



JOHANNESBURG OFFICE
EXAMINATIONS & CREDENTIALS

CMSA

The Colleges of Medicine of South Africa NPC

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February 2022

R E G U L A T I O N S

FOR ADMISSION TO THE FELLOWSHIP

OF THE COLLEGE OF FORENSIC PATHOLOGISTS OF SOUTH AFRICA

FC For Path(SA)

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

PART I

1.0 ADMISSION TO THE PART I EXAMINATION

(To be read in conjunction with the Instructions)

The candidate must

- 1.1 hold a post-internship qualification to practise medicine and be employed in an HPCSA approved training post at an HPCSA accredited University Department of Forensic Pathology
- 1.2 have completed the periods of training, totalling a minimum of two years, as detailed in 2.0. This will require certification by the Head of the Department concerned
- 1.3 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

2.0 SYLLABUS AND TRAINING PERIODS FOR PART I

2.1 **FORENSIC PATHOLOGY:** Minimum one year training in an HPCSA accredited University Department of Forensic Pathology

2.2 ANATOMICAL PATHOLOGY:

2.2.1 Minimum one year training, but not more than two years training in an HPCSA accredited University department of Anatomical Pathology

2.2.2 As an alternative to 2.2.1 an internal/in-house Anatomical Pathology Training Programme may be offered by HPCSA accredited University Departments of Forensic Pathology, aligned with the learning objectives in Anatomical Pathology in Annexure A, comprising a period of no less than 1 year, in conjunction with an HPCSA registered Anatomical Pathologist

See APPENDIX A for DETAILED LEARNING OBJECTIVES

3.0 CONDUCT OF THE PART I EXAMINATION

- 3.1 Two 3-hour online written papers on ANATOMICAL PATHOLOGY, which could include essay – and short questions, as well as MCQ's.
- 3.2 A 3-hour slide examination of 15 H&E and/or other stained sections during the week of the written examinations, to be held at the CMSA written venue.

Candidates must describe features that may be diagnostic, diagnose or offer differential diagnoses where relevant, as well as comment on special stains that may be required to confirm their diagnosis

NOTE:

Entry into Part II of the examination will not be permitted until the candidate has successfully completed Part I (See clause 4)

Candidates must pass a minimum of 8 out of 15, slide cases with a minimum of 50% as well as a minimum of 8 out of 15 correct diagnoses made in order to successfully pass the histopathology practical slide component of the examination.

Candidates must pass each individual component of these examinations i.e. each of the two (2) written papers and the slide examinations respectively, with a minimum of 50%, for successful completion of the Part I examination.

Weighting of examination

- Paper 1 – 25 %
- Paper 2 – 25%
- Paper 3 (Slide Examination)– 50%

PART II

4.0 ADMISSION TO THE PART II EXAMINATION

(to be read in conjunction with the Instructions)

The candidate must have completed:

- 4.1 Part I or have been exempted from it by successful completion of the equivalent training and examination (see 2.0 and 3.0) at an HPCSA accredited University and/or an International peer accredited University/Institute/College certified by the Heads of the Departments of Anatomical Pathology and Forensic Pathology concerned

Such exemption may be applied for and granted at the discretion of the Examinations and Credentials Committee

- 4.2 The minimum of two years of study called for in 5.0. This will require certification by the Head of the Department concerned
- 4.3 The portfolio and supporting certificates and documents must reach the Academic Registrar of the CMSA at least 3(three) months prior to the commencement of the FC For Path(SA) Part II examination.

5.0 SYLLABUS AND TRAINING PERIODS FOR PART II

See APPENDIX B for DETAILED LEARNING OBJECTIVES and PORTFOLIO GUIDELINES

- 5.1 Forensic Pathology: a minimum of two years training in an HPCSA accredited University department of Forensic Pathology, carrying out routine medico-legal autopsies and the associated microscopic examination of tissues removed at such autopsies, with experience in court work related to the autopsies carried out by the candidate. Knowledge of Traumatic Pathology in the Part II examination is stressed. In such a department the candidate will also gain experience in Forensic Sciences and relevant laboratory examinations and in such clinical work as is relevant to the speciality

- 5.2 The year of training in Forensic Pathology specified in 2.1, will count as one of the required years of training referred to above, in 5.1 (ie a minimum training period of three years in an HPCSA approved training post, must be completed, before the Part II may be written. This period includes the one year rotation through Anatomical Pathology and successful completion of the Part I Examination, as specified in 4.1)

6.0 CONDUCT OF THE PART II EXAMINATION

- 6.1 Two 3-hour online written papers, which could include essay and short questions, as well as MCQ's
- 6.2 A two hour slide examination of 10 to 15 H&E and/or other stained sections during the week of the written examinations, to be held at the CMSA written venue.

Candidates must describe features that may be diagnostic, diagnose or offer differential diagnoses where relevant, as well as comment on special stains that may be required to confirm their diagnosis

Candidates must pass a minimum of 5 out of 10 slide cases with a minimum of 50% as well as a minimum of 5 out of 10 correct diagnoses made in order to successfully pass the histopathology practical slide component of the examination.

AFTER SUCCESSFUL COMPLETION OF THE WRITTEN AND SLIDE EXAMINATIONS. THE CANDIDATE WILL BE INVITED TO AN AUTOPSY PRACTICAL EXAMINATION AND ORAL EXAMINATION. TO BE CONDUCTED AS FOLLOWS:

- 6.3 The autopsy practical examination (Assessment of Competence – AoC) will be conducted at the relevant University venue of the oral examination, prior to the oral examination
- 6.4 An online Zoom-based Structured Oral Examination (SOE) following the successful completion of the autopsy examination, which may include case files and macroscopic specimens or photographs.
- 6.5 Weighting of examination
- Paper 1 – 20 %
 - Paper 2 – 20%
 - Paper 3 (Slide Examination)– 20%
 - Assessment of Competence (AoC) – 20 %
 - Structured Oral Examination (SOE) – 20 %

Candidates must pass each individual component of these examinations ie each of the two (2) written papers and the slide-, autopsy- and oral examinations respectively, with a minimum of 50%, for successful completion of the Part II examination.

7.0 ADMISSION AS A FELLOW

7.1 The candidate having passed both parts of the examination and having been admitted as a Fellow of the College of Forensic Pathologists of South Africa.

7.2 **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)

7.2 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

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

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

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

APPENDIX A

LEARNING OBJECTIVES IN ANATOMICAL PATHOLOGY FOR CANDIDATES ENTERING THE FC FOR PATH(SA) - PART I EXAMINATION

GENERAL OVERALL LEARNING OUTCOMES:

The candidate should have a knowledge in greater depth of the practical application of the subject of Anatomical Pathology in the **medico-legal field**, with particular emphasis on the aetiology, epidemiology, classification, pathogenesis and the macroscopic and microscopic appearances of pathology seen in deaths commonly due to **NATURAL CAUSES** in Man, with further emphasis on cases of sudden unexpected deaths and 'natural' secondary complications following 'unnatural' primary injuries

In the light of the foregoing, the following detailed learning objectives for Anatomical Pathology are suggested:

Candidates must know and understand the following:

1.0 THE BASIC PRINCIPLES OF GENERAL PATHOLOGY INCLUDING:

1.1 Cellular injury and cellular death including:

- causes of cell injury and tissue necrosis
- stress proteins and cell injury
- apoptosis: broad overview
- intracellular accumulations, pigmentation and pathologic calcifications
- hyaline change and cellular ageing

1.2 Cellular adaptations of growth and differentiation including:

- hyperplasia, hypertrophy, atrophy and metaplasia

1.3 Inflammation, healing and repair including:

- acute and chronic inflammation
- chemical mediators of inflammation
- morphologic patterns and systemic effects of inflammation
- wound healing and the inflammatory reparative response

1.4 Haemodynamic disorders, thrombosis and shock including:

- oedema, hyperaemia and congestion
- haemorrhage, haemostasis and thrombosis
- embolism: thrombi, air, fat, bone marrow, amniotic fluid, atheromatous material, tumour fragments, bacteria/parasites, foreign bodies
- infarction
- shock: hypovolaemic, septic, neurogenic, cardiogenic, metabolic

1.5 Genetic disorders: a broad overview

1.6 Diseases of immunity including:

- cells of the immune system, cytokines and histocompatibility antigens
- hypersensitivity reactions including incompatible blood transfusions and transplant rejection
- autoimmune diseases
- amyloidosis
- acquired immunodeficiency syndrome (AIDS)
- broad overview of immunologic deficiency syndromes

1.7 Neoplasia in general including:

- general characteristics of benign and malignant neoplasms
- biology of tumour growth
- clinical features, staging and laboratory diagnosis of tumours in general
- carcinogenic agents in general

1.8 Tissue response to ionising radiation in general:**1.9 Infectious diseases including:**

- general principles of microbial pathogenesis
- categories of infectious agents
- special techniques for diagnosing infectious agents
- spectrum of inflammatory responses to infection

1.10 Selected human infectious diseases including:

- respiratory infections: viral, bacterial, fungal and opportunistic
- gastrointestinal infections: typhoid, cholera, amoebiasis, giardiasis, helminths, viral hepatic and opportunistic
- gram-positive pyogenic bacterial infections
- gram-positive spore-forming infections including bacillus anthracis and clostridial infections
- sexually transmitted infections
- common infections of childhood and adolescence
- opportunistic and AIDS associated infections
- zoonotic and vector-borne infections including tick-bite fever, plague, malaria and cysticercosis
- tropical infections including trachoma, leprosy, leishmaniasis, African trypanosomiasis, Chaga's disease, schistosomiasis, filariasis and onchocerciasis
- biological warfare infections including anthrax, smallpox, plague, botulinum toxin, tularemia and viral haemorrhagic infections
- Creutzfeldt-Jakob disease and variants

1.11 Environmental and nutritional diseases including:

- air pollution, tobacco smoking and occupational hazards
- chemical and drug injury including adverse drug reactions and non-therapeutic agents
- physical injuries including injuries induced by mechanical force, temperature changes, atmospheric pressure changes, electricity, radiation
- protein-energy under-nutrition and nutritional excesses

1.12 Diseases of infancy and childhood including:

- gestational ageing
- birth injuries
- congenital abnormalities
- perinatal infections
- respiratory distress syndrome in the newborn
- haemolytic disease of the newborn
- inborn errors of metabolism
- sudden infant death syndrome (SIDS)
- common tumours of infancy and childhood – broad overview

2.0 THE PATHOLOGY OF GENERAL SYSTEMIC AND SYSTEMATIC DISEASES**2.1 The vascular system including:**

- congenital anomalies
- atherosclerosis and other forms of arteriosclerosis
- hypertension
- the vasculitides
- aneurysms
- venous and lymphatic diseases
- vascular tumours in particular Kaposi's sarcoma
- complications of therapeutic interventions in vascular disease

2.2 The heart including:

- cardiac failure
- cardiac conductive system and arrhythmias
- ischaemic heart disease
- hypertensive heart disease
- valvular heart disease
- myocardial disease viz cardiomyopathies and myocarditis
- pericardial disease
- neoplastic heart disease
- congenital heart disease

2.3 The haemopoietic system including:

- the coagulation cascade and hypercoagulability syndromes
- bleeding disorders – haemorrhagic diatheses
- disseminated intravascular coagulation

2.4 The lympho-reticular system including:

- reactive proliferations of white cells and lymph nodes
- lymphomas, leukaemias, myeloproliferative disorders, plasma cell dyscrasias – broad overview
- diseases of the spleen

2.5 The lung including:

- congenital anomalies
- diseases of vascular origin including pulmonary oedema, adult respiratory distress syndrome, pulmonary embolism - haemorrhage and infarction, pulmonary hypertension and vascular sclerosis
- obstructive and restrictive pulmonary disease
- chronic obstructive pulmonary disease
- pulmonary infections
- diffuse interstitial diseases
- drug-induced lung disease
- lung tumours
- pleural diseases

2.6 The head and neck including:

- oral soft tissues and salivary glands, inflammations, infections and reactive proliferations
- upper airways and ears including inflammations and infections of the nose, sinuses, nasopharynx, larynx, trachea and ears

2.7 The GIT including:

- congenital, inflammatory, infectious, ulcerative, motility, vascular, hernia, obstructive, malabsorptions and neoplastic pathology of the oesophagus, stomach, small and large bowel

2.8 The liver and biliary tract including:

- morphologic patterns of hepatic injury including necrosis, degeneration, inflammation, regeneration, fibrosis, steatosis and cirrhosis
- portal hypertension, ascites, portosystemic shunts and splenomegaly
- jaundice and cholestasis
- hepatic failure including hepatic encephalopathy and hepatorenal syndrome
- inflammatory and infectious disorders including viral and autoimmune hepatitis and liver abscesses
- drug and toxin induced liver disease
- alcoholic liver disease
- inborn errors of metabolism and paediatric liver disease
- intra-hepatic biliary tract disease
- hepatic circulatory disorders
- hepatic disease associated with pregnancy
- tumours and tumourous conditions of the liver and gallbladder
- disorders of the extra-hepatic bile ducts, biliary tree and gallbladder

2.9 The pancreas including:

- *The exocrine pancreas:*
 - acute and chronic pancreatitis
 - pancreatic pseudocysts
 - cystic tumours and carcinoma of the pancreas
- *The endocrine pancreas:*
 - diabetes mellitus
 - islet cell tumours including insulinoma and gastrinoma

2.10 The kidneys including:

- congenital anomalies
- acute and chronic renal failure
- glomerular diseases including glomerular lesions associated with systemic diseases like diabetes mellitus and amyloidosis
- tubular and interstitial diseases including acute tubular necrosis, drug or toxin induced tubulointerstitial nephritis, pyelonephritis and urinary tract infections
- renal vascular diseases including hypertensive benign and malignant nephrosclerosis, renal artery stenosis and thrombotic microangiopathies
- urinary tract obstructions and urolithiasis
- tumours of the kidneys

2.11 The lower urinary tract and genital systems including:

- congenital, inflammatory, traumatic, obstructive and neoplastic lesions of the ureters, bladder, urethra, male and female genital tracts
- gestational and placental disorders

2.12 The breast including:

- congenital, inflammatory, traumatic, fibrocystic and neoplastic lesions of the female breast
- gynaecomastia and carcinoma of the male breast

2.13 The endocrine system including:

- *The pituitary gland:*
 - hyper and hypo-pituitary disorders or syndromes
 - posterior pituitary syndromes including diabetes insipidus
- *The thyroid gland:*
 - hyper- and hypothyroidism including thyrotoxicosis, cretinism and myxoedema
 - thyroiditis, Grave's disease, goitres and tumours
- *The parathyroid glands:*
 - primary and secondary hyperparathyroidism
 - hypoparathyroidism, pseudo-hypoparathyroidism and pseudo-pseudo-hypoparathyroidism
- *The adrenal glands:*
 - hyperfunction and hypofunction disorders of the adrenal cortex
 - adreno-cortical neoplasms
 - adreno-medullary pheochromocytoma
 - extra-adrenal paraganglia tumours (paragangliomas)
- *The thymus:*
 - developmental disorders, thymic hyperplasia and thymomas
- *The pineal gland:*
 - pinealomas
- Multiple endocrine neoplasia (MEN) syndromes – a broad overview
 - MEN 1, MEN IIa & IIb, MEN III

2.14 The skin including:

- disorders of pigmentation including nevi and melanomas
- benign epithelial tumours
- premalignant and malignant epidermal tumours
- tumours of the dermis including Kaposi's sarcoma
- tumours of the cellular immigrants to the skin
- acute and chronic inflammatory dermatoses including erythema multiforme (toxic epidermal necrolysis and Stevens-Johnson syndrome)
- bullous skin diseases
- skin infections and infestations and arthropod bites

2.15 The skeletal system including:

- developmental abnormalities
- diseases of abnormal matrix, osteoclast dysfunction and abnormal mineral homeostasis
- bone fractures including ageing of fractures
- osteonecrosis and osteomyelitis
- bone tumours and tumour-like lesions
- joint diseases including the arthritides
- soft tissue tumours and tumour-like lesions (muscular, fibrous and fatty)

2.16 Peripheral nerve and skeletal muscle including:

- *Peripheral nerve diseases:*
 - demyelination, axonal degeneration and nerve regeneration
 - peripheral neuropathies including inflammatory-, infectious-, hereditary-, metabolic-, toxic- and traumatic neuropathies
 - peripheral nerve tumours
- *Skeletal muscle diseases:*
 - muscular dystrophies
 - myopathies including congenital, metabolic, inflammatory, and toxic myopathies
 - neuromuscular junction disorders including myasthenia gravis and botulism
 - skeletal muscle tumours

2.17 The central nervous system including:

- cellular reactions to injury (traumatic and non-traumatic)
- hydrocephalus, cerebral oedema and cerebral herniations
- CNS malformations and developmental diseases
- complications of CNS trauma including skull fractures, brain injuries, traumatic intracranial haemorrhages and spinal cord injuries
- cerebrovascular pathology including ischaemic hypoxic encephalopathy and cerebral infarction
- non-traumatic intracranial haemorrhages including vascular malformations and hypertensive and cerebrovascular disease
- acute and chronic CNS infections as well as spongiform encephalopathies
- demyelinating and degenerative diseases
- toxic and acquired metabolic diseases including neurologic sequelae of metabolic disturbances and toxic disorders, viz hypo-/hyperglycaemia, hepatic encephalopathy, carbon monoxide, methanol, ethanol, methotrexate and radiation-induced cerebral injury and complications
- brain tumours and neurocutaneous syndromes including neurofibromatoses

3.0 THE USE OF SPECIAL STAINS, IMMUNOHISTOCHEMISTRY AND ELECTRON MICROSCOPY IN DIAGNOSTIC ANATOMICAL PATHOLOGY**4.0 BASIC MOLECULAR BIOLOGY**

4.1 Concentrating on:

- DNA: Principles of basic techniques, endonucleases, RFLP's and blotting, sequencing and PCR
- Basic Mendelian genetics

4.2 **RECOMMENDED TEXTBOOKS FOR THE PART I**

- Kumar V, Abbas AK, Aster JC. *Robbins & Cotran Pathologic Basis of Disease*, 9th ed. Philadelphia, Elsevier Saunders, 2015
- Rippey JJ. *General Pathology*. Cape Town: Juta, 1981
- Trent RJ. *Molecular Medicine*. 4th ed. Academic Press, 2012
- Ross DW, Dennis W. *Introduction to Molecular Medicine*. 3rd ed. New York: Springer – Verlag, 2012

APPENDIX B

LEARNING OBJECTIVES FOR CANDIDATES ENTERING THE FC FOR PATH(SA) - PART II EXAMINATION

Candidates will be expected to have acquired the relevant skills and competencies during their training so as to be able to provide or effectively participate as a Specialist in Forensic Pathology Services

GENERAL OVERALL LEARNING OUTCOMES MUST RESULT IN:

- ◆ an understanding of the legal and operational requirements and ethical underpinnings for their practise of Forensic Pathology
- ◆ an understanding of death scene investigation processes and techniques as well as competence in the Forensic Pathological aspects of such investigations
- ◆ proficiency with standard autopsy techniques and interpretation of autopsy findings
- ◆ familiarity with specialised autopsy and human identification techniques
- ◆ proficiency with documentation of autopsies and clear communication of findings to the Justice System
- ◆ familiarity with basic Clinical Forensic Medicine including examination techniques

1.0 THE FOLLOWING DETAILED LEARNING OBJECTIVES FOR THE FORENSIC PATHOLOGY ARE SUGGESTED:

1.1 The scene of death and manners of death:

- know how the investigation of a scene of death is approached
- understand what constitutes evidence and how it should be preserved
- understand the basic concept and application of crime scene management
- understand the importance and nature of documentation of evidence
- know the roles of the forensic pathologist and different specialist investigators at a scene of death
- appreciate the need to avoid cross-contamination of samples and the steps taken to avoid it
- know and understand Locard's Principle

1.2 Causes and mechanisms of death:

- be able to define cause, mechanism and manner of death
- be able to define death and distinguish between somatic and cellular death
- know and understand the basic mechanism of cell injury and cell death
- know and understand the basic concepts of ischaemia and all types of shock
- know and understand the basic concept of major causes of pulmonary oedema
- know and understand the basic concept of major causes of adult respiratory distress syndrome
- know and understand the major causes of death in cancer (neoplasia)
- know and understand the basic concept of anaphylaxis
- know and understand the term cardiac arrhythmia and name the major types
- know and understand the mechanisms of death in inhalation of stomach contents
- know and understand the major mechanisms of death from infectious disease
- know and understand the basic concepts of metabolic death
- know and understand hypersensitivity reactions, with the emphasis on anaphylactic reactions and sudden death

1.3 Sudden natural death:

- have a clear knowledge of the body systems commonly implicated in sudden natural death and of the proportions of deaths attributable to disorders of each system
- know the major forms of disease which cause sudden natural death and the mechanisms by which they do so in the following body systems: heart, vascular system, central nervous system, respiratory system and gastrointestinal system
- know the major forms of pregnancy-related disease which cause sudden natural death and the mechanisms by which they do so
- know the possible mechanisms of death in diabetes mellitus

1.4 The autopsy:

- understand the nature and uses of the autopsy as an investigative method and its applications in legal practise
- understand the importance of the history and scene examination in interpreting the autopsy findings
- have a clear understanding of the structure and usefulness of a well-written autopsy protocol
- distinguish clearly between objective observation and expression of opinion
- have a good working knowledge of the major useful conclusions which can be drawn from an autopsy examination
- have a clear concept of the techniques used in autopsy examination and specimen collection
- understand the planes of section of the human body and the terms used to define points on them, in relation to the Anatomical Position
- understand the needs and methods to describe precisely the location of any injury to the body

1.5 The second autopsy and summary of the role of the expert witness:

- know the major reasons for conducting a second autopsy
- know the major categories of death in custody
- know the principles upon which a second autopsy is conducted
- know the ethical principles which govern the giving of evidence as an expert witness
- know the principles which govern the way in which the courts make use of expert evidence and the correct procedures involved

1.6 Legal systems and the courts:

- know the roles of the main officers of the courts in South Africa
- understand the basic concepts of the standard of proof in civil and criminal cases
- know the main types of evidence usually admissible and inadmissible in courts of law
- know the main types of witnesses in courts of law
- understand the difference between evidence of fact and evidence of opinion
- know the Acts governing the performance of medico-legal autopsies in South Africa
- know and understand the Acts, general rules and procedures governing the handling of post mortem human tissues or remains, as contemplated in the Inquest Act, current Human Tissues Act and soon-to-be implemented National Health Act
- know and understand the Acts, general rules and procedures governing Certification of Death and the performance of medico-legal autopsies in South Africa

1.7 Torture, treatment of detainees and deaths in custody:

- definition of torture and methods of torture
- know the rights of prisoners and detainees
- understand the role of health care professionals in torture and treating prisoners and detainees
- know the diagnosis, treatment and prevention of torture
- know the principles for the treatment of prisoners and detainees by medical practitioners
- know the definition of custody-related deaths
- be able to give recommendations to prevent custody-related deaths
- know and understand the approach to the medico-legal investigation and autopsy in a custody-related death

1.8 Medical and surgical mishaps:

- understand the general concept of risk associated with medical procedures and the precautions which should be taken to avoid or minimise harmful consequences therefrom
- know and understand the causes and laboratory confirmation of incompatible blood transfusion reactions, as well as the procedures to be followed when such an event is suspected
- know the concepts governing the way in which the Inquest Court approaches the problem of medical negligence
- know the Medical and Dental and Supplementary Health Services Act provisions pertaining to the performance of medico-legal autopsies
- understand the concept of novus actus interveniens

1.9 Industrial and environmental health:

- understand the relationship between urban outbreaks of contagious disease and the provision of public sanitation
- know the main provisions of the Occupational Health and Safety Act
- be able to list the common industrial poisons and their major ill effects
- know and recognise the common occupational diseases (especially lung diseases) during autopsy

1.10 Brainstem death and organ transplantation:

- understand the basic concepts of brainstem death, whole brain death and the vegetative state
- know in basic terms the South African code for diagnosis of brain stem death
- know the main legal provisions governing organ/tissue transplantation in South Africa, as contemplated in the current Human Tissues Act and the soon-to-be implemented National Health Act

1.11 Post mortem interval and post mortem changes:

- know the methods by which the post mortem interval can be estimated and their limitations
- know the way in which the body cools after death, its rate of doing so and the factors which influence this
- know the nature and significance of hypostasis, cadaveric spasm, rigor mortis, putrefaction, mummification and adipoceros change and the estimated rates at which these phenomena occur
- know the nature and significance of post mortem injury

1.12 Post mortem microbiology and biosafety considerations in the mortuary:

- knowledge of basic and systematic microbiology, orientated towards a practical approach to the correct collection, storage and transportation of specimens for the appropriate microbiological laboratory examinations
- know and understand the medico-legal implications of the post mortem production of alcohol by bacteria and fungi, as well as the interpretation of post mortem ethanol results
- know the microbial food poisonings including botulism, mushroom poisoning, staphylococcal, salmonella, E coli, clostridium perfringens and bacillus cereus food poisoning
- know the microbial aspects of drowning pertaining to the significance of plankton and diatoms in tissues at autopsy
- know the microbial complications of the parenteral administration of drugs and fluids including blood transfusions and other intravenous infusions
- know the viral, bacterial and other infections in the neonatal period and infancy and their possible association with sudden infant death
- know the microbiology of wound infections and sepsis including gas gangrene
- be able to discuss the impact of HIV and other high risk blood and tissue borne infections in mortuary settings, including universal safety precautions required during autopsies
- know the procedures to be followed after accidental sharps or needle-stick injuries

1.13 Post mortem chemistry:

- know and understand the value and uses of post mortem chemistry of tissue samples and body fluids, including knowledge of (i) sample time, (ii) sample source and acquisition and (iii) a broad overview of analytical methodology

1.14 Common injuries (bruises, abrasions, incised wounds, lacerations and fractures):

- know the definition, mechanism of causation and diagnostic significance of bruises, abrasions, lacerations, incised wounds and fractures, as well as the factors which may modify or complicate them
- know the distinction between bite marks and oral suction marks and relevant investigative techniques used in bite mark identification
- know the legal significance of determining the degree of force used in inflicting an injury
- know the relevance and methods whereby wounds can be 'aged'

1.15 Firearms and firearm injuries:

- understand the basic principles by which modern firearms work and the major substances emitted by a gun when it fires
- know the major categories of firearms and ammunition and their basic distinguishing features
- understand the basic principles of matching firearm ammunition with the gun from which it was fired
- understand the basic principles of how firearm projectiles cause wounding, distinguishing between high and low velocity, as well as rifled and unrifled weapons
- know the basic principles of determination of the range of fire in rifled and smoothbore firearms
- know the basic distinguishing features of entry and exit firearm wounds caused by the various main types of firearms
- know the basic principles on which determination of accidental, suicidal and homicidal firearm wounding is made
- know the correct techniques of handling spent projectiles retrieved during autopsy

1.16 Head and neck injury:

- understand the vulnerability of the head to injury and the basic simple physics governing impact
- know the basic structure and functions of the scalp, skull and meninges
- know the basic mechanisms and patterns of skull fracture and, in general terms, the degree and nature of force required to fracture the different major areas of the skull
- understand the basic concept of brain injury due to space occupying lesions and be able to describe the major categories of intracranial bleeding
- understand the basic concept of brain injury due to diffuse brain swelling and raised intracranial pressure
- be able to classify brain damage, describing in simple terms the main named categories of brain injury
- understand the basic concepts of diffuse brain injury
- be able to describe in simple terms the nature of head injury in boxers, missile head injury and post-traumatic epilepsy
- know the likely medical and legal consequences of head injury
- know the major factors which modify the mobility and vulnerability of the cervical spine
- know the major mechanisms of cervical spine and cord injury and the likely medical and legal consequences of such injuries

1.17 Fire deaths:

- have a basic knowledge of the mechanisms involved in heat injury and of the classification of the degree of heat injury
- have a basic understanding of the factors which influence survival and disability following heat injury
- understand the mechanism of chemical burns
- know the mechanisms of death in fires and the common causes of house fires
- know the common heat artefacts seen in victims of fatal fires
- have in depth knowledge of vital phenomena observed in fire-related deaths

1.18 Carbon monoxide poisoning:

- know the sources and nature of carbon monoxide gas and the mechanism by which it causes poisoning
- know the methods by which such poisoning is assessed and their limitations

1.19 Electrical injury:

- know the mechanisms of electrical injury and the factors which modify the passage of electric current through the human body
- know the distinctive pathological features of electrical injury related to different sources of current, both high and low voltage

1.20 Cold and heat injury:

- know the main forms and mechanisms of local and generalised cold and heat injury, and the ways in which they can present themselves
- know the basic findings which may be associated with death from hypothermia and hyperthermia

1.21 Starvation and neglect:

- know the main findings in cases of neglect
- know the signs of starvation and dehydration visible in life and at autopsy

1.22 Radiation injury:

- broadly know the mechanisms by which ionising radiation causes tissue damage and those forms of radiation which pose the greatest danger to human health

1.23 Drowning and immersion:

- know the different mechanisms of death which may have been involved when a body is recovered from immersion
- know the basic mechanisms which may be involved in drowning and the effects of different drowning media
- know the major tests which may be applied to confirm a diagnosis of drowning
- know the changes in the human body which occur in immersion
- know the mechanisms of death, injury and disease associated with diving, as well as the relevant autopsy techniques and protocols used in such cases

1.24 Asphyxia and related deaths:

- understand clearly the concept of asphyxia both to lawyers and to medical practitioners, together with its legal significance
- know the general changes associated with asphyxia and the mechanisms which bring them about
- understand clearly the concepts of neurogenic cardiac arrest and arrhythmias, together with their legal significance and the stimuli which may cause them
- have a basic knowledge of the main structures of the neck which are of importance in considering asphyxial and related deaths
- know the main categories of asphyxial and related deaths and the mechanisms by which they operate

1.25 Road traffic deaths:

- know the reasons for autopsy of road traffic victims
- know the major patterns of injury in vehicle passengers injured in collisions, and the modifying effects of safety devices
- know the major features of suicidal vehicle collisions
- know the major patterns of injury in motorcyclists and pedal cyclists injured in collisions and the modifying effects of safety devices
- know the major patterns of injury in pedestrians injured in motor vehicle collisions

1.26 Alcohol:

- know the meaning of the term alcohol in the usual medico-legal sense
- know the approximate alcohol content of the major types of alcoholic beverages
- understand the concept of measurement of the alcoholic strength of drinks in alcohol units
- know and understand the chemical properties of alcohol, the ways in which alcohol is absorbed and metabolised, the rates at which it is eliminated and the factors which modify its absorption, metabolism and elimination
- know and understand the Widmark calculations, their uses and prerequisites for valid use
- know the major diseases and disorders associated with excessive long term alcohol consumption
- know the levels of alcohol in blood, breath and urine at which it becomes an offence to drive a motor vehicle in public in South Africa
- know the major legal statutes relating to alcohol and driving
- know the main methods used in law enforcement in the road traffic environment
- know the methods and types of post mortem sample collection, preservation, transportation and documentation for laboratory alcohol analyses, with particular understanding of and emphasis on “chain of evidence” preservation

1.27 Pregnancy:

- know the major medical signs of pregnancy and recent delivery
- know the basis of the proof of legitimacy and paternity
- know the main medical and legal implications of sterilisation

1.28 Abortion, concealment of birth and child murder:

- be able to define in simple terms foetus, viability, abortion, stillbirth and infanticide
- understand the terms neonatal death and perinatal death
- know the major provisions of the Termination of Pregnancy Act as compared to the old Abortions and Sterilisation Act
- know in simple terms the major methods of illegal abortion and their likely complications
- know the main medical signs of live birth and stillbirth

1.29 Legal aspects of child care:

- know the main provisions of the Child Care Act 74 of 1983 (as amended), Domestic Violence Act 116 of 1998, the Prevention of Family Violence Act 133 of 1993, the Sexual Offences Act 23 of 1957 and the new draft proposals of the Sexual Offences Bill
- know the major functions and jurisdiction of the SAPS Child Protection Unit as well as the statutory obligations of health practitioners and child care-givers regarding reporting of suspicions of child abuse or neglect

1.30 Physical abuse of children:

- be able to define child abuse
- have a basic knowledge of the historical recognition of child abuse
- be able to list the major clinical, radiological and pathological signs of physical child abuse
- be able to list the major natural conditions which may mimic child abuse
- be able to state the general strategy and laws for dealing with child abuse

1.31 Sexual abuse of children:

- be able to define child sexual abuse
- be able to list the major clinical signs of child sexual abuse
- be able to describe the investigation of a case of suspected child sexual abuse, including the medical examination and laboratory tests
- know the laws pertaining to Sexual Abuse of Children

1.32 Sudden infant death:

- be able to define the medical concept of sudden infant death syndrome (SIDS)
- know the incidence and distribution of SIDS and recent trends in its occurrence
- be able to list the major causes of sudden unexpected death in infancy
- know the major risk factors for SIDS
- know the main autopsy findings in SIDS
- know the main current theories for the cause of SIDS

1.33 Sexual offences against adults:

- be able to define rape, and other sexual offences under the law of South Africa
- be able to describe the procedure governing the medical examination of a victim of alleged rape and the follow-up care needed in survivors
- be able to describe the procedure governing the medical examination of the alleged assailant in a case of rape
- be able to describe and perform an autopsy in the case of a sexual homicide

1.34 Suicide:

- be able to define suicide, parasuicide and self-harm
- know the basic legal and cultural aspects of suicide and its epidemiology
- know the common methods of suicide and the gender preferences for them
- understand the concepts and legal significance of suicide pact and dyadic death

1.35 Consent to treatment and medical confidentiality:

- clearly understand the concept of consent as a human right
- know the types of consent and the concept of informed consent
- understand the ethical principles governing the provision of medical information when obtaining consent
- know the major circumstances in which the public interest may legally override individual consent
- clearly understand the concept of medical confidentiality and the ethical and legal principles which underlie it
- know the major circumstances in which patient confidentiality can be breached in the public interest or on the order of a court

1.36 Poisoning:

- know the common circumstances and common poisons in accidental poisonings, including “muti” or herbal poisoning
- be able to state the factors which may modify the effects of a poison on an individual
- be able to list the major categories of common drugs and poisons, giving examples of each and a simple account of their effects
- know which samples/specimens to collect for various drug/poison laboratory analyses, with a basic knowledge of the analytical techniques employed
- know the methods and types of post mortem sample collection, preservation, transportation and documentation for laboratory toxicological analyses, with particular understanding of and emphasis on “chain of evidence” preservation

1.37 Controlled drugs:

- be able to describe in general terms the historical background and current incidence and pattern of drug abuse in South Africa
- be able to define opioid drugs and their effects and methods of abuse (especially heroin)
- be able to define stimulant drugs and their effects and methods of abuse (especially cocaine and amphetamines)
- be able to define depressant drugs and their effects and methods of abuse (especially barbiturates)

- be able to .../

- be able to define hallucinogenic drugs and their effects and methods of abuse (especially LSD)
- be able to define euphoriant drugs and their effects and methods of abuse (especially ecstasy and cannabis)
- be able to define solvent abuse and describe the agents used, together with their patterns of abuse, effects, major causes of death and control measures

1.38 **Mass disasters – general principles:**

- know in simple terms the operational strategy for dealing with a mass disaster and its aftermath with particular emphasis on fatalities
- understand the basic principles of such investigations
- know the methods of identification used and their validity

1.39 **Deaths in explosions:**

- know the basic principles of wounding by explosives
- know the methods used for determining the distance between the victim and the seat of the explosion
- know the principles used in investigating the cause of an explosion and the collection of trace evidence

1.40 **Mass burials:**

- know the methods used in determining the causes of death of individuals found in a mass burial ground
- know the principles applied in identifying the group and specific identifying features of individuals found in a mass burial ground
- know the principles governing presentation of evidence in court during trial of alleged mass human rights abuses

2.0 **FORENSIC SCIENCES**

2.1 **DNA profiling:**

- know the sources of DNA in and on the human body, including methods of collection of specimens as well as conditions for their storage and transport to the laboratory
- understand the basic concept of using variable regions of the DNA molecule for comparison purposes
- know the main applications of DNA profiling in civil and criminal cases
- understand the basic mechanism, usefulness and pitfalls of the polymerase chain reaction (PCR) in DNA profiling

2.2 **Forensic entomology:**

- know the simple basic terminology of forensic entomology
- understand the basic concept of faunal succession on cadavers and its significance
- understand how factors such as burial, exposure and mummification after the faunal succession on cadavers
- understand how seasonal and climatic factors alter the faunal succession on cadavers
- know in basic terms the life-cycle of flies and give examples of the major families of flies which infest cadavers
- have a basic knowledge of the methods and techniques of forensic entomology and their major applications

2.3 **Identification of human remains:**

- know and be able to describe the methods used in identification of individuals, including personal characteristics, visual appearance, photography, computer-assisted matching of photographic images, handwriting analysis, fingerprinting and DNA profiling
- know and be able to describe the scientific methods used in identification of living and dead individuals, including X-ray superimposition, facial reconstruction and computer imaging, fingerprinting and DNA profiling

2.4 Anthropological identification:

- know and be able to describe the methods used in identification of skeletonised remains, including determination of the sex, age, stature and race, description of secondary characteristics, post mortem interval

2.5 Forensic odontology:

- know the main reasons for and methods of dental identification
- understand the basis of dental charting and its application to comparative identification
- have a basic knowledge of the terminology used in reporting the findings of dental examination
- know the major principles of diagnosis and bite marks and the forensic evidence which can be derived therefrom
- understand the principles of presenting dental evidence in court

2.6 Forensic radiology:

- describe the major techniques of forensic radiology, including medical diagnostic radiology, contrast media, and radioactive source radiology
- know the main application of radiology in forensic investigations involving pathology, paediatrics, dentistry and ballistics

2.7 Forensic toxicology:

- be able to broadly describe the role and scope of the forensic toxicologist
- be able to describe in general terms the working methods, instrumentation and diagnostic problems of the forensic toxicologist

2.8 RECOMMENDED READING

- Saukko P, Knight B: *Knight's Forensic Pathology*, 4th ed. Boca Raton: CRC Press, 2015
- Mason JK, Purdue BN: *The Pathology of Trauma*, 3rd ed. New York: Oxford University Press, Arnold, 2000
- DiMaio VJM. et al. *Forensic Pathology*. 2nd ed. Boca Raton: CRC Press, 2001
- DiMaio VJM. *Gunshot Wounds*. 3rd ed. Boca Raton: CRC Press, 2015
- Mason JK. *Paediatric Forensic Medicine and Pathology*. Chapman and Hall, 1989
- McQuoid-Mason DJ & Dada MA. *Guide to Forensic Medicine and Medical Law, Independent Medico-Legal Unit*. University of Natal, 1999
- Spitz WU. *Spitz and Fischer's Medicolegal Investigation of Death*, 4th ed., Springfield, Illinois: Charles C Thomas, 2006
- Adelson L. *The Pathology of Homicide*. Springfield, Illinois: Charles C Thomas, 1974
- Perper JA. *Microscopic Diagnosis in Forensic Pathology*. Charles C Thomas, 1980
- Busuttil A, Payne-James J, Smock W. *Forensic Medicine: Clinical and Pathological Aspects*. Greenwich Medical Media, 2003
- Drummer OH, Odell M. *The Forensic Pharmacology of Drugs of Abuse*. London: Oxford University Press, Arnold, 2001
- Eckert WG. *Introduction to Forensic Sciences*. 2nd ed.
- Fischer BAJ. *Techniques of Crime Scene Investigation*. 7th ed, Boca Raton: CRC Press, 2003
- Farley MA, Harrington JJ. *Forensic DNA Technology*. Lewis Publishers, 1990
- Krawczak M, Schmidtke J. *DNA Fingerprinting*. Bios Scientific Publishers, 1998
- Inman K, Rudin N. *An Introduction to Forensic DNA Analysis*. 2nd ed. CRC Press, 1997
- *Relevant recent literature on Forensic Medicine, – Science and –Pathology*

3.0 TRAINING PORTFOLIO ITEMS

3.1 Ancillary Forensic Sciences:

A minimum of 120 TRAINING HOURS should ideally be devoted to the following during the Forensic Pathology training period:

- Toxicology (including analytical chemistry and instrumental methods of analysis):

<ul style="list-style-type: none"> ▪ Our CMSA recommendation: 20 – 40 hours (NAME Recommendation: 80 hours / 2 weeks fulltime) NAME = National Association of Medical Examiners (USA)

- Forensic:
 - Anthropology
 - Odontology
 - Radiology
- Arson analysis:
- Serology:
 - DNA-based identification
 - Blood splatter analysis
- Trace evidence
- Firearms/ballistics/toolmarks
- Fingerprints
- Documents and photography

<p>Our CMSA Recommendation: 80–100 hours</p> <p>NAME: Recommendation: 40 hours/1 week fulltime NAME = National Association of Medical Examiners (USA)</p>
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3.2 Autopsies:

- Minimum 200 – per year
- To be documented in a “logbook” or “Year Diaries”, to be submitted with the Portfolio
- Accidental, suicidal, homicidal, natural, undetermined cases should all be “logged”

3.3 Crime scenes:

- ± 15 in total – to be documented in full in the Portfolio

3.4 Court experience and negligence reports:

- To be documented in the Portfolio

3.5 Seminars/courses/workshops/conferences attended:

- To be documented in the Portfolio

3.6 Lectures and presentations given:

- To be documented in the Portfolio