



**UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES**

**DEPARTMENT OF PHARMACY**

**FIRST BPHARM PART II EXAMINATION – SEPTEMBER/ OCTOBER 2020**

**PH 1254 HUMAN BIOLOGY II (SEQ)**

**TIME: THREE HOURS**

**INSTRUCTIONS**

- There are **six** questions in the parts **A, B, C, D, E** and **F** in the SEQ paper.
- Answer **all** questions.
- No paper shall be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

**PART A**

01.

1.1

- 1.1.1 Describe the regulation of testosterone secretion. (20 marks)
- 1.1.2 List five actions of testosterone. (10 marks)
- 1.1.3 Describe how a lower temperature is maintained in testis compared to the rest of the body. (20 marks)

**PART B**

1.2

- 1.2.1 Draw a labelled diagram to show the temporal relationship between an action potential and the contractile response of a skeletal muscle. (15 marks)
- 1.2.2 Describe the mechanism of action of depolarizing neuromuscular blocking drugs. (15 marks)
- 1.2.3 Describe the length-tension relationship of a skeletal muscle using a labelled diagram. (20 marks)

**PART C**

02.

2.1

- 2.1.1 Define oedema. (10 marks)
- 2.1.2 Describe the physiological basis of the formation of generalized oedema in nephrotic syndrome. (25 marks)

2.2

- 2.2.1 What is a goiter? (10 marks)
- 2.2.2 State four causes for goiters. (10 marks)
- 2.2.3 State four features of hyperthyroidism. (10 marks)

2.3

- 2.3.1 What is diabetes mellitus? (10 marks)
- 2.3.2 What are the two major types of diabetes mellitus? (10 marks)
- 2.3.3 State three major symptoms of diabetes mellitus. (7.5 marks)
- 2.3.4 List three types of investigations for diagnosis of diabetes mellitus. (7.5 marks)

03.

3.1 A lady is presented with polyuria. She gives a history of long-term treatment for osteoarthritis with prednisolone. On examination, she is found to have central obesity, moon face and hypertension.

- 3.1.1 What is the probable diagnosis? (10 marks)
- 3.1.2 What would be her ACTH level? (10 marks)
- 3.1.3 Explain the changes you would expect in her bones? (10 marks)
- 3.1.4 Explain the changes you would expect in her blood sugar level (10 marks)
- 3.1.5 Explain the development of hypertension in this patient (10 marks)

## PART D

3.2

3.2.1 State two substances reabsorbed at each of the following parts of the nephron. (16 marks)

- Proximal convoluted tubule
- Loop of Henle
- Distal convoluted tubule
- Collecting duct

3.2.2 State two substances secreted into each of the following locations. (04 marks)

- Proximal convoluted tubule
- Distal convoluted tubule

3.3 Antidiuretic hormone (ADH) and the renin-angiotensin- aldosterone-system (RAAS) play a major role in maintaining the ECF volume in the body.

- 3.3.1 State two factors which stimulate the secretion of ADH. (10 marks)
- 3.3.2 Outline how RAAS maintains homeostasis during dehydration. (20 marks)

04.

- 4.1 Using a graph, outline the ionic basis of an action potential in an axon. (20 marks)
- 4.2 Outline the steps involved in transmitting an action potential across a neuromuscular junction (NMJ). (20 marks)
- 4.3 Write short notes on Myasthenia Gravis. (20 marks)
- 4.4
  - 4.4.1 Draw and label the circle of Willis. (20 marks)
  - 4.4.2 Outline the mechanisms of regulation of cerebral blood flow. (20 marks)

**PART E**

05.

- 5.1 Illustrate the urinary system using a labelled diagram. (15 marks)
- 5.2 Describe the anatomical adaptations of the female reproductive system for its function. (30 marks)
- 5.3 Describe the spermatogenesis using diagrams. (30 marks)
- 5.4 Describe the components of the reticulo-endothelial system. (25 marks)

**PART F**

06.

- 6.1 Name the cranial nerves in order. (25 marks)
- 6.2 Name the extrinsic muscles of the eye and give the function of each of them. (25 marks)
- 6.3 Name the hormones secreted from the anterior pituitary and the posterior pituitary. (20 marks)
- 6.4 Write short notes on typical and atypical ribs. (30 marks)

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