



The Hong Kong College of Anaesthesiologists

Intermediate Fellowship Examination

Written Paper in Physiology

19 April 2022 (Tuesday)

09:00 - 11:30 hours (Online)

1. Describe the acute physiological responses to an acute hemorrhage of 2 litre blood in a 70kg adult.
2. Describe the features of a red blood cell that facilitate oxygen transport.
3. (i) Describe the arterial baroreceptor reflex in the control of arterial blood pressure. (70%)
(ii) Outline the cardiovascular responses upon clamping and unclamping of carotid artery during carotid endarterectomy. (30%)
4. (i) How does nephron handle blood glucose normally in a 70kg healthy adult? (70%)
(ii) Briefly describe the metabolic consequences of prolonged fasting with renal tubular glucose reuptake blocked. (30%)
5. Outline
(i) the physical principles of electrocardiography (ECG) and the possible sources of errors. (50%)
(ii) What is the difference between monitor mode and diagnostic mode? (50%)
6. Discuss
(i) the effects of pregnancy on the airway (10%) and
(ii) maternal respiratory system (90%)
that are relevant to the practice of anaesthesia.
7. Outline the production, circulation and absorption of cerebrospinal fluid (CSF). (60%)
Explain how the intracranial pressure affects production and absorption of CSF. (40%)
8. Outline
(i) the mechanism of gastric acid production and secretion. (40%)
(ii) the control of gastric acid secretion. (60%)
9. (i) Define "left ventricular contractility" (20%)
(ii) Describe the events at the cellular level that contribute to left ventricular contractility (20%)
(iii) Outline the factors that can decrease left ventricular contractility during general anaesthesia (60%)
10. Write short notes on non-respiratory functions of the lung.
11. Outline, with appropriate examples in anaesthesia if applicable, the physiological causes of tissue hypoxia.
12. Define morbid obesity. (20%)
Describe the effects of obesity to preload and afterload of the heart. (80%)

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