



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

Friday, 13th February 2015, 09:00 - 11:00

The questions carry equal marks. Answer ALL of them. For questions with multiple parts, allocation of marks is indicated in the brackets.

1. Describe the mechanisms that ensure adequate oxygen transfer from maternal blood to the fetal brain.
2. Explain how the resting membrane potential is related to the distribution of various ions across the cell membrane (50%). How does hypokalaemia cause skeletal muscle weakness (50%)?
3. Outline the complications of massive blood transfusion.
4. Outline the factors affecting “Preload” of the left ventricle.
5. Outline the physical principles of transcranial Doppler ultrasonography (TCD) (50%). What physiological information can be obtained from TCD, and what are the limitations (50%)?
6. Describe the changes in respiratory functions during moderate exercise.
7. Describe the factors that affect airway resistance.
8. Discuss the endocrine functions of the kidney.
9. List the physiological factors affecting gastric emptying (50%). Briefly explain the physiological basis for increased risks of regurgitation and aspiration for mothers in labour presenting for general anaesthesia (50%).
10. Explain the importance of controlling humidity in the operating theatre (30%). Describe the options for the measurement of humidity (70%).
11. Assuming that orally ingested sodium bicarbonate tablets are completely absorbed. Discuss the physiological consequences of taking such tablets orally.
12. Compare the anatomy and physiology of smooth muscles and skeletal muscles.

END OF PAPER