FC PAED(SA) PART I

CMSA EXAMINATIONS

OBJECTIVES AND SCOPE (EXAMINERS)

The FC Paed(SA) examination is the qualifying examination for specialist paediatricians.

Candidates for the examinations should note the following objectives of the FC Paed(SA) training programmes in existence at accredited training institutions:

COURSE OBJECTIVES:

1. The knowledge and application of appropriate basic sciences relevant to the practise of paediatrics and child health in South Africa.

2. The acquisition of problem solving skills and development of attitudes which would enable specialists to respond to the needs of children in the society.

3. Instilling in candidates the highest ethical principles.

4. The acquisition of knowledge and competence to

   ⇒ promote health
   ⇒ prevent disease
   ⇒ deal effectively with common and life-threatening paediatric problems
   ⇒ recognise uncommon diseases and refer these together with the serious problems of common diseases, where necessary, for sub-speciality care.

2. … /

A Fellow of the CMSA should remain a student and a teacher, should be able to become a member of a health team and to acquire basic administrative and management techniques necessary for the practise of paediatrics and child health.

In the attainment of the above, attention must be given to the following:

1. Problem solving skills should be acquired through experience in handling of problems of infants and children at all levels of health care (primary, secondary and tertiary).

2. The development of proper attitudes should derive from humane and responsible interactions with all individuals and institutions involved in child care but especially with children, their parents and families.

3. Ethical principles should be learned from role models and texts and journals devoted to this subject and from the application of these principles in the approach to all individuals and institutions involved in child care but especially to children, their parents and families.

4. Basic scientific methods should be mastered and applied regularly to the solution of problems in paediatrics and child health.

5. During the course of the FC Paed(SA) training, experience should be obtained in working as an integral part of a health team.

6. Administrative and management duties should be assigned to FC Paed(SA) candidates during their training in the various Departments of Paediatrics and Child Health.

Guidelines for Part I of the FC Paed(SA) examination are below. These are to assist candidates in their preparation. In preparing for Part I, trainees are expected to be familiar with material in current text books of paediatrics and with relevant aspects of basic sciences applicable to internal paediatrics and therapeutics. Texts in the major specialities are useful but not essential.

In addition to topics which are covered during the in-service training programme, trainees are expected to have knowledge of advances in physiology and biochemistry applicable to paediatrics, and coverage of review articles and editorial comment in appropriate medical journals is recommended as part of the trainee's preparation, particularly for Part II of the examination.

PART I

The papers should be based mainly on the guidelines provided for candidates and should be structured according to the recommendations of the full panel of FC Paed(SA) examiners.

ie:

a) part of the paper should cover recall of information from textbooks (eg embryology, biochemical pathways etc)
b) part of the paper should cover synthesis or formulation of an answer (eg construction of a table/flow diagram; comparisons and contracts between conditions etc)
c) and a smaller part of the paper should remain for questions which should cover state-of-the-art knowledge, attitudes, opinions etc, and be geared towards identifying the above-average candidates.

Examiners and candidates should note that unnecessary or irrelevant information may result in marks being deducted.

In marking the papers, it is the consensus of examiners that some form of marking schedule is required. It is not acceptable to simply read an answer and give a mark based on one's impression. A schedule should be drawn up awarding marks for particular points.

It is desirable for examiners to discuss candidates' final marks prior to submission of the mark sheets to the Examinations and Credentials Committee. This should be done by means of a telephone conference, and would be for the CMSA's account.

JOHANNESBURG
February 2004

FC PAED(SA) PART I
GUIDELINES FOR CANDIDATES PREPARING FOR CMSA EXAMINATIONS

NOTE WELL: THESE GUIDELINES SHOULD NOT BE REGARDED AS THE SYLLABUS, WHILE IT IS THE INTENTION OF THE COLLEGE OF PAEDIATRICIANS TO ASSIST CANDIDATES BY COVERING AS MUCH OF THE SYLLABUS AS POSSIBLE, EXAMINERS ARE NOT BOUND BY THESE GUIDELINES, AND ARE FREE TO INCLUDE RELEVANT ASPECTS OF PAEDIATRICS NOT INCLUDED IN THE FOLLOWING LISTS.

It is the consensus of the College of Paediatricians that preparation for the Basic Sciences examination should include the following:

1 Neonatology

Normal and common pathological states related to:-

- Initiation of respiration
- Circulatory adaptations to extra-uterine life
- Bilirubin metabolism
- Thermoregulation
- Surfactant production
- Oxygen transport
- Neonatal immune function
- Neonatal metabolism (particularly carbohydrate and protein)
- Neonatal renal function
- Primitive reflexes
- Assessment of intra-uterine growth and foetal well-being
- Placental transfer of hormones, nutrients and drugs
- Lactation

2 Embryology, anatomy, growth and development, normal physiology, and common pathological states of the following systems:

Respiratory System, including

- Surfactant physiology and biochemistry
- Pulmonary ventilation and perfusion

- Oxygen transport … /

- Oxygen transport
- The role of the lung in acid-base balance
- Control of respiration
- Lung volumes
- Lung compliance and resistance
- Tests used in the assessment of lung function, and the interpretation thereof

Cardiovascular System, including

- Cardiac cycle
- Circulatory and blood-pressure control
- Cardiac failure (preload, afterload, contractility)
- Shock
- Basic electrocardiology and the ECG
- Tests used in the assessment of cardiac function, and the interpretation thereof

Gastro-intestinal tract, including

- Digestion and absorption of carbohydrates, fats and proteins
- Vitamins and trace elements
- Secretory functions of the gastro-intestinal tract
- Enterohormones
- Functions of the liver and pancreas
- Tests used in the assessment of gastro-intestinal tract function and the interpretation thereof

Genito-urinary System, including

- Role of the kidney in - maintenance of circulatory volume
  - erythropoiesis
  - acid-base balance
  - osmolality
  - sodium and potassium balance
  - vitamin D metabolism

- The renin-angiotensin system
- Basic tubular and glomerular failure
- Acute and chronic renal failure
- Control of micturition
- Tests used in the assessment of renal function and the interpretation thereof

Endocrine System, including

- General principles of hormones
- Receptors
- Specific organs
  - Hypothalamus
  - Hypophysis
  - Thyroid and parathyroids

- Kidney and Adrenal glands … /

- Kidney and Adrenal glands
- Gonads
- Sexual differentation
  - Changes occurring at puberty
- Pancreas

- Tests used in the assessment of endocrine function and the interpretation thereof

Neurological System, including

- The brain and cranial nerves
- Blood supply of the brain and spinal cord
- Brachial and sacral plexus
- Motor function, tone and reflexes
- Sensory functions
- CSF composition, secretion and circulation
- The blood-brain barrier
- Neurotransmitters
- The neuromuscular interaction and muscle contraction
- Tests used in the assessment of brain (eg EEG, evoked potentials), nerve and muscle function and the interpretation thereof

Immune System, including

- The reticulo-endothelial system
- Cellular and humoral immunity
- Allergic reactions
- The complement system
- Interferon
- Leukotrienes
- Tests used in the assessment of immune function and the interpretation thereof

Haematological System, including

- Composition and properties of blood
- Red and white blood cells
- Haemopoiesis
- Haemoglobin synthesis and degradation
- Platelet function
- Coagulation
- Haemostasis and fibrinolysis
- Haematinics
- Blood groups
- Tests used in the assessment of haematological function and the interpretation thereof

3 The following basic areas should be covered

Body fluids, including

- Fluid compartments

- Osmolality … /

- Osmolality
- Acid-base balance
- Ascites
- Oedema
- Effusions
- Exudates and transudates

Nutrition and Metabolism, including

- Vitamin D and calcium metabolism
- Other vitamins
- Iron metabolism
- Trace elements
- Neonatal and infant feeding

Principles of genetics, including

- Modes of inheritance
- Antenatal diagnosis

Miscellaneous aspects of cellular structure and function, including

- Cell membrane and organelles
- Transport mechanisms
- DNA and RNA synthesis
- Protein synthesis
- Nucleic acids and nucleotides
- Protein, fat and carbohydrate metabolism
- Glycolysis and gluconeogenesis
- The citric and cycle and oxidative phosphorylation
- Enzymes
- Cholesterol metabolism
- Lipoproteins
- Prostaglandins
- Endorphins
- Leukotrienes

4 Candidates should be familiar with aspects of microbiology, including

A working knowledge of the pathophysiology of diseases caused by Bacteria, including Streptococci, Pneumococci, Staphylococci, Neisseria, Haemophilus influenzae, Bordetella, E.Coli, Salmonella and Shigella species, Cholera, Pseudomonas, Yersinia, Brucella, Diphtheria, Listeria, Tetanus, Mycobacteria, Spirochaetes, Chlamydia, Campylobacter

Where relevant, candidates should be aware of bacterial structure, classification and serotyping.

A working knowledge of … /

A working knowledge of the morphology and classification of viruses and the pathophysiology of diseases caused by viruses commonly encountered in paediatric practise.

A working knowledge of the pathophysiology of diseases caused by parasites.

A working knowledge of the diseases caused by fungi and rickettsiae.

5 Candidates should have an understanding of pharmacodynamic principles and be aware of the mode of action of drugs used in paediatric practise

Pharmacodynamics, including

- Drug absorption
- Importance of ionic status
- Transfer across membranes, blood-brain barrier and the placenta
- Binding
- Biotransformation
- Excretion
- Dosage schedules and blood levels
- Drug receptor sites

Drugs used, including

- Antibiotics and antihelminthics
- Antihypertensives
- Bronchodilators
- Cardiac – anti-arrhythmics, inotropes
- Diuretics
- Chemotherapeutic agents
- Antipyretics and anti-inflammatory agents
- Antihistamines
- Sedatives and tranquillisers
- Anticonvulsants

Candidates should also have a working knowledge of the manifestations of overdosage with therapeutic agents, and of poisoning with other agents, and should be aware of the principles of management of poisoning.

6 Candidates should have a working knowledge of terms, values and tests used in scientific studies, including

- Normal distribution
- Mean, median, mode
- Standard deviation
- Null hypothesis
- Sensitivity and specificity
- P values and confidence intervals

- Tests used to test … /

- Tests used to test differences between means of normally and abnormally distributed data (t-test, Mann-Whitney)
- Tests for frequencies (Chi square, Fisher's exact)

JOHANNESBURG
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