UNIVERSITY OF RUHUNA

FACULTY OF MEDICINE

SECOND EXAMINATION FOR MEDICAL DEGREES

PHYSIOLOGY II

July 2013

TIME: THREE HOURS

Answer all questions. Answer each question in a separate book.

1. **A 56 year-old farmer from North Central Province presented with weakness, malaise and bone pain for few months. Investigations revealed (a) low creatinine clearance, (b) low blood haemoglobin concentration and (c) X-ray features suggestive of osteomalacia. He was diagnosed to have chronic renal failure.**

   1.1 Name **three** hormones which are likely to have abnormal serum concentrations in this patient. **(15 marks)**

   1.2 Explain the reasons for the findings (a), (b) and (c) in this patient. **(60 marks)**

   1.3 Briefly describe the acid-base disturbance that could be seen in this patient. **(25 marks)**

2. 2.1 Define oedema. **(10 marks)**

   2.2 Describe Starling forces. **(30 marks)**

   2.3 Explain how disturbances in Starling forces lead to oedema in

   2.3.1 right heart failure. **(20 marks)**

   2.3.2 nephrotic syndrome. **(20 marks)**

   2.3.3 chronic lymph oedema. **(20 marks)**

3. **A boy accidentally stepped his right leg on a sharp nail. He quickly withdrew his leg due to pain but did not fall since his extended left leg supported his body.**

   Using labeled diagrams, **explain** the neurological basis for

   3.1 withdrawal of his right leg. **(50 marks)**

   3.2 extension of his left leg. **(50 marks)**

4. **O_2 saturation (% saturation of Hb with O_2 in blood) measured on a finger tip using a pulse oxymeter was found to be low in two patients admitted to emergency treatment unit. Patient A was admitted with a severe chest injury following a road traffic accident. He complained of severe chest pain during inspiration. Patient B was in severe left ventricular failure. On admission, both were treated with O_2 by nurses. Later, only patient A was artificially ventilated along with oxygen.**

   4.1 Explain the physiological basis of having low O_2 saturation in

   4.1.1 patient A. **(25 marks)**

   4.1.2 patient B. **(25 marks)**

   4.2 Compare the benefits of giving O_2 treatment to these two patients. **(25 marks)**

   4.3 How does artificial ventilation help patient A? **(25 marks)**

5. Explain the physiological basis of the following.

5.1 It takes several minutes for a person to get a clear vision when he moves from a dark place to a brightly lit place. **(25 marks)**

5.2 There is no lactation until delivery though the serum prolactin level is high during pregnancy. **(25 marks)**

5.3 A patient who is on thyroxine treatment following total thyroidectomy is found to have high serum TSH concentration. **(25 marks)**

5.4 Patients with resection of the terminal ileum develop anaemia. **(25 marks)**

====== The End ======