



SECOND EXAMINATION FOR MEDICAL DEGREES

PHYSIOLOGY II

NOVEMBER 2009

TIME: THREE HOURS

Answer all questions.

Answer each question in a separate book.

1. Explain why

- 1.1. angiotensin II receptor blockers are used in treating hypertension. (40 marks)
- 1.2. systolic blood pressure is elevated while diastolic blood pressure is reduced during muscular exercise. (40 marks)
- 1.3. the 'a' wave of the jugular venous pulse is larger than normal in pulmonary stenosis. (20 marks)

2. Two persons participated in a marathon race. One person is anaemic and he stopped halfway through the race. The other person continued to run and completed the marathon. Both of them continued to breathe fast for a considerable period of time after stopping running.

- 2.1 Describe the physiological changes that occur in O_2 and CO_2 in the (i) lungs, (ii) venous blood, (iii) arterial blood and (iv) muscle tissue during this whole period in the normal person. (60 marks)
- 2.2 What is the role of H^+ in the regulation of respiration during this period in the normal person? (20 marks)
- 2.3 Describe the deviations of the above (2.1 and 2.2) in the anaemic person from the normal person. (20 marks)

3.

- 3.1 Define renal clearance. (10 marks)
- 3.2 A patient with diabetes mellitus had plasma glucose concentration of 250 mg/dL. His urine flow rate was 180 mL/hour while his urine glucose concentration was 500 mg/dL. Calculate his renal glucose clearance showing steps in your calculation. (30 marks)
- 3.3 Explain the role of different factors that determine the urine output in a healthy person. (60 marks)

4. A doctor examined a patient who underwent total thyroidectomy 24 hours after the surgery. He decided that the patient has latent tetany. He elicited two clinical signs before deciding on this.

- 4.1 What is the hormone responsible for development of latent tetany in this patient? (5 marks)
- 4.2 Explain physiologically why this patient is in latent tetany. (25 marks)
- 4.3 Name the two clinical signs that were likely to have been elicited by the doctor before deciding on the presence of latent tetany. (10 marks)
- 4.4 Hormonal assay showed that his T_4 and T_3 were low while TSH and cortisol were high in the blood. Explain these findings. (60 marks)

5. Write short notes on

- 5.1 aspirin therapy in prevention of thrombosis. (25 marks)
- 5.2 role of *Helicobacter pylori* in the development of peptic ulcer. (25 marks)
- 5.3 precocious puberty. (25 marks)
- 5.4 endorphins. (25 marks)