Certificate in Electrocardiography

The Certificate in Electrocardiography is awarded by the Society to successful candidates who demonstrate, to the satisfaction of the examiners, knowledge and understanding of:

- Anatomy, Physiology and Pathophysiology of the Cardiovascular System • Electrocardiographic Instrumentation

and of their ability to:

- Recognise features that distinguish an abnormal from a normal electrocardiogram

Written (Multiple Choice Questions) Examination

A candidate's knowledge and understanding will be assessed using a Multiple Choice Question (MCQ) examination paper.

The Certificate in Electrocardiography MCQ paper covers all aspects of the syllabus with questions that examine your knowledge of:-

- Anatomy, Physiology and Pathophysiology of the Cardiovascular System
- Electrocardiographic Instrumentation and ECG Interpretation

The paper also includes an *Essential ECG Interpretation Section*.

It is very important to note that a candidate must pass this *Essential ECG Interpretation Section* in order to successfully complete the Certificate in Electrocardiography.

The *Essential ECG Interpretation Section* comprises three 12-lead ECGs taken from the list below. Candidates are required to identify which of these findings is demonstrated on the ECGs displayed in *Essential ECG Interpretation Section*.

- Sinus rhythm
- Acute ST elevation myocardial infarction
- Atrial fibrillation
- Complete heart block
- Left bundle branch block
- Right bundle branch block
- Ventricular fibrillation
- Ventricular tachycardia

Certificate in Electrocardiography

SYLLABUS

This syllabus prescribes the following areas of knowledge and understanding expected of a successful candidate:

- Medical and technical terminology applicable to the subject area.
- Essential anatomy and physiology of the heart and circulation as relevant to electrocardiography.
- Features of the normal 12-lead resting electrocardiogram and the recognition of some common abnormalities.

ANATOMY, PHYSIOLOGY and PATHOPHYSIOLOGY OF THE CARDIOVASCULAR SYSTEM:

A candidate is expected to know the structure and function of the heart, the anatomy of the blood vessels and the roles of the different types of vessels in the circulatory system.

1) Knows and understands the general structure and function of the heart including:
   - Role of the heart in the circulation of blood
   - Valves and supporting apparatus
   - Chambers
   - Main coronary arteries and veins
   - Great veins and arteries
   - Pericardium

2) Knows and understands basic anatomy and function of the specialised conduction system:
   - Sinus node
   - Atrioventricular node
   - Bundle of His
   - Left and right bundle branches
   - Purkinje fibres

3) Knows and understands common pathological terms and, where applicable, the associated electrocardiographic features.

- Acute Coronary Syndrome
  - Unstable angina
  - Non-ST elevation myocardial infarction
  - ST elevation myocardial infarction
- Angina pectoris
- Atheroma
- Atherosclerosis
- Atrial & ventricular septal defects
- Claudication
- Coarctation of the aorta
- Cyanosis
- Dextrocardia
- Dyspnoea
- Heart failure
- Hypertension
- Hypothermia
- Ischaemia
- Oedema
- Pericarditis
- Pericardial Effusion
- Valve stenosis and regurgitation
- Ventricular Hypertrophy

ELECTROCARDIOGRAPHIC INSTRUMENTATION AND ECG INTERPRETATION

1) Understands the function of the controls of the ECG machine
   - Recording ('paper') speed
   - Amplitude gain
   - Use of the filters

2) Electrocardiographic interpretation:
   - Relationship of the electrocardiogram waveforms to the electrical events of the cardiac cycle
   - Relationship of the electrical events to the mechanical events of the cardiac cycle • Einthoven's triangle and ECG lead theory
   - Calculation of the heart rate from the electrocardiogram
   - Recognises the features and variations of the electrocardiogram and makes appropriate measurements:
     - Waveform components (P, Q, R, S, T and U)
     - Definitions and normal ranges of PR interval, QRS duration and QT interval

3) The normal electrocardiogram:
   - The appearance of the normal resting electrocardiogram including normal variations in relation to age, state of activity, body build and ethnic origin

4) Common ECG abnormalities
   - Rhythms arising from the sinus node:
     - Normal sinus rhythm
     - Sinus arrhythmia
     - Sinus tachycardia
   - Supraventricular arrhythmias:
     - Atrial premature beats
     - Atrial flutter.
     - Atrial fibrillation
   - Conduction abnormalities:
     - 1st degree atrio-ventricular (AV) block
     - 2nd degree AV block: Mobitz I (Wenckebach), Mobitz II and 2:1 block
     - 3rd degree (complete) AV

block

- Left and right bundle branch block
- Ventricular pre-excitation (Wolff-Parkinson-White syndrome)

- Ventricular arrhythmias:
  - Ventricular premature beats
  - Ventricular escape beats
  - Ventricular tachycardia
    - Sinus bradycardia
    - Sinus arrest
    - Ventricular fibrillation
    - Ventricular standstill
    - Supraventricular tachycardia
    - AV nodal (junctional rhythm)

- The electrocardiogram associated with an artificial cardiac pacemaker: ○ Identification of pacemaker stimulus on the electrocardiogram ○ Differentiation between atrial and ventricular pacing