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UNIVERSITY OF RUHUNA – FACULTY OF MEDICINE
ALLIED HEALTH SCIENCES DEGREE PROGRAMME
FIRST BPHARM PART II EXAMINATION - JANUARY 2017
PH 1254 HUMAN BIOLOGY II (SEQ)

TIME: THREE HOURS

INSTRUCTIONS

- Answer **all** questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

1.

1.1 Define the renal clearance of a substance? ***(10 marks)***

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1.2 List **five** factors that affect the Glomerular Filtration Rate (GFR). ***(20 marks)***

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1.3 Describe briefly difference between GFR and renal clearance. ***(20 marks)***

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1.4 Describe briefly what happens to Na^+ which is filtered into the renal tubules. ***(20 marks)***

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1.5 List **two** hormones that are important for regulation of Na^+ excretion from body.

(***10 marks***)

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1.6 Describe briefly functions of **two** hormones produced by the kidney. (***20 marks***)

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2.

2.1

2.1.1 Describe the mechanism of development of resting membrane potential in a nerve cell. (***25 marks***)

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2.1.2 Describe the mechanism of development of action potential in a nerve cell.

(***25 marks***)

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2.2

2.2.1 List **two** ovarian hormones and mention their main actions on uterus. (***10 makes***)

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2.2.2 Describe the hypothalamic-pituitary regulation of ovarian hormones. (***30 marks***)

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2.2.3. What is "LH surge"? (***10 marks***)

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3.

3.1 State the normal pH of arterial blood. ***(05 marks)***

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3.2 State the major buffer systems in the blood. ***(15 marks)***

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3.3 State the major intracellular buffers. ***(10 marks)***

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3.4 Describe the role of kidney in the maintenance of pH in the body. ***(30 marks)***

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3.5 Explain the term "metabolic acidosis". ***(20 marks)***

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3.6 State **two** diseases leading to metabolic acidosis. ***(10 marks)***

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3.7 State a situation which results in respiratory alkalosis. ***(10 marks)***

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4. A lady is presented with polyuria. On examination, she was found to have central obesity and hypertension. She is currently on long-term prednisolone (a steroid drug) treatment.

4.1

4.1.1 What is the probable diagnosis? ***(10 marks)***

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4.1.2 What would be her ACTH level in this patient? ***(10 marks)***

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4.1.3 What abnormality would you expect in her bones? ***(15 marks)***

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4.1.4 Briefly explain how she developed polyuria. ***(15 marks)***

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4.2

4.2.1 Explain the difference between isometric muscle contraction and isotonic muscle contraction, giving examples. (***15 marks***)

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4.2.2 Explain the term "absolute refractory period" in relation to action potentials in a skeletal muscle. (***15 marks***)

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4.2.3 Explain why skeletal muscle can be tetanized while cardiac muscle cannot be tetanized. (***20 marks***)

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5.

5.1 Briefly describe functions of the female reproductive system using a labeled diagram. (***30 marks***)

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5.2 Describe the spermatogensis. (***20 marks***)

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5.3

5.3.1. Describe the urinary system. (***25 marks***)

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5.3.2. Name the structures belongs to both urinary tract and genital tract in male.

(10 marks)

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5.4 Name the organs belongs to reticuloendothelial system. ***(15 marks)***

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6.

6.1 Name three (**03**) endocrine organs located in the head and neck region. ***(10 marks)***

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6.2 Briefly explain the blood supply to the thyroid gland. ***(20 marks)***

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6.3 Name three (**03**) types of vertebrae. ***(10 marks)***

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6.4 Explain the curvatures of the vertebral column. ***(20 marks)***

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6.5 What are the main divisions of nervous system? ***(15 marks)***

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6.6 Briefly explain the anatomy of autonomic nervous system. ***(25 marks)***

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