



**The Hong Kong College of Anaesthesiologists  
Intermediate Fellowship Examination**

**Written Paper in Physiology**

**Friday, 2 July 2004, 09:00 h. – 11:00 h.**

The questions carry equal marks. Answer ALL of them.

1. Briefly describe how the kidney excretes an acid urine.
2. Briefly describe the factors that influence the mixed venous partial pressure of oxygen.
3. Describe and compare the cardiac performance of infants to that of adults.
4. Briefly describe how the  $\text{Na}^+\text{-K}^+$  pump ( $\text{Na}^+\text{-K}^+$  ATPase) works and its importance to cellular function.
5. Briefly describe the ABO and Rhesus blood group systems indicating which antigens and antibodies are found in each group.
6. Briefly describe how insulin reduces blood glucose levels.
7. Describe how coughing effort is modified in an awake person breathing through an endotracheal tube.
8. Describe the physiological changes in a patient who has a biliary fistula that leads to complete loss of bile.
9. Briefly describe how cardiac output is measured using a thermodilution technique.
10. Briefly describe the factors that influence hepatic blood flow.
11. Outline the physiological changes that predispose pregnant patients with mitral stenosis to the development of pulmonary oedema after delivery.
12. A healthy lowlander climbed to an altitude of 10,000 ft (3,300 m), where the barometric pressure is 547 mm Hg (73 kPa). Briefly show how the climber's arterial oxygen tension breathing air is calculated. Describe the physiological responses.

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