



**The Hong Kong College of Anaesthesiologists  
Intermediate Fellowship Examination  
Written Paper in Physiology**

**July 16, 2010**

**09:00 - 11:00**

1. Draw the pressure/volume curve for the left ventricle. Briefly explain the changes in the pressure/volume curve under the following conditions:
  - (a) infusion of inotropes
  - (b) diastolic dysfunction of the left ventricleWhat is the main physiological difference between dilated & hypertrophic cardiomyopathy?
2. Describe the complement cascade and outline its role in an immunological response.
3. Outline the physiological response to starvation for 5 days. Briefly mention the anaesthetic implications of anorexia nervosa.
4. Outline the physiological factors contributing to the development of intrinsic PEEP. What ventilatory strategies could be used to manage patients with high intrinsic PEEP?
5. Outline the composition and production of cerebrospinal fluid.
6. Define "Strong Ion" and "Strong Ion Difference". Give 3 causes for acidosis due to strong ion difference which can occur during anaesthesia.
7. What are the factors affecting renal blood flow? Outline one technique for measuring renal blood flow.
8. Explain how the body regulates heart rate. List the possible causes for intraoperative tachycardia.
9. Outline the respiratory changes in a healthy 70 kg adult after losing 2 liters of blood within 30 minutes.
10. Define the term "thermal neutral zone". What is the thermal neutral zone of a neonate? How does the maintenance of body temperature in a neonate differ from that in an adult?
11. Outline the cardiovascular changes in pregnancy. Explain why parturient with severe mitral stenosis is prone to pulmonary edema during the peripartum period.
12. Define Ultrasound. Briefly explain the physical principles behind ultrasound imaging and Doppler measurement of flow velocity.

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