CMSA

The Colleges of Medicine of South Africa NPC
Nonprofit Company (Reg. No. 1955/000003/08)
Nonprofit Organisation (Reg No 009-874 NPO)
27 Rhodes Ave, PARKTOWN WEST 2193
Private Bag X23, BRAAMFONTEIN 2017
Tel: +27 11 726-7037/8/9
Fax: +27 11 726-4036

JOHANNESBURG
ACADEMIC OFFICE

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THE COLLEGE OF PHYSICIANS OF SOUTH AFRICA

SPECIAL REGULATIONS

FOR THE FS 2020 MODIFIED CLINICAL/PRACTICAL/ORAL EXAMINATIONS

FOR THE POST-SPECIALISATION

SUB-SPECIALTY CERTIFICATE

IN

CARDIOLOGY

Cert Cardiology(SA) Phys

1.0	**INSTITUTION**	The Colleges of Medicine of South Africa
2.0	**DIVISION**	The College of Physicians of South Africa
3.0	**QUALIFICATION TITLE**	Certificate in Cardiology of the College of Physicians of South Africa
4.0	**OFFICIAL DESIGNATION**	Cert Cardiology(SA)
5.0	**FIELD**	09 (Health Sciences and Social Services)
6.0	**SUB-FIELD**	Preventive, promotive, curative and rehabilitative
7.0	**NQF FIELD**	9

8.0 PURPOSE OF QUALIFICATION

This qualification forms part of the credentialing process, for specialist physicians, as sub-specialist cardiologists. The Health Professions Council of South Africa (HPCSA) stipulates training requirements, including a minimum period of experiential learning. The aim of this qualification is to meet the needs for formal examination certification, as well as to set standards, nationally, for such a qualification

9.0 PRIOR LEARNING FOR ADMISSION TO THE PROGRAMME LEADING TO THE QUALIFICATION

9.1 MB ChB or equivalent qualification acceptable to the Health Professions Council of South Africa for registration as a medical practitioner in South Africa

9.2 FCP(SA), or equivalent qualification

10.0 OTHER ENTRY REQUIREMENTS

10.1 Current registration with the Health Professions Council of South Africa as a specialist physician

11.0…/

11.0 EXIT LEVEL OUTCOMES

11.1 **Overall learning outcomes**

Be able to fulfil the role of a specialist cardiologist in the medical and academic communities, and in society at large

11.2 **Assessment criteria for overall learning outcomes**

a) Be able to recognise, diagnose and treat cardiovascular disorders.
Be able to prioritise problems, plan cost-effective and safe investigation and rational management of patients with cardiovascular disorders
Be able to demonstrate insight into preventive strategies and prognosis
Be able to interpret and integrate the results of relevant special investigations into a differential diagnosis and management plan
Be able to discuss aspects of management, pathophysiology, pharmacology, genetics or other relevant areas in which a competent specialist cardiologist would be expected to be knowledgeable

b) Be able to manage all conditions commonly occurring in Cardiology

c) Must be able to judge when to seek the help of a colleague with special expertise

d) Must be able to act as the patient's advocate, advisor and guide within the discipline of Cardiology

12.0 CRITICAL CROSS-FIELD AND PERSONAL OUTCOMES

	OUTCOMES ("BE ABLE TO …..")	***ASSESSMENT***
12.1	critically appraise the state of current knowledge with respect to important public health issues;	14.2.4
12.2	work as a team member, wherever this is important for the achievement of health goals;	14.1
12.3	demonstrate good leadership skills where these may be required for the candidate's future professional work situation;	14.1 12.4…/
12.4	demonstrate good analytical skills;	14.2, 4
12.5	demonstrate an appropriate level of professional knowledge;	14.2, 4
12.6	make health-related decisions in a rational way;	14.1, 4
12.7	solve health-related problems effectively;	14.1, 2, 4
12.8	communicate effectively using written and oral methods	14. (all)
12.9	use science and technology responsibly and ethically;	14.1, 4
12.10	demonstrate good interpretative skills as well as sensitivity for community values	14. (all)
12.11	assess one's own personal strengths and weaknesses;	14.1
12.12	commit to a life of continual professional development;	14. (all)
12.13	act consistently within levels of competence and professional norms.	14.1
12.14	Demonstrate experience and competence in cardiological procedures, invasive and non-invasive	14.3

13.0 CURRICULUM AND SYLLABUS

These are attached as an Appendix.

14.0 ASSESSMENT TO ENSURE THE PURPOSE OF THE QUALIFICATION IS ACHIEVED

(criteria to be satisfied in the order shown below, successful completion of each step being a pre-requisite for the next step)

14.1 **Certification**, by head of the candidate's training department, that at least 100 weeks (24 month) of learning will have taken place (excluding leave, maternity leave and sick leave), in an approved training post, prior to the date of any written examination

14.2 **Two written, 3-hour closed book examination papers**, one potentially covering the entire basic sciences syllabus, and one clinical Cardiology. Overall pass mark: 50% with a sub-minimum of 45% mean mark for any individual paper. The format of questions will include the following:

i) Essay questions, answer all 4 questions to demonstrate integrative skills

14.3 **Completion of at least 2/3 of the logbook requirements (in each category), to be certified by the head of the training institution at the time of applying for the examination**

14.4 **An oral examination.**

The oral examination will take minimum 40, maximum 60 minutes

The pass mark for the oral examinations will be 50%

15.0 CRITERIA FOR REGISTRATION OF ASSESSORS

There will be a panel of at least four examiners appointed for each biannual cycle of written examinations. One or more of these examiners should hold appointments at institutions other than the convening institution, and all should be involved in the setting and marking of the papers. Examiners will be selected by the President of the College of Physicians and the convenor

Any one examiner may examine the same candidate in different parts of the examination

An observer from the candidate's training institution should be invited to the oral examination, wherever possible

15.1 **Qualifications required**: All examiners should hold one or more of the following degrees: FCP(SA), MMed (Internal Medicine), or the equivalent and be practising Cardiologists

15.2 **Experience required:** Normally, examiners should have been registered as Physician specialists, with the Health Professions Council of South Africa, or its predecessors, for at least 5 years

15.3 **Other criteria**: It is recommended that examiners should hold an academic appointment, either part-time or fulltime
All examiners should be listed on a panel of approved examiners which has been approved by the Council of the College of Physicians, and which has to be revised at least once every three years

A P P E N D I X A

EXPANDED INFORMATION FOR CANDIDATES

1.0 ADMISSION TO THE EXAMINATION

(To be read in conjunction with the Instructions)

A candidate may be admitted to the examination having

1.1 A postinternship qualification to practise medicine which is registered or registrable with the Health Professions Council of South Africa (HPCSA)

1.2 registration as a Specialist Physician

1.3 certification of having completed 24 months fulltime of the 36 month training period as a cardiology trainee in an accredited cardiology department(s)/division(s)/unit(s), registered and approved by the Health Professions Council of South Africa

1.4 submission of the pre-scribed logbook, at least 2/3 complete, filled in up to date, and certified by the head(s) of the department(s)/division(s)/unit(s) in which the candidate trained

1.5 Approval of the logbook

1.6 Written report(s) from the head(s) of the institution(s) in which he or she trained

A P P E N D I X B

A. SYLLABUS FOR CERT CARDIOLOGY(SA)

1.0 Basic Sciences for Cardiovascular Disease:

Anatomy, physiology, pathophysiology and pathology of cardiovascular diseases

1.1 **Molecular biology:**

- Genetics relevant to cardiovascular disease
- *Cellular function:*
  - Ion channels
  - Excitation/contraction coupling
  - Receptor function
  - Endothelial function
- *Circulating factors:*
  - Cytokines
  - Renin-angiotensin system
  - ***Other:***
    - Natriuretic peptides
    - Endothelin

1.2 **Autonomic nervous system:**

- Cardiovascular reflexes
- Circulating factors

1.3 **Cardiovascular haemodynamics:**

- Circulatory regulation
- Myocardial performance
- Pathophysiology of valvular, myocardial, ischaemic, pericardial and congenital heart disease
- Heart failure

1.4 **Electrophysiology:**

- ***Conduction system:***
  - Anatomy
  - Function
- *Mechanisms of arrhythmias:*
  - Conduction disorders
  - Re-entry
  - Automaticity
  - Triggered automaticity

1.5 **Pathology/pathophysiology, natural history and epidemiology of specific conditions:**

- Arrhythmias and resuscitated sudden death
- Cardiomyopathies
- Congenital heart disease
- Ischaemic heart disease pericardial disease
- Tumours of the heart and pericardium
- Valvular heart disease
- Vascular disease
- Pulmonary hypertension
- Pulmonary embolic disease
- Endocardial disease
- Cardiac infections
- Cardiac involvement in systemic disease

1.6…/

1.6 **Scientific basis of treatment methods and investigations:**

1.6.1 **ECG – including signal-averaged ECG:**

1.6.2 **Imaging techniques:**

- Echocardiogram – including stress echo and intracardiac ultrasound
- MRI
- Nuclear imaging
- X-rays – including radiation biology and radiation protection

1.6.3 **Pharmacology/drugs:**

1.6.3.1 ***All drug classes affecting the cardiovascular system and/or used for treatment of cardiovascular disorders, including, but not limited to:***

- ACE inhibitors and angiotensin receptor blockers
- Antiarrhythmics
- Antihypertensives
- Antithrombotic agents (including antiplatelet agents)
- Beta blockers
- Calcium channel blockers
- Cardiac glycosides
- Catecholamines and inotropes
- Diuretics
- Lipid lowering agents
- Nitrates
- Vasodilators

1.6.4 **Resuscitation/defibrillation:**

1.6.5 **Electrical cardioversion**:

1.6.6 **Percutaneous coronary intervention:**

- Balloon angioplasty
- Stents

1.6.7 **Implantable electrical devices:**

- Pacemakers
- Implantable cardioverter/defibrillators
- Cardio resynchronisation therapy

1.6.8 **Catheter ablation:**

- Arrhythmias
- Septal ablation

1.6.9 **Other interventions:**

- Balloon valvotomy
- Occluder devices
- Percutaneous valve implantation

1.6.10 **Cardiac surgery/cardiopulmonary bypass**

2.0 Clinical aspects of cardiovascular medicine, relevant investigations and management

2.1 Clinical skills:

Since candidates have passed the FCP(SA), or equivalent, it is assumed that they are competent general physicians. Specific knowledge of the full spectrum of cardiovascular disease, at the level of competent general cardiologist, is expected. Awareness of, and ability to recognise certain rare, but important, conditions is also required

2.2 Cardiovascular diseases/conditions:

- Arrhythmias and resuscitated sudden death
- Cardiomyopathies
- Congenital heart disease (adult)
- Heart failure
- Ischaemic heart disease
- Pericardial disease
- Tumours of heart and pericardium
- Valvular heart disease
- Vascular disease
- Pulmonary hypertension
- Pulmonary embolic disease
- Endocardial disease
- Cardiac infections
- Cardiac involvement in systemic disease

2.3 Indications for investigations and interventions:

- Balloon valvuloplasty
- Catheter ablation of arrhythmias
- Cardiac catheterisation/angiography
- Evaluation of severity and significance of coronary stenoses
- Cardiac surgery
- Cardioversion
- *ECG:*
  - Holter
  - Stress
  - Signal-averaged
- *Echocardiography:*
  - Transthoracic
  - Transoesophageal
  - Stress echo
- Electrophysiological studies
- Implantable cardioverter defibrillator (ICD)
- Intra-aortic balloon pump
- MRI and CT
- Nuclear imaging
- *Pacemaker insertion:*
  - Temporary
  - Permanent
- *Percutaneous coronary intervention:*
  - PTCA
  - Stent insertion
- Percutaneous insertion of occluder devices
- Percutaneous valve implantation
- Pericardiocentesis
- Swan-Ganz catheterisation

2.4 ... /

2.4 **Interpretation of investigations:**

- Electrocardiograms
- Radiographs
- Angiograms
- Echocardiograms

2.5 **Procedural skills:**

- Resuscitation and advanced cardiac life support
- Electrical cardioversion
- Central and peripheral venous and arterial access for diagnostic and therapeutic procedures
- *Cardiac catheterisation – diagnostic:*
  - **Right heart:**
    - Pressures
    - Shunt measurement
    - **Angiograms:**
      - Right ventricle
      - Pulmonary arteries
  - **Left heart:**
    - Retrograde
    - Transseptal
    - **Angiograms:**
      - Left ventricle
      - Aortogram
      - Coronary arteries
- *Echocardiography:*
  - Transthoracic
  - Transoesophageal
- *Therapeutic procedures:*
  - Insertion of intra-aortic balloon pump
  - Temporary pacemaker insertion
  - **Permanent pacemaker implant:**
    - Pacemaker follow-up; programming; trouble-shooting
  - Pericardiocentesis
  - Mitral balloon valvuloplasty
  - **Percutaneous coronary interventions:**
    - PTCA
    - Stent insertion

2.6 **Cardiovascular epidemiology:**

- Assessment and management of risk factors

2.7 **General:**

- Analysis and interpretation of clinical trials and critical appraisal of evidence
- Use of resources
- Communication with patients and colleagues
- Relationship to cardiovascular surgeons
- Judgement as to when to refer to another specialist

A P P E N D I X C

CONDUCT OF THE FINAL EXAMINATION – EFFECTIVE FOR THE FIRST SEMESTER 2020

1.0 Format of the Examination:

1.1 One written paper in the basic sciences, relevant to cardiovascular disease (3 hours)

1.2 One written paper on the principles and practise of Cardiology, including investigations, diagnosis and treatment (3 hours)

1.3 A modified clinical/practical/oral examination will be conducted in the form of a Structured Oral Examination and Written OSCE.

1.3.1 Candidates will engage in an electronic (Zoom-based) Structured Oral Examination and electronic online Written OSCE at the venues listed on the timetable.

1.3.2 Format of the Structured Oral Examination:

- Number of stations: 3
- Duration of examination: 60 minutes (20 minutes per station)
- Number of examiners: 2 per station (with a moderator)
- Examination material may include case histories and test results, still images, photos, diagrams, short clinical video clips, radiology imaging.
- PowerPoint slides will be used to present exam material, using topic-based questions.

1.3.3 A written OSCE using online exam scripts will be conducted as part of the examination process:

- Number of stations: 16
- Duration of examination: 3 hours (10 minutes per station)
- Examination material may include case histories and test results, still images, photos, diagrams, clinical video clips, radiology imaging.

1.3.4 During the oral, use of ECG's, echocardiograms, angiograms, radiographs, recordings of intracardiac or intravascular pressures or other records in everyday use in cardiology practice is encouraged. Common and/or important conditions should be chosen for discussion

1.3.5 The expected level is that of a competent general cardiologist. The oral should be used to test the candidate's judgement and strategy, rather than expecting detailed knowledge of complex percutaneous coronary intervention or electrophysiological procedures

1.3.6 Weighting of the Examination for Cert Cardiology(SA) Phys:

Clinical/Practical/Oral Examination (out of 100%):

- Case-based SOE: 40%
- Written OSCE: 60%
- An average of 50% and above warrants the candidate a pass mark.

A P P E N D I X D

GUIDELINES FOR CANDIDATES AND EXAMINERS

1.0 Candidates:

1.1 Recognised training centres should have a supervisor for cardiologists in training. The supervisor should be on the panel of examiners and be familiar with the examination and the CMSA regulations

1.2 The role of the supervisor should include discussion of the regulations for the Cert Cardiology(SA) examination with prospective candidates; indication of the breadth and depth required for different aspects of the examination; discussion of the methods of assessments used in the examination, informing the candidate of the limitations of his or her hospital as a training institution

1.3 On written request written reports on their performance will be made available to unsuccessful candidates after the examinations from the CMSA convenor. These must be such as to allow unsuccessful candidates to learn where they have made mistakes and correct their deficiencies in specific areas

2.0 Examiners:

2.1 Question papers will be carefully reviewed by the convenor, moderator and other examiners before the examinations, and all care will be taken to ensure that the questions are appropriate and free from ambiguities, grammatical errors, errors of vocabulary and spelling errors

2.2 Standards used in the oral examination will be the same for each candidate. The same (or very similar standard) questions should be posed to each candidate.

2.3 At least two examiners will examine each candidate in the oral parts of the examination. Examiners should play a minor role in the examination of candidates with whom they have worked closely in the recent past

2.4 In the oral part of the examination, each examiner should submit his or her own independent assessment of each candidate. Discrepancies between the assessments will be discussed at the examiners meeting. The consistency of the examination as a whole will be assessed

2.5 Examiners should familiarise themselves with the basic theoretical considerations involved in examinations, in medical examinations in particular

2.6 All new examiners should undergo a period of familiarisation during which they act as observers of the clinical and oral parts of the examination. During this period they will not submit assessments of candidates

2.7 Prior to the oral examination examiners and the moderator should review the questions proposed by each examiner to ensure that the standard is fair and that there is agreement among the examiners as to the expected answer

3.0 RECOMMENDED READING

- *Braunwalds Heart disease: A Textbook of Cardiovascular Medicine. 9th Edition EdsBonow, Mann, Zipes, Libby Saunders 2012*
- *Evidence-based cardiology. Eds Yusuf. Cairns. Camm, Fallon, Gersh 3rd ed. London. BMJ Books, 2009*
- *Textbook of Clinical Echocardiography.Catherine M Otto 4th edition Elsevier, Health Sciences 2009*
- *Chou's Electrocardiography in clinical Practice: Adult and Pediatric 6th Edition Surawicz, Knilans saunders 2008*
- *Drugs for the heart Opie LH, Gersh BJ (eds). 7th ed. Philadelphia, Pa Saunders, Elsevier 2009*
- *Educational Journal reviews. Such as those in Those in Heart.*

3.1 Sets of 6 previous examination papers are available on the CMSA website (http:/www.collegemedsa.ac.za)

A P P E N D I X E

1.0 LOGBOOK REQUIREMENTS FOR CERT CARDIOLOGY(SA)

1.1 The logbook must contain a complete record of the cases attended to by the candidate. The data to be recorded for each case is listed below. At the time of applying for the written and oral examination, the candidate must have met two-thirds of the minimum requirements for each of the procedures listed in the logbook. The logbook requirements should be regarded as the minimum necessary for certification and all trainees and institutions should strive to achieve maximal exposure to all aspects of cardiology.

1.1.1 The head of department of the training institution must confirm that the logbook is satisfactory before the candidate is admitted to the examination

1.2 After successful completion of the written and oral examination, the Certificate in Cardiology will be awarded

1.3 The final logbook certification must be submitted to the HPCSA by the head of the relevant training unit after completion of at least 33 months of the required 36 months training period

1.3.1 The final logbook certification must indicate that all of the minimum requirements for the procedures listed in the logbook had been met:

- Diagnostic cardiac catheterisation
- Percutaneous coronary intervention
- Transthoracic echocardiography
- Transoesophageal echocardiography
- Installation of intra aortic balloon pump
- Pacemaker implantation
- Temporary pacing
- Pericardiocentesis
- Valvuloplasty
- Electrophysiological studies
- Other (specify)

1.4 For each of the procedures the following must be documented:

- Name and initial of patient. (This should only be on the copy for the Head of Department. Any copy sent for external scrutiny must identify patients by initials and/or number only)
- Hospital and hospital number
- Procedure
- Indication
- Complications
- Outcome
- Status of trainee (first operator, second operator, observational)
- Identity and signature of supervisor

1.5 The minimum requirements for the procedures listed are:

- Diagnostic cardiac catheterisation 200
  - Coronary angiography 175
  - Full study, including right heart 25
- Percutaneous coronary intervention 50
- Transthoracic echocardiography 350
- Transoesophageal echocardiography 25
- Installation of intra-aortic balloon pump 10
- Pacemaker implantation (including 5 dual chamber) 30
- Temporary pacing 15
- Pericardiocentesis 10
- Valvuloplasty (observation) 10
- Electrophysiological studies, including 15 ablations (observation) 15
- Implantable cardiac defibrillator (observation) 10
- Cardiac resynchronisation therapy (observation) 10