephones), respirator-induced movements, intravenous drips/drip pumps, etc

Topics Asked In Written Examination

- **EEG Interpretation and Reporting**
  - Principles of interpretation
  - General classification of abnormal EEGs
  - Elements of EEG reports
  - How to make good reports
- **Normal EEG in Adult & Elderly**
  - Normal awake and normal sleep patterns including alpha, beta, theta, delta waves, mu, lumbda waves, POST, Vertex sharp transients, spindles, K-complex
  - Normal responses to hyperventilation and photic stimulation
  - Changes in EEG in the elderly
- **Normal EEG in Infants and Children**
  - Normal patterns of various ages from neonates up to adolescents
- **Normal Variants & Uncommon Patterns of Doubtful Significance**
  - Small sharp spike / benign epileptiform transients of sleep
  - Wicket spikes
  - Psychomotor variants
  - 14&6 positive spike
  - Breech rhythm
  - Sub-clinical rhythmic EEG discharges in adults (SREDA)
  - Alpha variants,
  - Phantom spike-waves patterns

Topics Asked In Written Examination

- **Non-Epileptiform Patterns**
  - Slow waves
  - Triphasic waves
  - Generalized periodic complexes/patterns
  - Periodic lateralized epileptiform discharges (PLEDs)
  - Coma and stupor
- **Epileptiform Patterns**
  - Definition of epileptiform patterns
  - Types & recognition of various inter-ictal epileptiform patterns such as sharp waves, spikes, polyspikes, 3Hz spike & wave complexes, 4-6Hz spike & wave complexes, slow spike & wave complexes, photo-paroxysmal responses, hypsarrhythmia
  - Ictal patterns
  - How to differentiate interictal from ictal patterns
  - EEG patterns in specific epilepsy syndrome such as focal (e.g. Benign Rolandic Epilepsy, Benign Epilepsy of Childhood with Occipital Paroxysms) and generalized (West Syndrome, Lennox-Gastaut Syndrome, Absence Epilepsy, Juvenile Myoclonic Epilepsy, etc) epilepsy syndromes
  - EEG in status epilepticus
- **Long-term EEG Monitoring**
  - Types of long-term EEG recording
  - Indications and limitation of ambulatory and video-EEG monitoring
  - Various semiology and their localizing & lateralizing values
- **Use of EEG in the Management of Seizure and Non-Seizure Disorders**
  - Strength and limitations of EEG
  - Indications for ordering EEG
  - Yields of finding abnormality (e.g. epileptiform patterns) in patient with & without seizure disorders
  - Use of long-term EEG monitoring in patients with refractory epilepsy
  - Use of EEG in treatment & prognosis of epilepsy
  - Use of EEG in non-seizure disorders (e.g. CVA; metabolic & toxic encephalopathies; dementia; brain tumors; head trauma; headaches, etc)

Eligibility for Part 2

- **Must Pass Part 1**
  - Pass at least 2 of the 3 sections
    - Passing marks for each section is **50%**
  - Average mark for 3 Sections must be **≥ 50%**

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EEG Certification Examination

This is to certify that

Dr Kwan Shang Yeong

has satisfied the requirement of the ASEPA-ASNA EEG Certification Examination Board and is hereby certified as a qualified

Electroencephalographer

2017

Dr John Dunne	**Dr Shih-Hui LIM**
Asian Epilepsy Academy	**ASEAN Neurological Association**

Direct your queries to:

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Chairman, ASEPA EEG Examination Board

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