



The Hong Kong College of Anaesthesiologists
Intermediate Fellowship Examination
Written Paper in Physiology
Friday, 5 February 2016, 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. Outline the components of parenteral nutrition and explain the rationale for the use of each component.
2. Explain the physiological factors that may decrease mixed venous blood oxygen saturation.
3. (1) With the aid of a labelled diagram, explain the changes in pressure tracings when a pulmonary artery catheter is advanced from a central vein to a branch of the pulmonary artery and then becomes wedged. (50%)
(2) Discuss the use of the pulmonary capillary wedge pressure as a measure of preload of the left ventricle. (50%)
4. Outline the physiology of the red blood cell (erythrocyte). In your answer, include the normal values, structure, production, function and degradation of red blood cell.
5. Outline the similarities and differences between myoglobin and adult haemoglobin, explaining the physiological relevance of the differences.
6. Write short notes on the factors that affect respiratory compliance.
7. Write short notes on pneumotachograph. In your answer, include the physical and mechanical principles of function and potential inaccuracies for measuring airflow.
8. Explain how bicarbonate, phosphate and plasma proteins are used as buffers in humans.
9. What is normal resting membrane potential in a resting neurone (nerve cell)? (10%)
Describe how it is generated. (90%)
10. Describe the physiological changes to the foetal circulation at birth.
11. List the physiological factors that are involved in the control of cerebral blood flow.
12. Write short notes on hormones produced by kidneys.

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