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UNIVERSITY OF RUHUNA – FACULTY OF MEDICINE

ALLIED HEALTH SCIENCES DEGREE PROGRAMME

FIRST BPHARM PART I EXAMINATION – AUGUST 2017

PH 1144 HUMAN BIOLOGY I (SEQ)

TIME: THREE HOURS

INSTRUCTIONS

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

1.

1.1. Explain the “ejection fraction” of the left ventricle. **(20 marks)**

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1.2. Draw a labeled diagram of the flow-volume curve of the left ventricle. **(20 marks)**

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1.3. Explain the importance of the diastole for cardiac function.

(20 marks)

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1.4. Write **four** different types of shock.

(20 marks)

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1.5. Describe briefly the compensatory mechanisms that occur in a patient who went into shock following a massive blood loss.

(20 marks)

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2. 2.1. What is tidal volume? (10 marks)

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2.2. A diver was using a 40 cm long tube with a volume of 50 mL to breath, when he was diving near the surface of water. Then he thought of using 120 cm long tube with a volume of 150 mL when he wanted to dive deeper. Comment on the effect of longer tube on his respiration. (30 marks)

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2.3. Using a diagram explain the oxygen hemoglobin dissociation curve. (20 marks)

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2.4. When an individual climbed to a high mountain he developed hypoxic hypoxia.
2.4.1. What is hypoxic hypoxia? (10 marks)

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2.4.2. What are the compensatory physiological changes that occur in this individual?

(30 marks)

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3.

3.1.

3.1.1. Name **two** hormones secreted by the gastrointestinal system. *(05 marks)*

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3.1.2. State **two** actions of each hormone you stated in 3.1.1 *(10 marks)*

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3.1.3. Using a diagram of a parietal cell illustrate the regulation of gastric acid secretion. *(30 marks)*

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3.1.4. Describe the physiological basis for development of peptic ulceration in NSAID treatment. *(30 marks)*

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3.2. 'One ligand may interact with multiple receptors or receptor subtypes with different affinity'.

Explain this statement.

(25 marks)

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4.

4.1.

4.1.1. What are the types of proteins in the cell membrane?

(10 marks)

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4.1.2. State the basic functions of the proteins mentioned above.

(20 marks)

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4.1.3. What are the functions of cell membrane receptors?

(20 marks)

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4.2. 35 year-old pregnant woman complaining of tiredness was found to be pale. On examination, she had tachycardia and dyspnoea. She was diagnosed as anaemic.

4.2.1. What is anaemia? (10 marks)

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4.2.2. State a classification of anaemia. (10 marks)

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4.2.3. Explain the physiological basis for the presence of tiredness, tachycardia and dyspnoea in the above woman. (30 marks)

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5.1. Illustrate the classification of connective tissue. (20 marks)

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5.2. State the functions of connective tissues. (15 marks)

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5.3. List the different types of cells found in connective tissues. (15 marks)

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5.4. What are the different parts of the gastrointestinal tract and state the function of each. (40 marks)

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5.5. Name the associated glands of the gastrointestinal system. (10 marks)

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6.

6.1.

6.1.1. List **five** important developmental events take place during first two weeks of embryological development.

(15 marks)

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6.1.2. Describe the structure of the mature placenta.

(25 marks)

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6.1.3. Name **five** organs derived from the mesoderm.

(10 marks)

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6.2. The anatomy of the structures of human reproductive system is adapted to perform its functions effectively.

6.2.1. List the structures of male reproductive system. *(05 marks)*

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6.2.2. List the functions of each structure listed above. *(20 marks)*

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6.2.3. List the structures of female reproductive system. *(05 marks)*

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6.2.4. List the adaptations of each structure for its function listed above in 6.2.3. *(20 marks)*

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