



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

Written Paper in Physiology
Friday, 22 February 2002, 09:00 h. – 11:00 h.

Answer ALL questions

- 1. Define preload and afterload of the heart. Explain how positive pressure mechanical ventilation affects the preload, afterload and cardiac output.**
- 2. Explain how arterial pressure readings from an oscillometric cuff (Dinamap®) over the right brachial artery may differ from that of a pressure transducer connected to a catheter in the left radial artery of the same patient.**
- 3. Explain how the cerebral perfusion is maintained when a healthy adult stands up from a supine position.**
- 4. Compare and contrast capnography using mainstream and sidestream analysers.**
- 5. Describe the cough reflex. Briefly explain how coughing is modified in an awake person breathing through an endotracheal tube.**
- 6. List the primary causes of arterial hypoxaemia. Explain the effects of breathing 100% oxygen on the arterial partial pressure of oxygen for each cause.**
- 7. Briefly outline the functions of the hypothalamus.**
- 8. Describe the roles of mast cells in all types of anaphylactic reactions.**
- 9. Describe the physiological control of plasma calcium concentration.**
- 10. Describe the factors that control aldosterone secretion.**
- 11. Describe the changes in Na^+ and K^+ conductance during the action potential of a nerve.**
- 12. Describe how the kidney handles the excretion of potassium.**