



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

Friday, 10 February 2012, 09:00 AM - 11:00 AM

The questions carry equal marks. Answer ALL of them.

1. Discuss the principles of using electroencephalography for the monitoring of the depth of anaesthesia.
2. Describe the changes of cardiac function with aging (changes caused by age related diseases are NOT required).
3. Discuss the factors affecting lung perfusion.
4. What are latex allergens (25%)? Explain the mechanisms of latex allergy (75%).
5. Outline the physiologic effects of metabolic acidosis (50%). Describe the features of the bicarbonate buffer system that makes it an efficient buffer system (50%).
6. Compare and contrast the factors that determine the passage of fluid across the systemic capillary membrane, the pulmonary alveolar membrane, and the glomerular membrane.
7. Outline the principles of blood groupings that allow O negative blood to be safely transfused to most patients.
8. Explain the physiological factors that determine intracranial pressure (ICP) (50%), and explain how the head-down position affects ICP, cerebral blood flow and cerebrospinal fluid dynamics (50%).
9. Describe the descending modulatory system of pain.
10. Outline the physiological consequences of perioperative mild hypothermia.
11. Describe the counter current mechanism of the kidney involved in concentrating urine.
12. Outline the possible causes of the following arterial blood gas from a person breathing air at rest:

pH 7.31 oxygen tension 7.8kPa carbon dioxide tension 6.2kPa
plasma bicarbonate concentration 26 mmol/L

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