



## **The Hong Kong College of Anaesthesiologists**

### **Intermediate Fellowship Examination**

#### **Written Paper in Physiology**

**Friday 16<sup>th</sup> February 2001, 14:00 h to 16:00 h**

#### **ANSWER ALL QUESTIONS**

1. Explain the functions, formation and absorption of cerebrospinal fluid (CSF).
2. Briefly outline the physiological consequences of a rapid blood loss of 1 litre in a pregnant lady (60kg) at 32 weeks of pregnancy.
3. Describe the normal plasma level and function of magnesium in the body. Briefly outline the causes of magnesium deficiency.
4. Describe the compensatory changes that occur with acute normovolaemic haemodilution resulting in a drop of haematocrit from 0.45 to 0.20.
5. What is 2-3 Diphosphoglycerate (DPG)? How is it produced in the red blood cells? Briefly describe the physiological role of 2-3 DPG and its relevance in altitude exposure, anaemia, and blood transfusion?
6. Outline the control of body water by the kidneys.
7. Describe the function, distribution and turnover of the albumin in the body.
8. Outline the control of arginine vasopressin secretion.
9. A 70 years old man (70 kg) has a gastric cancer causing outlet obstruction with nasogastric losses of 1000 mL per day for 7 days. He develops metabolic alkalosis. Describe the electrolyte changes and explain how the metabolic alkalosis develops in this man. Justify the choice of replacement fluid.
10. Explain how blood gases and acid-base status is measured in modern blood gas analyzers.
11. Describe how the pulmonary circulation differs from the systemic circulation.
12. Explain the factors that affect resistance to gas flow in the respiratory tract.