



THE COLLEGES OF MEDICINE OF SOUTH AFRICA

Part 1 Examination for the Fellowship of the  
College of Emergency Medicine of South Africa

26 August 2008

Paper 1(A)

Anatomy

(2 hours)

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

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- 1.1 You are attending to a young adult epileptic patient with a bite to the middle of his tongue. Describe:
- a) the neurovascular supply of the tongue (5)
  - b) the muscular control of tongue movements. (5)
- 1.2 A second patient presents with an impacted stone in the parotid gland
- a) What clinical signs are likely to be present? (2)
  - b) What important structures pass through the parotid gland? (3)
  - c) Write short notes on the anatomy of the parotid gland. (5)
  - d) Write short notes on the anatomy of the submandibular gland. (5)
- [25]
- 2.1 Discuss the cubital fossa under the following headings
- a) Name the borders of the cubital fossa. (5)
  - b) What forms the roof and the floor? (2)
  - c) Which structures are found superficial to the roof? (2)
  - d) What is the content of the fossa? (6)
- 2.2 Occlusion of the mesenteric artery is a serious abdominal emergency
- a) Which part of the bowel will become ischaemic? (2)
  - b) Name two branches of the superior mesenteric artery. (2)
- 2.3 In acute appendicitis
- a) Describe Mc Burney's point. (2)
  - b) Which muscles will be divided to do an appedicectomy? (3)
  - c) Name the blood supply of the appendix. (1)

[25]

- 3.1 a) With the aid of a diagram, name the tarsal bones of the foot. (5)  
b) What is the tarsal tunnel, and what is its clinical significance? (2)  
c) What structures are contained in the tarsal tunnel? (6)  
d) Which nerves provide sensory innervation to the skin of the foot, and what is the sensory distribution of each? (5)  
e) Describe the boundaries and contents of the popliteal fossa. (7)  
[25]

4.1 With the aid of diagrams, describe the neuro-anatomy in the following circumstances:

- a) a fracture of the cervical spine resulting in paraplegia (6)  
b) a vascular lesion of the cervical spine resulting in upper limb weakness (6)  
c) a penetrating injury of the thoracic spine affecting the sensations of pain and temperature (6)  
d) neurological complications of a poorly performed lumbar puncture. (7)  
[25]



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Paper 2(A)

Pathology

(2 hours)

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- 1.1 In the context of a patient who present to the Emergency Department with severe epigastric pain
- a) Discuss the salient macroscopic features of peptic ulcers according to site, size and appearance. (15)
  - b) Name the complications of peptic ulcer disease. (5)
- 1.2 Name the pathological findings in typhoid fever. (5)  
[25]
- 2.1 Discuss the pathological processes involved in long bone fracture healing. (8)
- 2.2 How do these correspond to clinical signs and symptoms at various stages of healing? (5)
- 2.3 Write short notes on the pathological basis of:
- a) acute osteomyelitis (4)
  - b) osteoarthritis (4)
  - c) rheumatoid arthritis. (4)
- [25]
- 3.1 a) What is the "anion gap", and what is the normal range? (1)  
b) List the causes of an increased anion gap. (7)
- 3.2 What would be the expected Prothrombin Time, Partial Thomboplastin Time, Thrombin Time and Platelet Count for each of the following conditions?
- a) Liver disease.
  - b) Warfarin therapy.
  - c) Factor VII deficiency.
  - d) Haemophilia.
  - e) Heparin therapy.
  - f) Disseminated intravascular coagulation. (12)

3.3 What pathological conditions could result in decreased cerebrospinal fluid glucose levels? (5)  
[25]

4.1 Describe the pathological process resulting in the stated oncological emergency

- a) Spinal cord compression with breast cancer metastasis. (8)
  - b) Haematemesis with gastric carcinoma. (8)
  - c) Clotting dysfunction with leukaemia. (9)
- [25]



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Paper 3(A)

Physiology

(2 hours)

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- 1.1 a) You are on a night shift at a busy Emergency Department. You are struggling to stay awake. Describe the physiological basis of the sleep cycle. (8)
- b) You are woken by a nurse with a request to see a patient with an impacted food bolus. Write short notes on the physiology of swallowing. (8)
- c) Discuss the regulation of gastric acid production. (9)
- [25]
- 2.1 In respiratory physiology explain the following terms
- a) Physiologic dead space. (2)
- b) Anatomic dead space. (2)
- c) Alveolar dead space. (2)
- d) Residual volume. (2)
- e) Functional residual capacity. (2)
- f) Vital capacity. (2)
- 2.2 Describe the pathways by which increased arterial pCO<sub>2</sub> stimulates ventilation. (13)
- [25]
- 3.1 a) Describe in detail the pathways involved in the control of antidiuretic hormone (ADH) secretion. (10)
- b) List the criteria for diagnosing the syndrome of inappropriate ADH secretion (SIADH). (5)
- c) List the causes of SIADH. (5)
- d) Describe the actions of atrial natriuretic peptide (ANP). (5)

4.1 In the context of a patient who has drowned in the sea

- a) How does aspirating water compromise cardio-pulmonary function? (9)
  - b) Describe the various processes that might result in pulmonary oedema in such a patient. (8)
  - c) How is surfactant produced endogenously, and how does it function? (8)
- [25]



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Paper 4(A): Pharmacology (2 hours)

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

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- 1.1 Discuss the physicochemical characteristics of local anaesthetics, including potency, duration and onset. (5)
- 1.2 Write short notes on
- a) Lignocaine. (5)
  - b) Bupivacaine. (5)
  - c) EMLA cream. (5)
- 1.3 Discuss the treatment of methaemoglobinaemia. (5)  
[25]
- 2 Cephalosporins are often used in the Emergency Department. Name and give the indications for the use of the following in the Emergency Department
- a) First generation Cephalosporins. (5)
  - b) Second generation Cephalosporins. (10)
  - c) Third generation Cephalosporins. (10)  
[25]
- 3.1 Adenosine is commonly used in the emergency treatment of paroxysmal supraventricular tachycardias at an initial dose of 6 mg intravenous push. Indicate under which circumstances this initial dose should be modified? (5)
- 3.2 List 5 drug groups which should be avoided completely for each of the following conditions
- a) Liver disease. (5)
  - b) Renal disease. (5)
  - c) Breast feeding. (5)
- 3.3 In acute poisoning, emergency dialysis would be particularly effective for which drug overdoses? (5)

4.1 With reference to analgesic agents used in emergency medicine

- a) Write short notes on the pharmacokinetics of intravenous opiates. (4)
  - b) Discuss in detail the central nervous system pharmacological effects of the agents referred to in (a) above. (6)
  - c) Tabulate 5 analgesics according to duration of action, half life, adverse effects, indications and dose. (15)
- [25]