



FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA
SECOND EXAMINATION FOR MEDICAL DEGREES
PHYSIOLOGY PAPER II

Time: THREE HOURS

Answer all FIVE questions

Answer EACH QUESTION in a SEPARATE BOOK

Use diagrams where necessary

NOVEMBER 2020

1.

1.1 Name the body fluid compartments and compare the composition of those body fluid compartments. (40 marks)

1.2 Describe the role of macrophages in immunity. (30 marks)

1.3 Describe the role of cytotoxic T lymphocytes in immunity. (30 marks)

2.

2.1.

2.1.1 State the Starling's law of the heart. (10 marks)

2.1.2 Describe how the above law can be used to explain the change in cardiac output during exercise. (40 marks)

2.2.

2.2.1 State **five (05)** clinical features of hypovolaemic shock. (10 marks)

2.2.2 Explain **two (02)** endocrine mediated compensatory mechanisms operating **through kidneys** in hypovolaemic shock. (40 marks)

3.

3.1 Describe the changes in the intrapleural pressure, alveolar pressure and transpulmonary pressure during a normal respiratory cycle. (50 marks)

3.2 Give physiological explanations to the following:

3.2.1 Athletes trained in high altitudes perform better than others. (25 marks)

3.2.2 Respiratory rate continues to be high for some length of time even after finishing a strenuous exercise session. (25 marks)

4.

4.1 Describe how the pituitary gland is involved in controlling the activity of the thyroid gland. (50 marks)

4.2 Describe the regulation of aldosterone secretion. (50 marks)

5.

5.1

5.1.1 Describe the neuromuscular transmission. (25 marks)

5.1.2 Explain the mechanism of development of muscle fatigue with repeated activity in myasthenia gravis. (25 marks)

5.2

5.2.1 List the differences between superficial pain and visceral pain. (20 marks)

5.2.2 Describe the mechanism of development of pain in the inner aspect of the left arm in patients with acute myocardial infarction. (30 marks)