



(New Regulations) FCEM(SA) Part I

THE COLLEGES OF MEDICINE OF SOUTH AFRICA

Incorporated Association not for gain
Reg No 1955/000003/08

Part I Examination for the Fellowship of the
College of Emergency Medicine of South Africa

23 March 2010

Combined Basic Sciences

Anatomy, Pathology, Physiology and Pharmacology

Paper I

(3 hours)

All questions to be answered. Each question is to be answered in a separate book (or books if more than one is required for the answer)

- 1 A 75-year-old male patient presents to the emergency department with severe abdominal pain of 5-hours' duration, a blood pressure of 90/50mmHg and a heart rate of 80 beats per minute. You make the provisional diagnosis of ischaemic bowel.
- a) Describe the anatomy of the arterial blood supply to the small and large bowel. (6)
 - b) Describe the pathophysiology of ischaemic necrosis of the bowel. (6)
 - c) Describe the physiology of the development of metabolic acidosis that is associated with ischaemic bowel. (6)
 - d) One of the medications that this patient will receive post-operatively is enoxaparin. Discuss the difference in dosage regimes for routine prophylaxis and for full anti-coagulation. (5)
 - e) How should the dosage be modified in patients with renal dysfunction? (2)
- [25]
- 2 In the context of the prevention and management of acute life threatening sepsis in an adult trauma patient with multiple fractures, write short notes on the following
- a) The use of prophylactic antibiotics. (5)
 - b) The endocrine responses to trauma. (10)
 - c) The appropriate use of inotropes in septic shock. (5)
 - d) The structures that might be damaged in a compound distal femoral fracture. (5)
- [25]
- 3
- a) Describe the anatomical relationships of the right kidney. (9)
 - b) With the use of a table, discuss the factors that influence renin secretion. (7)
 - c) Write short notes on 3 carbapenems, including their spectrum of activity and indications for use. (9)
- [25]

- 4
- a) Describe the anatomical locations involved in speech, and explain the physiology of normal speech. (5)
 - b) Name the various forms of speech disorders, and discuss the pathophysiological process involved in each. (10)
 - c) In determining brainstem death, describe in detail how to perform the various brainstem reflexes, naming the cranial nerves involved in each test. (10)
- [25]



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Paper II

(3 hours)

All questions to be answered. Each question is to be answered in a separate book (or books if more than one is required for the answer)

- 1 A 13-year-old female patient is stung by a wasp and presents to the emergency department with severe breathlessness. She is wheezing and hypotensive.
- a) Describe the pathophysiology of anaphylaxis that results in bronchospasm and hypotension. (15)
 - b) The patient deteriorates and you elect to intubate her by means of a rapid sequence intubation. You choose ketamine as your induction agent. Discuss the advantages and disadvantages of ketamine as an induction agent in this scenario. Include drug dosages in the discussion. (5)
 - c) Once the patient has recovered she complains that she has persistent numbness in her anterolateral thigh. Her first dose of intramuscular adrenaline may have been given in an unusual area.
 - i) What nerve provides sensation to the anterolateral thigh? (1)
 - ii) Describe the position and relations of the nerve as it passes beneath the inguinal ligament. (4)
- [25]
- 2 A young adult is involved in a motor vehicle accident and is being managed in the emergency department. He has multiple fractures, skin lacerations and burns. In the context of managing pain in this patient
- a) Using the patient's femur fracture as an example, describe the structures and processes involved in the transmission and awareness of pain. (7)
 - b) Discuss in detail the appropriate use of analgesia, including drug selection and doses. (7)
 - c) Discuss in detail the effects of your selected analgesia on the cardiovascular system. (6)
 - d) Describe possible complications of not managing this patient's pain effectively. (5)
- [25]

- 3 a) A patient complains that she has been diagnosed previously with carpal tunnel syndrome and that her symptoms are worsening.
- i) Name the nerve which is involved. (1)
 - ii) Which muscles in the hand are innervated by this nerve? (2)
- b) Several factors contribute to thrombus formation. Which of these may contribute to
- i) Alterations in normal laminar flow? (3)
 - ii) Alterations in the constituents of blood? (4)
- c) Draw the oxygen-haemoglobin dissociation curve showing the following effects
- i) Increase in 2,3 diphosphoglycerate (DPG). (2)
 - ii) Hypothermia. (2)
 - iii) Acidosis. (2)
- d) A patient has been prescribed colchicine for his acute gout attack.
- i) How does colchicine relieve the symptoms of gout? (3)
 - ii) What are common symptoms of colchicine toxicity? (3)
- e) Beside allergy, what are the contra-indications for angiotensin converting enzyme (ACE) inhibitors? (3)
- [25]
- 4 a) Discuss disease states affecting the lower urinary tract under the following headings, and include therapeutic options for each condition mentioned
- i) Failure to store urine. (10)
 - ii) Failure of the bladder to empty. (10)
- b) Explain "steal syndromes", giving an example and the clinical significance. (5)
- [25]