



SECOND EXAMINATION FOR MEDICAL DEGREES

PHYSIOLOGY II

March 2010

TIME: THREE HOURS

Answer all questions.

Answer each question in a separate book.

1. Two patients (Patient A and Patient B) were admitted to the hospital after a road traffic accident. Patient A had severe bleeding while patient B was suspected of having a head injury with increased intracranial pressure but with minimal bleeding.
 - 1.1 State the expected changes in heart rate and blood pressure in
 - 1.1.1 patient A. (5 marks)
 - 1.1.2 patient B. (5 marks)
 - 1.2 Explain the physiological mechanisms for the development of changes stated above for
 - 1.2.1 patient A. (40 marks)
 - 1.2.2 patient B. (35 marks)
 - 1.3 State three important measures that should be taken when treating patient A. (15 marks)

2.
 - 2.1 Explain the term
 - 2.1.1 hypoxia. (10 marks)
 - 2.1.2 cyanosis. (10 marks)
 - 2.1.3 hypercapnoea. (10 marks)
 - 2.2 Explain why the following **do not** develop when a healthy person does moderate muscular exercise.
 - 2.2.1 Hypercapnoea (35 marks)
 - 2.2.2 Hyperthermia (35 marks)

3. A 10 year-old boy developed vomiting following consumption of spoiled milk. His mother was informed by the doctor that the boy had developed a gastrointestinal infection and should be treated with some drugs including oral rehydration solution.
 - 3.1 List **five** protective mechanisms that operate in the gastrointestinal system against bacterial infections. (15 marks)
 - 3.2 Explain the physiological basis in giving oral rehydration solution to this boy. (40 marks)
 - 3.3 Discuss the possible acid-base disturbance that could develop in this boy due to vomiting. (45 marks)

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4. Give physiological explanations for the following.

- 4.1 Vertigo is induced when cold water is instilled into one ear. (25 marks)
- 4.2 A person with conduction defect in one ear hears better from that ear when the base of a vibrating tuning fork is kept on the vertex. (25 marks)
- 4.3 Tendon reflexes are absent in lower motor neurone lesions. (25 marks)
- 4.4 A dancer performs better after practicing the steps several times compared to an untrained dancer. (25 marks)

5. Write short notes on the following.

- 5.1 Negative feedback regulation of hormones (25 marks)
- 5.2 GFR (25 marks)
- 5.3 Polycythaemia (25 marks)
- 5.4 Measurement of plasma volume (25 marks)