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UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES

DEPARTMENT OF PHARMACY

FIRST BPHARM PART I EXAMINATION – NOVEMBER/DECEMBER 2019

PH 1144 HUMAN BIOLOGY I (SEQ)

TIME: THREE HOURS

INSTRUCTIONS

- There are **six** questions in parts A, B, C, D, E, F, G and H of the SEQ paper.
- Answer **each** part in a separate booklet.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

PART A

1.

1.1. Alveolar partial pressure of oxygen is less than the oxygen partial pressure of atmospheric air, at the end of inspiration. Physiologically explain this. ***(25 marks)***

1.2. What is hypoxia? ***(10 marks)***

1.3. What is the type of hypoxia developed when a person is in a high altitude? ***(10 marks)***

1.4. When a person travels to a high altitude, initially the respiratory rate increases and later it gradually declines to previous rate. Physiologically explain the increase and decrease of respiratory rate in this situation. ***(25 marks)***

1.5. Describe the modes of carbon dioxide transport in blood. ***(30 marks)***

PART B

2.

2.1. Explain the following terms in relation to the cardiovascular system:

2.1.1. Cardiac output ***(15 marks)***

2.1.2. Ejection fraction ***(15 marks)***

2.1.3. Muscle pump ***(15 marks)***

2.1.4. Relative refractory period of cells of conductive system ***(15 marks)***

2.2. Draw a clearly labelled diagram of the pressure-volume curve of the left ventricle. ***(20 marks)***

2.3. Indicate where the following events occur on the diagram you draw in 2.2 above:

2.3.1. Isovolumetric contraction phase (*10 marks*)

2.3.2. Closure of the mitral valve (*05 marks*)

2.3.3. Opening of the mitral valve (*05 marks*)

PART C

3.

3.1. State **three** enzymes secreted by the exocrine pancreas. (*10 marks*)

3.2. Outline the regulation of exocrine pancreatic secretion. (*30 marks*)

3.3. State the name of the condition that occurs due to deficiency of pancreatic secretion. (*05 marks*)

3.4. Outline the complications of longstanding pancreatic deficiency. (*30 marks*)

PART D

3.5. What are the functions of cell membrane? (*25 marks*)

4.

4.1.

4.1.1. What is the difference between an agonist and a partial agonist? (*10 marks*)

4.1.2. Describe the meaning of adaptation in relation to receptors. (*10 marks*)

4.1.3. Describe the functional difference between acetylcholine nicotinic receptors and acetylcholine muscarinic receptors. (*30 marks*)

PART E

4.2.

4.2.1. State **five** functions of blood. (*10 marks*)

4.2.2. State **five** functions of plasma proteins. (*10 marks*)

4.2.3. State **two** functions of white blood cells. (*10 marks*)

4.2.4. State **five** signs/symptoms of anaemia. (*10 marks*)

4.2.5. Classify anaemia according to aetiology giving **one** disorder for each. (*10 marks*)

PART F

5.

5.1. Heart is a hollow muscular organ located in the middle mediastinum of the thoracic cavity.

5.1.1. Briefly describe the pericardium. ***(15 marks)***

5.1.2. Briefly explain the coronary circulation. ***(15 marks)***

5.1.3. List the **three** circulatory changes that occur at birth. ***(10 marks)***

5.1.4. Draw a labeled diagram to show the light microscopy of a vein. ***(10 marks)***

PART G

5.2.

5.2.1. List the basic steps of intra-uterine development from ovulation to birth. ***(10 marks)***

5.2.2. Describe the period of embryogenesis. ***(30 marks)***

5.2.3. Briefly describe the histology of nucleus. ***(10 marks)***

PART H

6.

6.1. State **five** functions of connective tissues. ***(10 marks)***

6.2. Describe the different types of connective tissues. ***(40 marks)***

6.3. State the functions of different parts of the gastrointestinal tract. ***(30 marks)***

6.4. Describe the associated glands of the gastrointestinal system. ***(20 marks)***

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