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JOHANNESBURG OFFICE
EXAMINATIONS & CREDENTIALS

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December 2020

R E G U L A T I O N S

FOR ADMISSION TO THE FELLOWSHIP OF THE COLLEGE OF PATHOLOGISTS OF SOUTH AFRICA IN MICROBIOLOGICAL PATHOLOGY

FC Path(SA) Micro

1.0 STRUCTURE

1.1 Candidates write the final examination at the conclusion of their training period.

2.0 ADMISSION TO THE EXAMINATION

2.1 A candidate must hold a post-internship qualification to practise medicine which has been registered or is registrable with the Health Professions Council of South Africa

2.2 For admission to the final examination the candidate must have completed a minimum of three and a half (3 ½) years of approved training in Pathology by the time of applying for the written examination

2.3 At least three years of this period must have been spent in a Department of Microbiological Pathology

2.4 In addition, at least 6 months must have been spent fulltime in an approved Medical Virology laboratory; this is outside the 3 year period spent in the Department of Microbiological Pathology

2.5 The candidate will be required to submit a certificate from the head of the department(s) where he/she has been working showing that he/she has completed the required training ie an adequate rotation through the bacteriology, mycology, parasitology, serology/immunology and molecular diagnostic sections of the diagnostic laboratory.

2.6 From the second semester 2014 the submission of your Portfolio at the time of making your application is compulsory for all candidates who entered into their Registrar post from 1 January 2010. It is recommended that all candidates entering into their registrar training from 1 January 2019 use the LogBox 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.[1]

3.0 PART-TIME PROGRAMME

Part-time training of up to 50% of the total training time required may be accepted, provided the candidate submits evidence of prior approval by the Health Professions Council of South Africa of his/her part-time programme. A 5/8 training post is the minimum acceptable and will count as halftime.

4.0…/

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

4.0 SYLLABUS

[See appendix A for guidelines]

5.0 CONDUCT OF THE EXAMINATION[2]

5.1 The written examination will consist of two papers, each worth 100 marks.
The overall pass mark is 50%. The subminimum for Paper 1 is 45% and for Paper 2 is 45%.
Each paper will consist of:

- Single Best Answer (SBA) multiple choice questions MCQs to the total of 20 marks. Each SBA-MCQ will be worth 1 mark, and will contain 4 choices.
- Short questions to the total of 80 marks. Short questions will be 5 marks each. While there is no formal restriction on the length of the answers, the broad expectation is one paragraph (about 50 words) for a 5 mark question.
- No essay questions (20 marks) will be included.

All questions in each paper must be answered.
Each paper will be 4 hours (split into 2 papers of 2 hours each with a 40-minute break in-between).

CONTENT OF THE WRITTEN EXAMINATION:
NOTE: Virology will comprise 10-15% of the written examination, although some questions will integrate bacteriology and virology. Candidates are expected to include appropriate virology into the answer where relevant

Paper 1:

- Fundamentals of microbiology (including bacteriology, mycology, parasitology and virology) including pathogenesis of infection, virulence mechanisms, microbial genetics, antimicrobial resistance mechanisms and immunology (45-55 marks)
- Clinical microbiology including clinical syndromes, epidemiology of infection, diagnostic approach and antimicrobial therapy (45-55 marks)

Paper 2:

- Laboratory methodology including specimen collection and transport, microscopy, laboratory media, antimicrobial susceptibility testing, molecular diagnostics, serology and interpretation of laboratory tests (35-45 marks)
- Laboratory management including quality management, accreditation, data handling, evaluation and validation of tests, laboratory safety and needs analysis/budgets (20-30 marks)
- Prevention and control of infections in the hospital and community including principles of infection prevention and control, antimicrobial stewardship, policy development, surveillance, notifiable diseases, outbreak investigation and immunisation (30-40 marks)

JOHANNESBURG
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[2] Examination format – effective FS 2021

6.0 ADMISSION AS A FELLOW

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

6.2 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 1 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 1 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)

6.2 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

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

6.4 In the event of a candidate not being awarded the Fellowship (after having passed the examination) the examination fee shall be refunded in full

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

A P P E N D I X A

1.0 GENERAL AIM:

1.1 To produce trained Microbiological Pathologists to provide specialist opinion in their clinical discipline and who should have developed the appropriate management skills to lead a department, if required.

2.0 OBJECTIVES:

2.1 Over the training period the candidate should acquire or develop:

2.1.1 Specialised factual knowledge of the natural history of those diseases upon which the chosen discipline is based

2.1.2 Interpretative skills so that a clinically useful opinion can be derived from laboratory data

2.1.3 Technical knowledge, gained from close acquaintance with laboratory technology, so that methodology appropriate to a clinical problem can be chosen, and so that quality control and quality assurance procedures can be implemented

2.1.4 Familiarity with all aspects of health and safety requirements for laboratories

2.1.5 Management and communication skills. The candidate must gain experience, under supervision, in planning departmental policies and develop the leadership skills necessary to implement them

2.1.6 Data management skills to evaluate information derived from the population served and from the technical procedures applied in the laboratory. These skills should include familiarity with IT and the use of spreadsheets, databases and statistical packages etc

2.1.7 The life-long habits of reading, literature-searches, consultation with colleague's, attendance at scientific meetings, and the presentation of scientific work as part of continuing performance development (CPD)

2.1.8 Research and development experience, original thought and critical assessment of published work are important to allow the trainee to contribute in a team, and individually, to the development of the service.

3.0 A CORE TRAINING PROGRAMME: MICROBIOLOGICAL PATHOLOGY

3.1 Scientific basis of microbiological pathology covering bacteriology, parasitology and mycology. Trainees should have an understanding of the principles, clinical and research applications of the following:

- Microbial structure, physiology and genetics
- Microbial taxonomy, classification and typing methods
- Host defense mechanisms and immunity to infection
- Microbial pathogenicity
- Principles of vaccine development and use
- Antimicrobial agents, their mode of action, mechanisms of microbial resistance and application for therapy.

3.2 Trainees should develop a broad knowledge of infectious diseases as well as clinical syndromes related to infection, with regard to aetiology, epidemiology, clinical presentation, diagnosis, management, surveillance, control and prevention.

3.3 Laboratory safety

3.3.1 At the end of formal training, the microbiologist should be familiar with:

- Local procedures for the safe transport of specimens or cultures and also with national and international postal and packaging regulations for such material
- Current requirements and recommendations of the Department of Health's (DoH) recommendations for notifiable and specific diseases eg viral hepatitis, HIV, prion diseases, haemorrhagic fevers
- The principles and operation of microbiological safety cabinets and the procedures for their decontamination and monitoring of air flow
- Safety requirements regarding laboratory design.

3.4…/

3.4 Sterilisation and disinfection:

3.4.1 At the end of formal training, the microbiologist should understand the principles and uses of sterilisation and disinfection procedures for the preparation of media and instruments and for microbiological waste disposal.

Trainees should be familiar with methods of monitoring and be capable of formulating a policy on the use of sterilisation and disinfection in the laboratory, hospital or community.

3.5 **Handling of specimens:**

3.5.1 At the end of formal training, the microbiologist should:

- Be aware, for each specimen type, of the optimal methods for collection, transport (including transport media), storage, reception, identification and documentation, including the requirements for high-risk specimens
- The trainee should develop a sense of the continuity of identification of specimens from collection, through culture and further testing to the issuing of a final report. He or she needs to be aware of critical points in processing when this continuity may fail and be able to minimise the risk of this happening
- Be able to assess degrees of urgency for the processing of specimens, including the provision for an out of hours service and the communication of preliminary results as applicable
- Be able to decide upon further testing or processing of specimens as appropriate
- Be aware of existing reference facilities and their appropriate use.

3.6 **Microscopy:**

3.6.1 At the end of formal training, the microbiologist should:

- Understand the principles of light, dark ground, phase contrast, fluorescent and electron microscopy, be competent in the use of a light microscope and familiar with dark ground and phase contrast facilities
- Be able to perform routine staining techniques including fluorescent dyes
- Be familiar with the appearance of stained preparations and be able to recognise artefacts and their possible origin.

3.7 **Culture methods:**

3.7.1 At the end of formal training, the microbiologist should:

- Have a basic understanding of the diversity of microbial metabolism
- Be aware of the wide range of selective, enrichment and inhibitory media available for general and specialised use and be able to choose relevant media in common use or in medical and environmental laboratories
- Be familiar with physical growth requirements of micro-organisms including atmosphere and optimal temperature and have an appreciation of the growth kinetics of both solid phase and broth cultures. It is important in this context to know those micro-organisms and clinical situations in which detectable growth may require prolonged incubations
- Be familiar with the preparation of media in common use and have an understanding of internal quality control of such preparations
- Be able to process all common specimens, recognise potential pathogens from a mixture of colonies on culture plates, and separate such colonies in order to achieve the pure growth necessary for further work.

3.8…/

3.8 **Further processing of cultures:**

3.8.1 At the end of formal training, the microbiologist should:

- Be able to perform tests leading to the identification of all common pathogens including the use of commercially produced kits (eg enzyme assays), latex agglutination and rapid diagnostic kits
- Understand the principles of identification media and be able to use them appropriately
- Understand the principles behind automated identification technology, be familiar with its use and be able to interpret the relevant reports
- Be aware of available reference facilities for further identification including serotyping and all other typing schemes both phenotypic and genotypic.

3.9 **Antimicrobial investigations:**

3.9.1 At the end of formal training, the microbiologist should:

- Be able to test the antibiotic sensitivities of an isolate using the common techniques of disc testing and break points, know how breakpoints are determined and understand the principles behind automated sensitivity technology, be familiar with its use and be able to interpret the relevant reports
- Be able to perform and interpret MIC and MBC tests as appropriate and advise on treatment using PK/PD principles.
- Understand the principles behind antimicrobial assays using biological and automated techniques and be able to advise on dosage regimens accordingly.
- Understand principles of antibiotic stewardship, participate in such activities and be familiar with the development of antibiotic guidelines and policies.

3.10 **New and emerging technologies:**

3.10.1 At the end of formal training, the microbiologist should:

- Be able to evaluate critically the need for emerging techniques within the laboratory including cost effectiveness and effects on staffing levels and working practises.
- Have a detailed understanding of the evaluation and implementation of new diagnostic tests in the clinical microbiology laboratory.

3.11 **Molecular diagnostic technologies**

3.11.1 At the end of formal training, the microbiologist should:

- Be thoroughly familiar with the theory and practice of molecular diagnostics in the microbiology laboratory, including PCR, quantitative real-time PCR and nucleic acid hybridisation and sequencing.

3.12 **Data handling:**

3.12.1 At the end of formal training, the microbiologist should:

- Have a basic understanding of information technology and in particular, computerised data handling. He or she should have an appreciation of the advantages and disadvantages of such systems and a basic understanding of the need for data protection, medico-legal requirements for storage and legislation related to patient confidentiality.

3.13 **Clinical experience:**

3.13.1 At the end of formal training, the microbiologist should:

- Have gained experience of liaison with clinical colleagues through regular ward visits. In particular, a close relationship with high dependency units (eg ICU), and specialist units (eg haematology, paediatrics, transplantation) where available
- Have gained experience of liaison with general practitioners
- Have participated in on-call rosters (including weekends) with consultant cover
- Have participated in postgraduate educational meetings such as Grand Rounds and lunchtime case presentations
- Be able to provide informed advice on vaccination and immunisation with all products normally available in South Africa.

3.14…/

3.14 **Infection control in hospital and community:**

3.14.1 At the end of formal training, the microbiologist should:

- Have a detailed understanding of the principles of infection control and relevant international guidelines as they relate to patient isolation
- Have had first hand experience of local infection control problems, including outbreaks of infection and their management
- Be familiar with the workings of infection control meetings including local and regional infection control committees
- Be aware of those areas of hospitals and community health that require infection control policies
- Have worked closely with the infection control nurse both in day to day duties and in the education of those involved with infection control issues
- Have participated in visits to clinical and non-clinical areas to advise on infection control. These should include kitchen inspections, especially those conducted by environmental health officers. Relationships should be developed with key personnel in the CSSD, pharmacy and laundry
- Be familiar with any documents relevant to infection control, also a knowledge of any existing working party recommendations (eg MRSA, Shigella, Clostridium difficile etc)
- Gained some experience of public health microbiology with secondment if necessary to a Public Health Laboratory
- Have had some experience of communicable disease control in the community working with Public Health Specialists and Environmental Health Officers.

3.15 **Virology:**

3.15.1 At the end of formal training, a microbiologist should have knowledge of:

- Basic diagnostic virology methodology including virus isolation, serological and molecular methods
- Interpretation of results, both for clinical and infection control purposes
- Virology policies in relation to health care workers, pregnancy, transplantation, immunisation, notification and isolation
- When to refer to or request specialist virological expertise

3.15.2 A period of no less than six months in total should be spent in a specialised virology laboratory during the training period.

3.16 **Quality Assurance:**

3.16.1 At the end of formal training, the microbiologist should:

- Have an understanding of quality control and quality assurance
- Have experience and knowledge on the validation of diagnostic tests, development of standard operating procedures and procedures for corrective actions and re-training.
- Have had experience of the regular processing of the quality assurance distributed specimens
- Have an understanding of the external control schemes and the processing of data by these schemes.

3.17 **Audit:**

3.17.1 At the end of formal training, the microbiologist should:

- Have participated in microbiological audits both in house and in the microbiological audit of clinical specialties.

3.18 **Accreditation:**

3.18.1 At the end of the formal training, the microbiologist should:

- Have an understanding of the principles of an accreditation audit
- Have knowledge of the requirements of any existing laboratory accreditation schemes and the process whereby accreditation is conferred eg SANAS.

3.19…/

3.19 **Management:**

3.19.1 At the end of formal training, the microbiologist should:

- Have achieved a basic knowledge of important aspects of laboratory management including budget control, personnel management and administration. Attendance at local or national management courses should be strongly encouraged.

4.0 WRITTEN EXAMINATION

4.1 PAPER 1 and 2

Candidates are to have in depth knowledge of infectious diseases. Content of the written papers will cover the following 5 key areas:

- Fundamentals of microbiology (including bacteriology, mycology, parasitology) and virology including pathogenesis of infection, virulence mechanisms, microbial genetics, antimicrobial resistance mechanisms and immunology (50 marks)
- Clinical microbiology including clinical syndromes, epidemiology of infection, diagnostic approach and antimicrobial therapy (50 marks)
- Laboratory diagnostics including specimen collection and transport, microscopy, laboratory media, antimicrobial susceptibility testing, molecular diagnostics, serology and interpretation of laboratory tests (40 marks)
- Laboratory management including quality management, accreditation, data handling, evaluation and validation of tests, laboratory safety and needs analysis/budgets (30 marks)
- Prevention and control of infections in the hospital and community including principles of infection prevention and control, antimicrobial stewardship, policy development, surveillance, notifiable diseases, outbreak investigation and immunization (30 marks)

Both papers combined will be weighted at 50% of the examination with a subminimum of 50% for each paper.

5.0 PRACTICAL EXAMINATION

5.1 A practical examination of 3 days duration tests candidates' abilities to process laboratory specimens with a view to providing provisional diagnosis, leading to a definitive diagnosis and advising on patient management (analysis, evaluation and synthesis)

Only candidates that have met the written paper subminimum requirements are invited to the practical examination. At least two examiners will be present from day 2 of the practical examination.

The practical examination will be weighted at 40% of the examination with a subminimum of 50%.

6.0 ORAL EXAMINATION

6.1 This will have duration of not less than 30 minutes and will require all examiners to be present. This will be weighted at 10% of the examination with a subminimum of 50%.