

UNIVERSITY OF CAPE TOWN  
STELLENBOSCH UNIVERSITY  
Faculty of Health Sciences

MMed Emergency Medicine  
Primary examination

22 August 2008

**Physiology**

0900 - 1200

**NO CALCULATORS AND/OR  
ELECTRONIC EQUIPMENT/AID WILL BE ALLOWED**

This paper consists of **FIVE** short answer questions, and **TWO** long answer questions. All questions are to be answered.

Each Short answer question is worth 15 marks; each Long answer question is worth 50 marks.

Answer each question in a separate answer book.

### Short answer questions

1. Draw and label the cardiac action potential; explain what processes are responsible for each phase.
2. Write short notes on foetal circulation, and the changes that occur immediately at birth.
3. Using the equation concerned with delivery of oxygen to the tissues, discuss tissue oxygenation.
4. Discuss by means of an illustration, compliance of the lung. Include in this discussion major factors affecting compliance.
5. Describe the physiological process of swallowing.

## Long answer questions

6. Discuss renal blood flow in the resting adult, with particular reference to:
  - a. Regional blood flow and measurements 7
  - b. Effects on glomerular filtration rate and filtration fraction 8
  - c. Autoregulation and neurohumeral control 20
  - d. Response to hypovolaemic shock 15
  
7. With regard to control of Calcium in the body:
  - a. Discuss its physiological role, including normal values and distribution 15
  - b. Explain its hormonal control mechanisms 20
  - c. Tabulate signs and symptoms of hypocalcaemia; list common causes. 15