



UNIVERSITY OF RUHUNA – FACULTY OF MEDICINE

ALLIED HEALTH SCIENCES DEGREE PROGRAMME

FIRST BPHARM PART I EXAMINATION – JUNE 2015

PH 1144: HUMAN BIOLOGY I (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 The heart is a pyramid shaped hollow muscular organ lying within the pericardium in the mediastinum.

1.1.1. Describe briefly the pericardium.

(15 marks)

.....

.....

.....

.....

.....

.....

.....

1.1.2. State the nerve supply of the pericardium.

(06 marks)

.....

.....

.....

1.1.3. List the openings of the right atrium.

(04 marks)

.....

.....

1.1.4. List the components of the conducting system of the heart.

(10 marks)

.....

.....

.....

1.1.5 Write a short note on coronary arteries.

(15 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

1.2. The respiratory system extends from external nasal meatus to the alveolus of the lung.

1.2.1. State the functions of the larynx.

(06 marks)

.....

.....

.....

1.2.2. Describe briefly the trachea.

(10 marks)

.....

.....

.....

.....

.....

.....

1.2.3. Describe briefly the pleura and its nerve supply.

(15 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

1.2.4. State **four (04)** differences of left and right lungs.

(04 marks)

.....

.....

.....

.....

.....

1.2.5. Describe briefly the blood supply of the lungs.

(15 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

2.

2.1. Draw a labeled diagram of a human cell (show the different types of organelles present).

(15marks)

2.2. State the types of epithelial tissues. Give **one (01)** structure as an example for **each** type of epithelial tissue you mentioned. (25 marks)

(25 marks)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

2.3. List the parts of the gastrointestinal tract.

(15 marks)

[illegible]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings on the page.

[illegible]

3.

3.1. Fill in the blanks.

(10 marks)

- a. The pacemaker of the heart is
- b. Normal range of the heart rate is to beats per minute.
- c. Heart rate is increased by an increase in the activity of nerves.
- d. The relationship between the initial fibre length and the force of contraction of the heart muscle is described by of the heart.
- e. During systole, blood flow to the of the left ventricle is reduced.

3.2. Draw a diagram to show the action potentials that occur in the pacemaker cells of the heart and explain the ionic basis of it.

(20 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

3.3. Explain what happens to the above action potentials when the vagal nerve activity on the heart is increased.

(20 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

4.

4.1. Blood contain red cells, white cells and platelets. Anaemia is a common disease that affects red blood cells.

4.1.1. Define anaemia.

(10 marks)

.....

.....

.....

.....

.....

4.1.2. Classify anaemia according to morphological changes.

(20 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

4.1.3. What are the morphological changes seen in iron deficiency anaemia?

(10 marks)

.....

.....

.....

.....

.....

.....

.....

.....

4.1.4. State **four (04)** causes for iron deficiency anaemia.

(10 marks)

.....

.....

.....

.....

.....

.....

.....

5.

5.1. List **five (05)** functions of the lung. **(20 marks)**

.....

.....

.....

.....

.....

5.2. What are the factors that affect on gas exchange in the alveoli? **(20 marks)**

.....

.....

.....

.....

.....

.....

.....

.....

.....

5.3. What is tidal volume? **(10 marks)**

.....

.....

.....

.....

5.4. Base of the lung is better ventilated than the apex of the lung during inspiration. Explain the physiological basis of this phenomenon. **(25 marks)**

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

5.5. Explain the effect of chemoreceptors on regulation of respiration.

(25 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

6.

6.1. List **five (05)** functions of saliva.

(25 marks)

.....

.....

.....

.....

.....

.....

6.2. Explain the physiological basis of control of gastric acid secretion by proton pump inhibitors.

(30 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- 6.3. A Patient who had undergone gastrectomy (removal of stomach) developed megaloblastic anemia a few months later. Explain the physiological basis for it. **(20 marks)**

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- 6.4. What is peristalsis? Describe briefly. **(25 marks)**

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....