



# The Hong Kong College of Anaesthesiologists Intermediate Fellowship Examination

**Written Paper in Physiology**  
Friday, 18 February 2005, 09:00 h. – 11:00 h.

The questions carry equal marks. Answer ALL of them.

1. Define the term “anion gap”. Why does it exist? List the circumstances that give rise to abnormalities of the anion gap.
2. How does the respiratory system respond to exercise? Outline how the ventilatory changes are initiated.
3. Compare and contrast the electrophysiology of the cardiac action potential at the sino-atrial node to that of the ventricular myocyte.
4. Outline the physiology and factors affecting the airway humidification in the normal adult. List the advantages of artificial humidification in the ventilated patient.
5. Outline the production of carbon dioxide and factors affecting the arterial carbon dioxide tension in the body.
6. Briefly comment on factors that determine cardiac contractility of the left ventricle. Outline how this may be quantitatively assessed in man.
7. Explain the differences in the effects of true shunt *versus* scatter of ventilation/perfusion (V/Q) ratio on arterial oxygenation.
8. Use a table to compare and contrast skeletal and smooth muscle.
9. Describe the circulatory changes that occur at birth.
10. Where is aldosterone produced in the body? What are its physiological effects and how is its secretion controlled?
11. Define the terms “accuracy” and “precision”. Briefly comment on some of the important properties of a continuous measuring system.
12. Discuss with examples the factors determining the movement of fluid across the intravascular and interstitial compartments.